ProAir
Customer Service Manual

Release Date: 30 November 2000

Mission Statement

ProAir is a leading manufacturer, distributor, and installer of air conditioning and heating systems to the specialty vehicle industry. Our mission is to continually improve our product and services in order to meet our customers' needs. This will allow us to prosper as a business.

We are dedicated and committed to:

Providing the employees of ProAir with a quality work life

Supplying our customers with a superior product, excellent service, and a competitive price

Maintaining technological advancement and leadership

Expanding and distributing our products worldwide

Forming a partnership and long-lasting relationship with our suppliers

Profitability which will allow us to survive and grow

Conducting business in an ethical and accountable manner

ProAir has designed this manual to assist in diagnosing and servicing our rear heat/cool units. We have organized it by chassis-specific sections. Within each of these sections we have included ProAir requirements and factory connection points, concern categories (heating, cooling, electrical, and airflow), wiring schematics, system-diagnosis flowcharts, exploded-view diagrams, and parts lists. You will also find sections on replacement/repair procedures, technical information bulletins, and our warranty statement. Please refer to the table of contents for further details.

Although we have designed this manual for the current model year, you will find that it also applies to GM vans, both GMT600 and Astro/Safari, from the 1996 model year on; to Ford vans from the 1996 model year on; and to Dodge vans from the 1998 model year on.

When using this manual, please keep in mind the following:

ProAir's rear unit serves as an *auxiliary* system to the front factory unit. If the factory unit (heating or air conditioning) does not work correctly, the symptoms will appear in the ProAir unit also. Repairs made to the factory system will in turn allow the ProAir unit to perform properly again.

We have designed this manual to cover the vast majority of concerns encountered in the field. However, it does not address every possible concern that may occur. In some instances, you will need to contact ProAir for further assistance. Please feel free to do so whenever you wish.

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Elkhart, Indiana 46514
Telephone: 219 264 5494
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Customer Service Manual
Table of Contents

Section 1.0
Chrysler/Dodge B-Van

ProAir Unit Location:

Although location may vary by converter, the ProAir unit is usually located on the driver's side, rear corner, inside the interior wall. A/C and heater hoses are routed over the wheel well, inside the interior wall, and drop through the floor behind the gas fill; they are then routed forward into engine compartment. (See page 1.1 or 1.2, "Factory Connection Points.") The air ducts also attach to the unit at this point and continue up the wall into the ceiling.

CAUTION: Located near the unit and built into the wall is a vent which must be kept clear to maintain adequate airflow through the evaporator. Do not block off this vent. Also, the louvers in the ceiling must be partially open while the unit is operating. If the louvers are completely closed, air backup will result in possible damage to the blower assembly.

ProAir Unit Operation:

The rear air conditioning system will function with the dash mode control positioned in one of the air conditioning settings. The rear heating system will function to its maximum potential with the dash mode control positioned in the "HEAT" location. (Verify that the unit is not cool-only; it must be a heat/cool unit.) When the dash mode control is positioned in the "DEFROST" mode, the air conditioner continues to cycle and circulate refrigerant throughout the system. The output of rear heat will be moderated in the "DEFROST" position.

ProAir Unit Requirements:

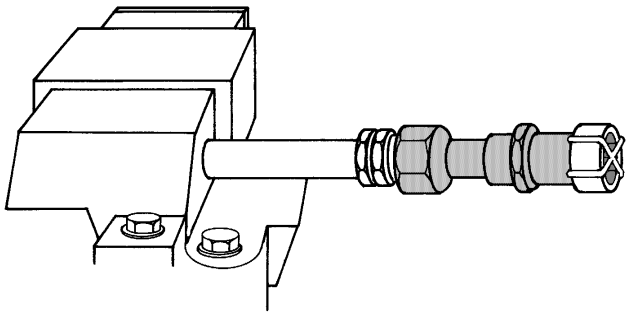
This ProAir unit contains Refrigerant-134a (R-134a). **DO NOT** add or replace with Refrigerant-12 (R-12/Freon). Adding R-12 to an R-134a system may cause component damage or poor A/C system performance. Use only PAG (polyalkylene glycol) synthetic lubricant within an R-134a system.

System Capacities			
Fluids	**ProAir Rear Unit**	**OEM Dash Unit**	**Total**
Refrigerant-134a (R-134a)**—1100**	10 oz (0.63 lb)	34 oz (2.13 lb)	44 oz (2.75 lb)
Refrigerant-134a (R-134a)**—AirTech®**	12 oz (0.75 lb)	34 oz (2.13 lb)	46 oz (2.88 lb)
PAG lubricant (54L or Chrysler Equivalent)**—all units**	3 oz	8 oz	11 oz
Anti-freeze**—all units**	Add approximately ½ gallon of a 50/50 mixture of anti-freeze and water to the van's cooling system when installing a ProAir rear unit.		

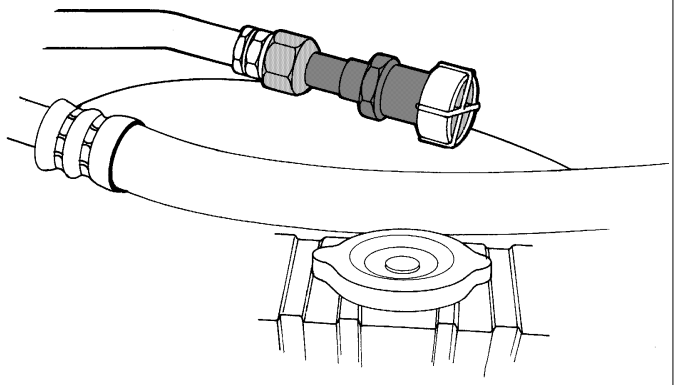
NOTE: The refrigerant capacity for the ProAir rear unit should not be confused with the factory auxiliary rear unit, which requires 12 oz (0.75 lb) of R-134a and is stated on the OEM sticker in the engine compartment on the front evaporator housing. The ProAir sticker is located in this same area.

DODGE B-VAN FACTORY CONNECTION POINTS W/HBC

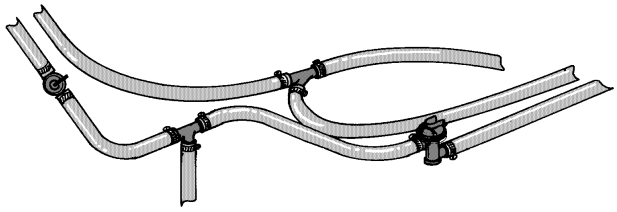
The Chrysler Motor Corporation has provided for upfitters, OEM connection points to interface with OEM heating, cooling and electrical systems. This package is labeled HBC.



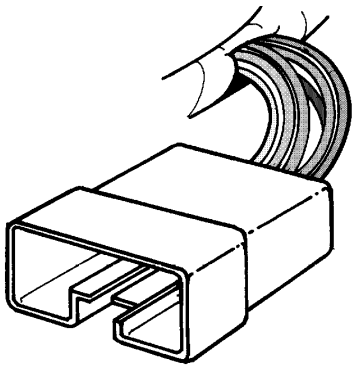
OEM LIQUID LINE CONNECTION LOCATED AT PASSENGER SIDE BY OEM DASH UNIT



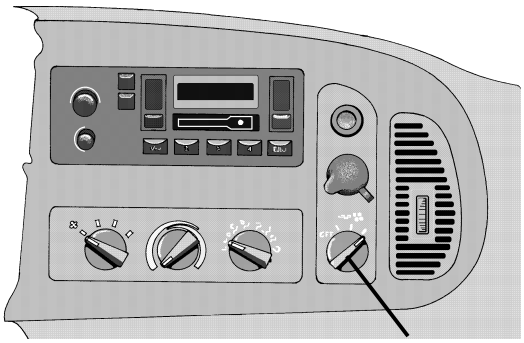
OEM SUCTION LINE CONNECTION LOCATED BY RADIATOR FILL



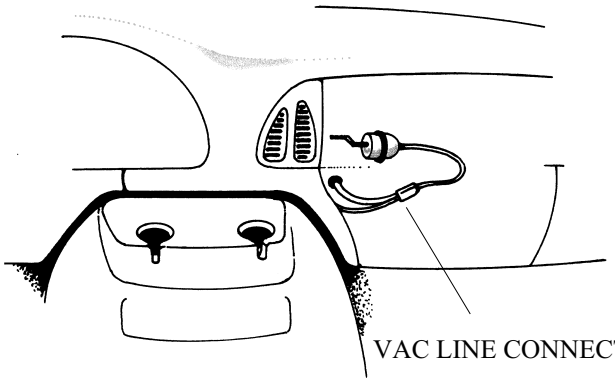
OEM WATER LINE CONNECTIONS LOCATED BEHIND THE SUCTION CONNECTION.



OEM ELECTRICAL CONNECTION LOCATED AT THE B - PILLAR



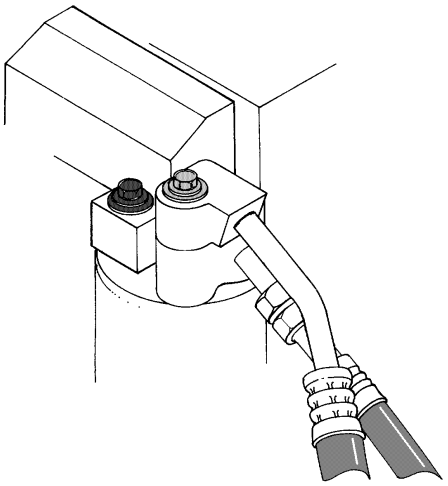
OEM SWITCH LOCATION AT THE DASH



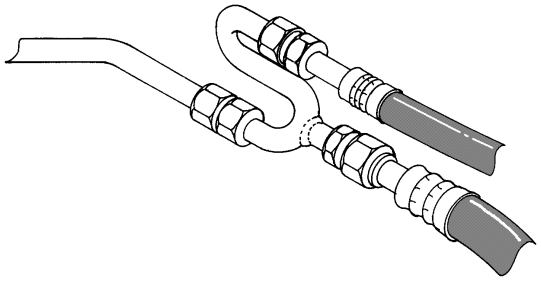
VAC LINE CONNECTION

DODGE B-VAN FACTORY CONNECTION POINTS W/O HBC

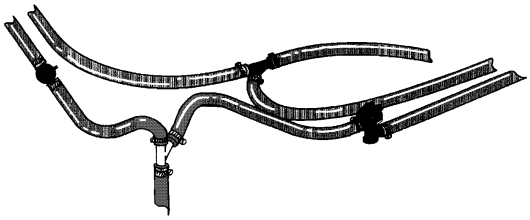
For vehicles without the HBC package, the locations for A/C and heat connections are shown below.



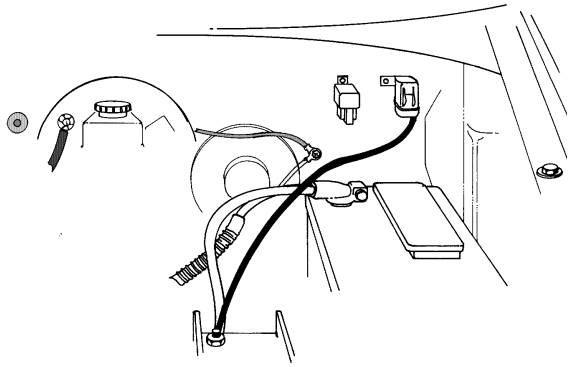
OEM LIQUID LINE CONNECTION W/O THE HBC PACKAGE BY DASH HEATER



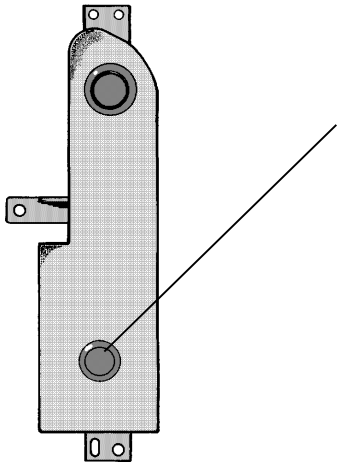
OEM SUCTION LINE CONNECTION W/O THE HBC PACKAGE ABOVE FAN SHROUD



OEM WATER LINE CONNECTIONS W/O THE HBC PACKAGE UNDER THE HOOD



ELECTRICAL CONNECTIONS FOR VEHICLES W/O THE HBC PACKAGE ARE MADE UNDER THE HOOD.

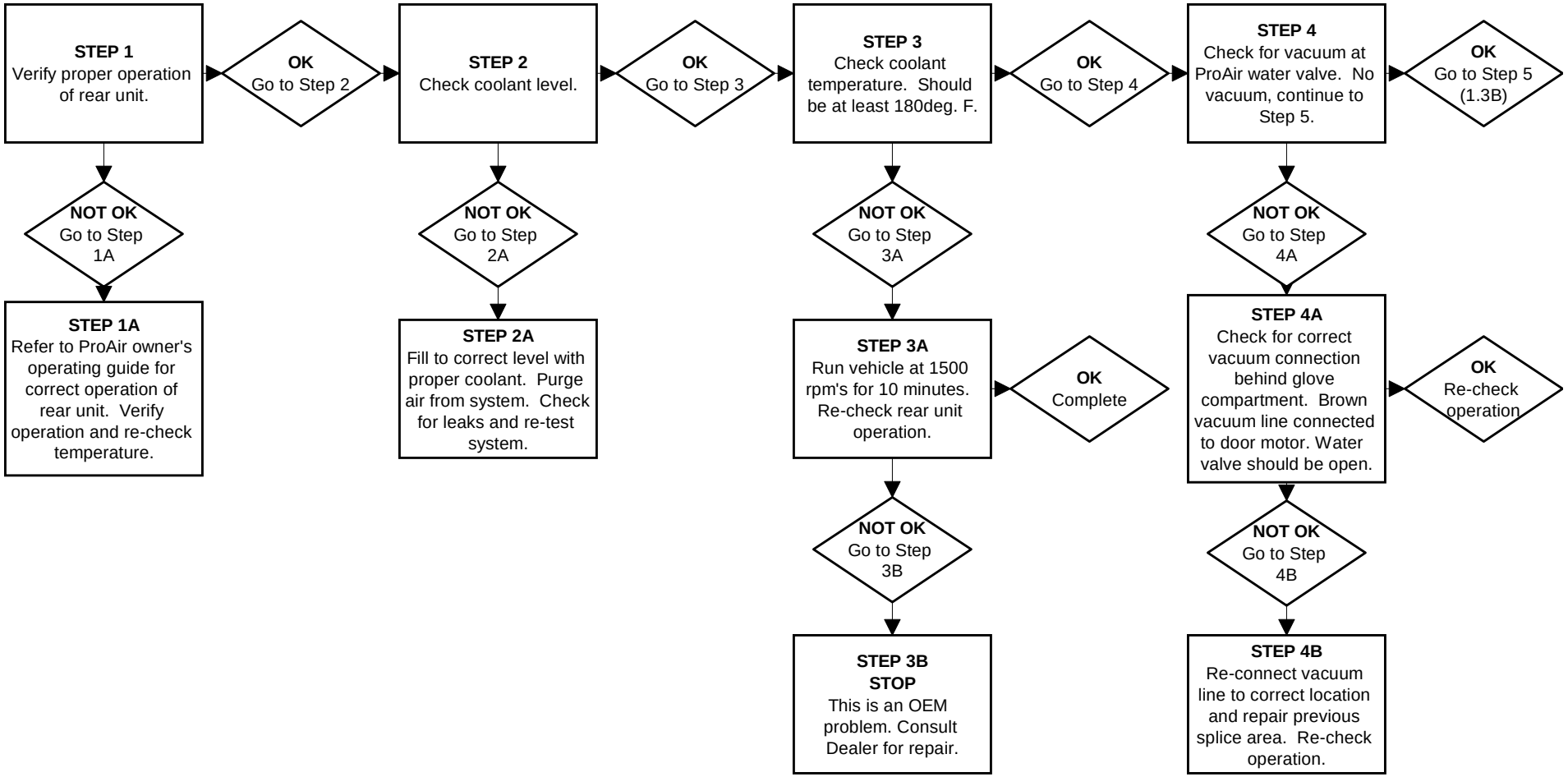


SWITCH PANEL SHOWING LOCATION OF AUXILIARY SWITCH FOR UNITS W/O THE HBC PACKAGE

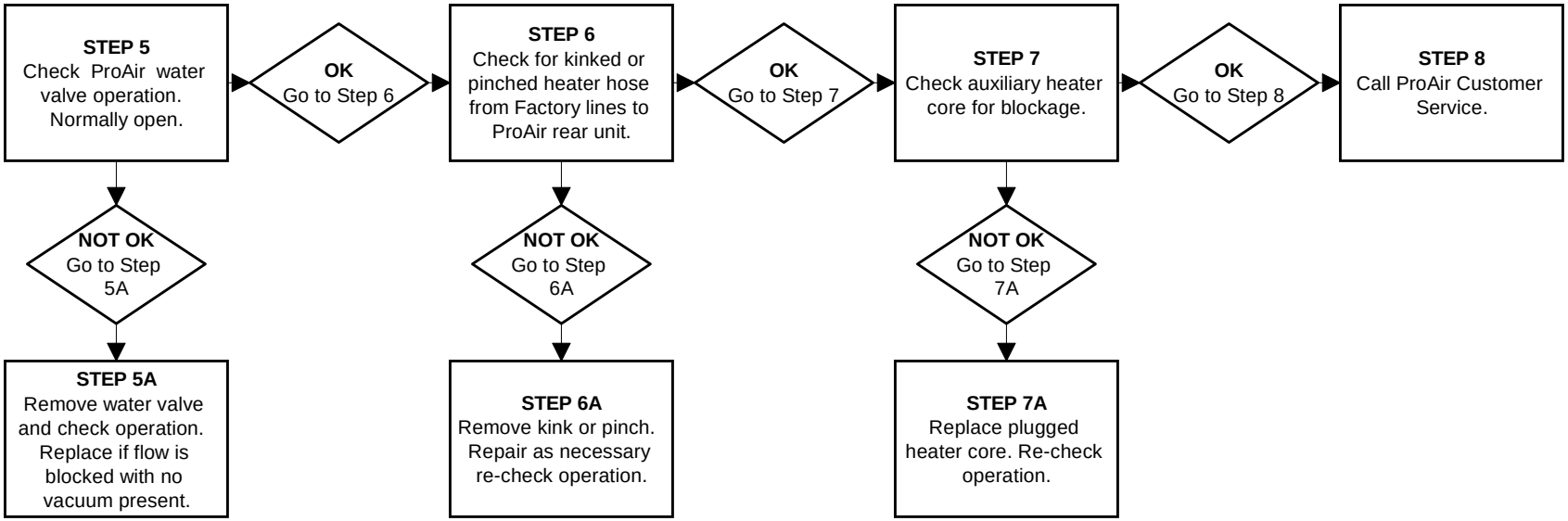
Chrysler/Dodge B-Van Diagnosis Flow Chart
Heat Concerns w/HBC

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



2000 Chrysler/Dodge B-Van Diagnosis Flow Chart
Heat Concerns w/HBC



Chrysler/Dodge B-Van Diagnosis Flow Chart
Heat Concerns w/o HBC

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1) Rear heat temperatures should be checked at closest louver to ProAir unit.
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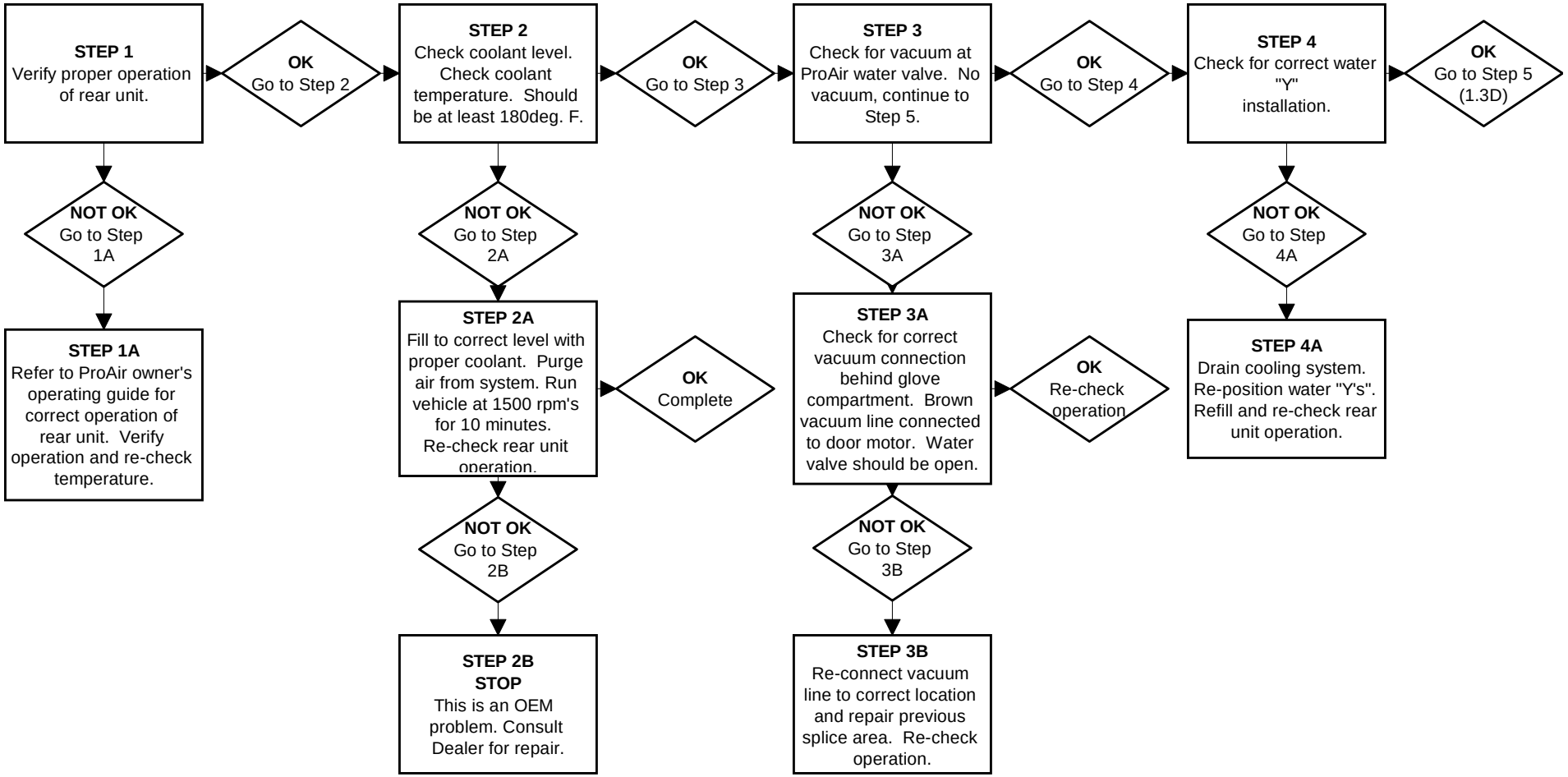
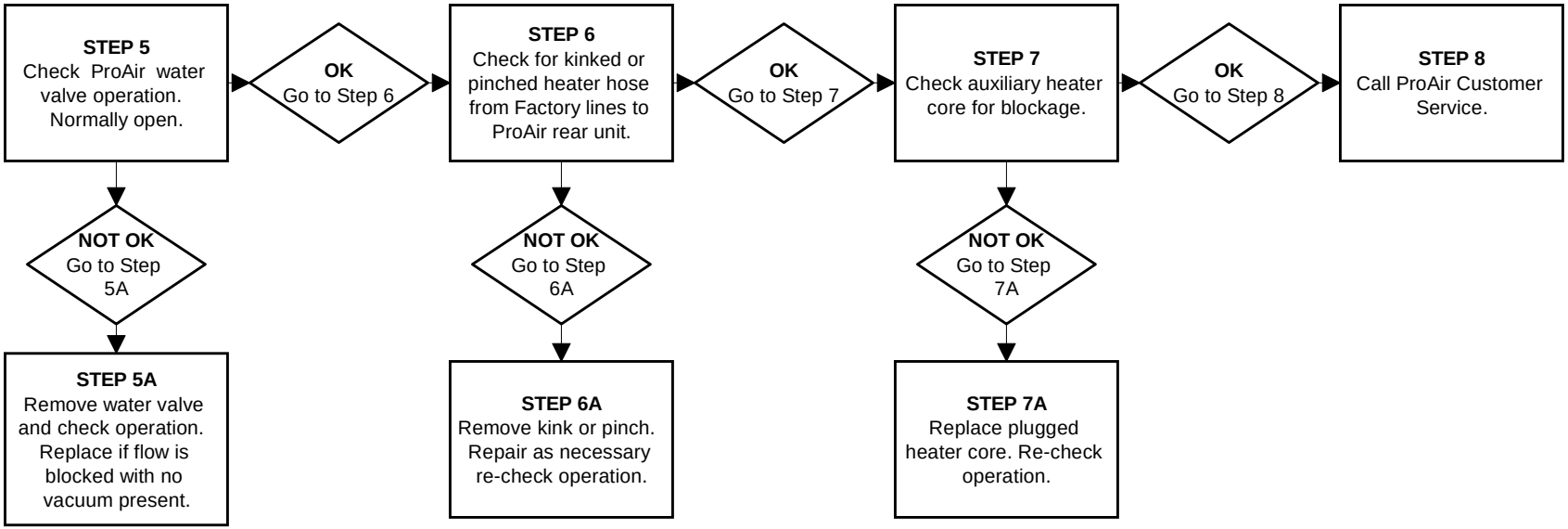


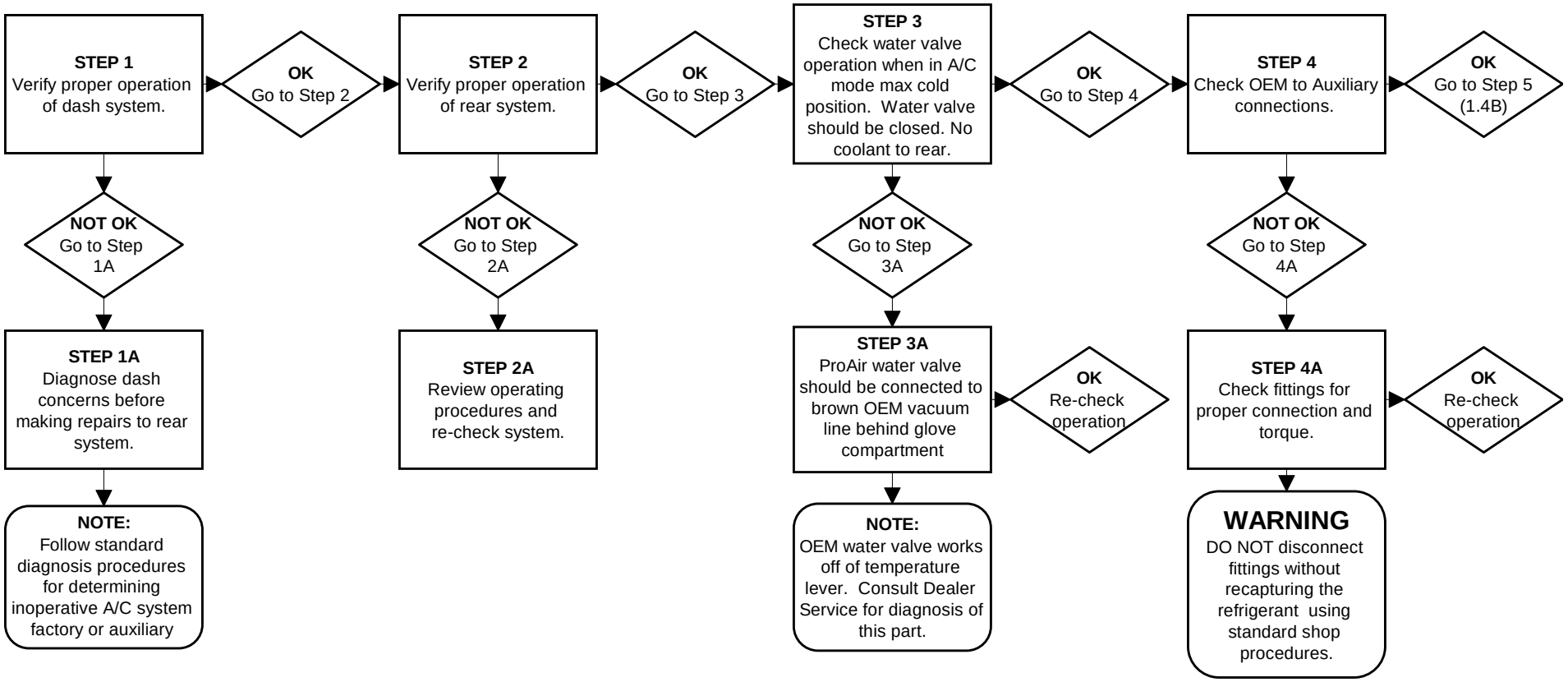
2000 Chrysler/Dodge B-Van Diagnosis Flow Chart
Heat Concerns w/o HBC



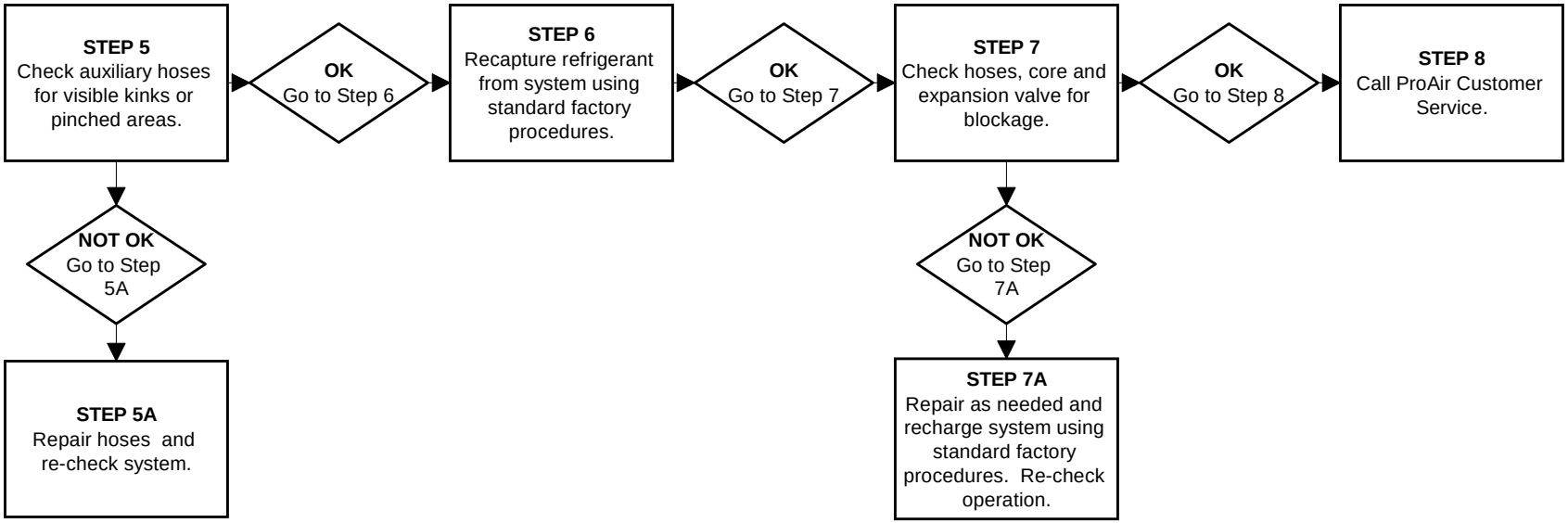
Chrysler/Dodge B-Van Diagnosis Flow Chart
Cooling Concerns w/ HBC

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head must be set to "MAX A/C"
5) The vehicle's temperature control lever should be at the max cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



2000 Chrysler/Dodge B-Van Diagnosis Flow Chart
Cooling Concerns w/HBC



Chrysler/Dodge B-Van Diagnosis Flow Chart
Cooling Concerns w/o HBC

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
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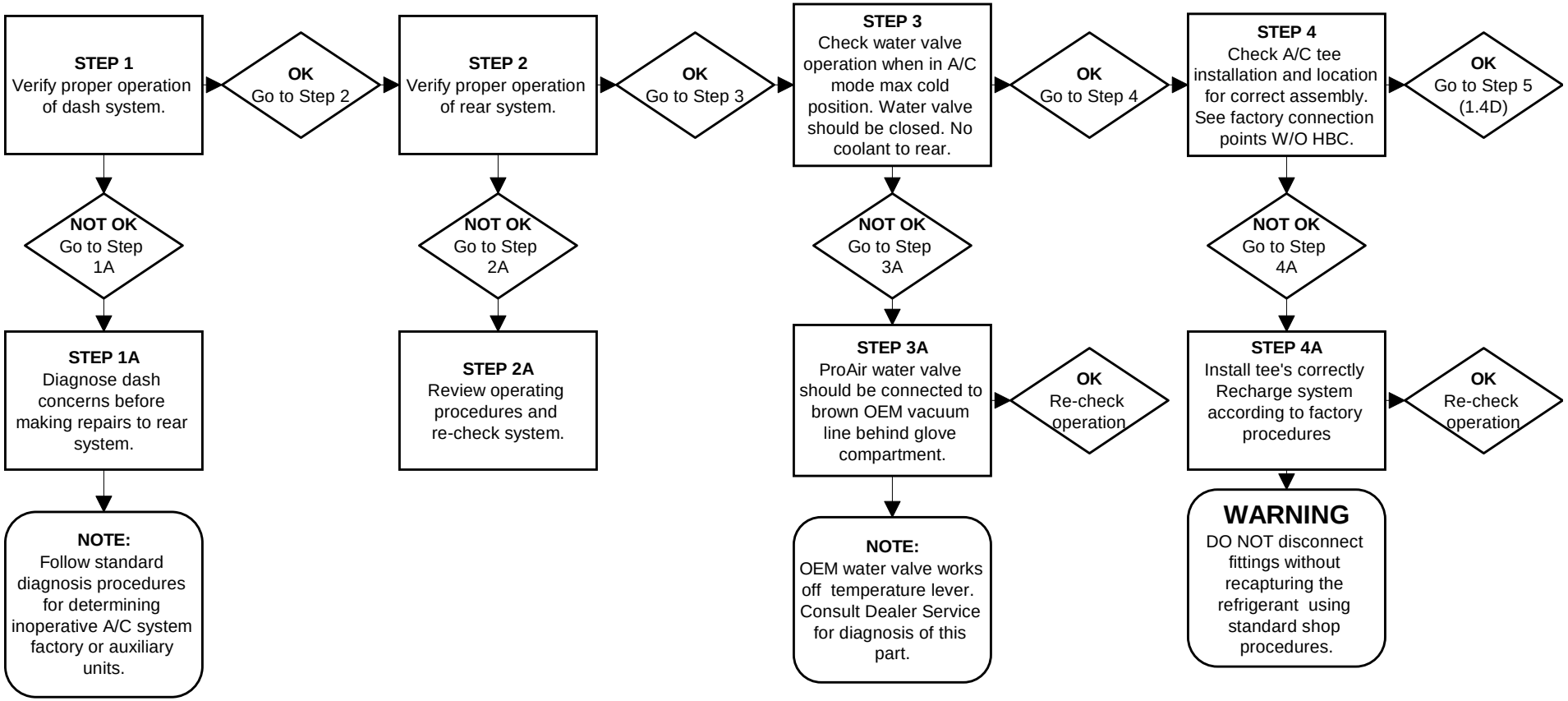
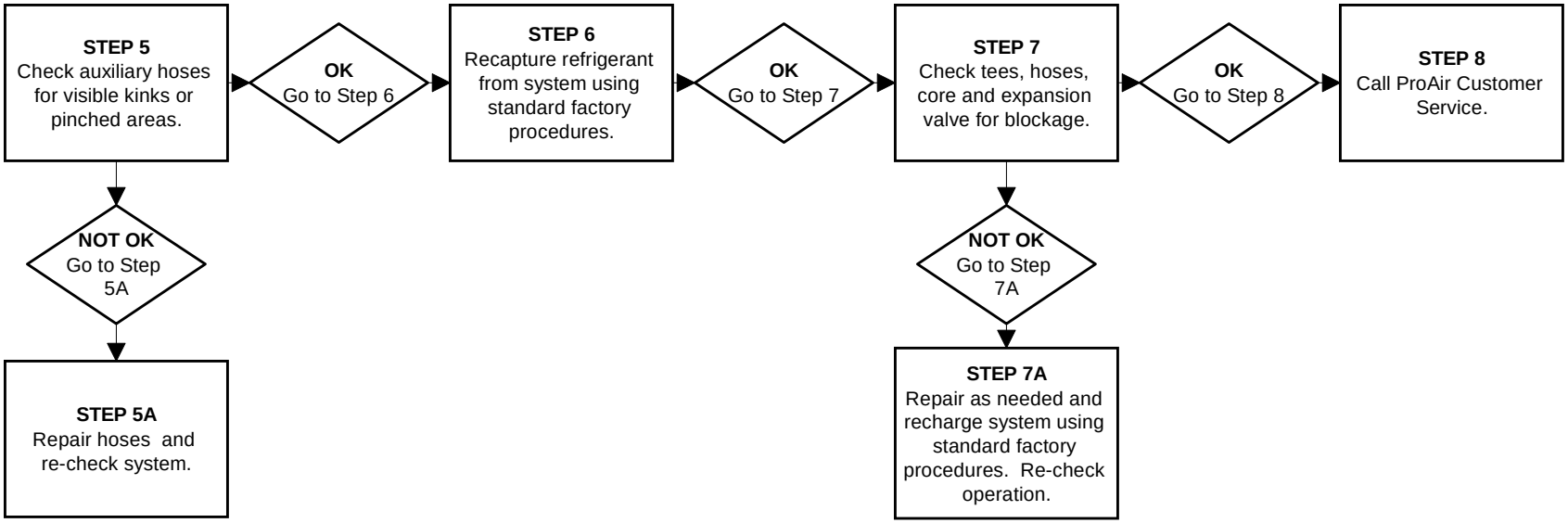


2000 Chrysler/Dodge B-Van Diagnosis Flow Chart
Cooling Concerns w/o HBC



Chrysler/Dodge B-van
Electrical Concerns
(With HBC)

Chrysler vans that come with the HBC upfitter's package are equipped with OEM wiring from the dash-mounted switch to the driver's side B pillar of the van. Start diagnosis of electrical concerns at the B-pillar connector.

The electrical system on Chrysler vehicles uses as 12-volt (DC) signal. The switching to the auxiliary unit is done on the ground side of the circuit. When starting diagnosis of the electrical concern, disconnect the ProAir harness from the OEM harness and check the chassis connector for the following inputs:

White 6-pin connector	
Red wire with green tracer	12V (DC) ignition switched with key
Red wire with grey tracer	12V (DC) battery positive
Black wire with light-blue tracer	Grounded in low speed on auxiliary dash switch
Black wire with orange tracer	Grounded in medium speed on auxiliary dash switch
Green wire	Grounded in high speed on auxiliary dash switch
Green wire with white tracer	Unused by ProAir

These conditions must be met in order for the auxiliary unit to operate. To diagnose any problems with the OEM wiring, consult dealer service manuals.

If all inputs are present from the OEM system, reconnect the ProAir harness to the OEM plugs and continue checking at the rear unit. (See next page.)

If the following test procedures do not lead you to the correction, please contact ProAir for further assistance.

Chrysler/Dodge B-van
Electrical Concerns—Test Procedures
(With HBC)

Concern	Possible Cause	Solution
No Blower Speeds	1. 15A fuse at unit blown 2. No battery voltage at fuse connector 3. Motor lead disconnected 4. No ground signal to terminal 30 of relays 5. No ground at motor 6. Inoperative motor	1. Replace fuse. Check for short in system. 2. Repair open wire or connector at B pillar. 3. Reconnect and secure to prevent reoccurrence. 4. Repair open wire or connector at B pillar. 5. Repair open relay connection or replace relay. 6. Replace motor assembly.
No Low Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal out of resistor 5. No ground signal to motor plug	1. Repair open in circuit between B pillar and relay. 2. Replace low-speed relay. 3. Repair open wire to resistor. 4. Replace resistor. 5. Repair open in wire or connector at motor plug.
No Medium Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal out of resistor 5. No ground signal to motor plug	1. Repair open in circuit between B pillar and relay. 2. Replace medium-speed relay. 3. Repair open wire to resistor. 4. Replace resistor. 5. Repair open in wire or connector at motor plug.
No High Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal to motor plug	1. Repair open ground at floor near unit. 2. Replace high-speed relay. 3. Repair open wire to resistor. 4. Repair open in wire or connector at motor plug.
Motor Runs Continuously	1. Stuck relay 2. Improperly wired connector 3. Shorted wire	1. Replace relay. 2. Check connector. Rewire harness. 3. Check for screw in harness.
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

Chrysler/Dodge B-van
Electrical Concerns
(Without HBC)

Chrysler vans that do not come with the HBC upfitter's package are equipped with ProAir wiring from the dash-mounted switch to the unit mounted on the driver's side. The ProAir wiring consists of three harnesses: (1) a relay harness to carry the system's power requirements; (2) a main harness routed from the auxiliary-switch location to the rear unit; and (3) a blower-motor-resistor harness attached directly to the unit.

This electrical system uses a 1 2-volt (DC) signal. This means that the dash switch sends 12-volt signals to the rear unit in order to switch blower speeds.

When starting diagnosis of the electrical concern, begin by accessing the auxiliary fan switch and check for ignition power on the red wire to the terminal marked B.

You must have this ignition source for the rear blower to operate. This source is generated from the ProAir relay harness mounted under the hood next to the battery. The relay harness gets its signal at the OEM lighter connection located above the ProAir auxiliary switch.

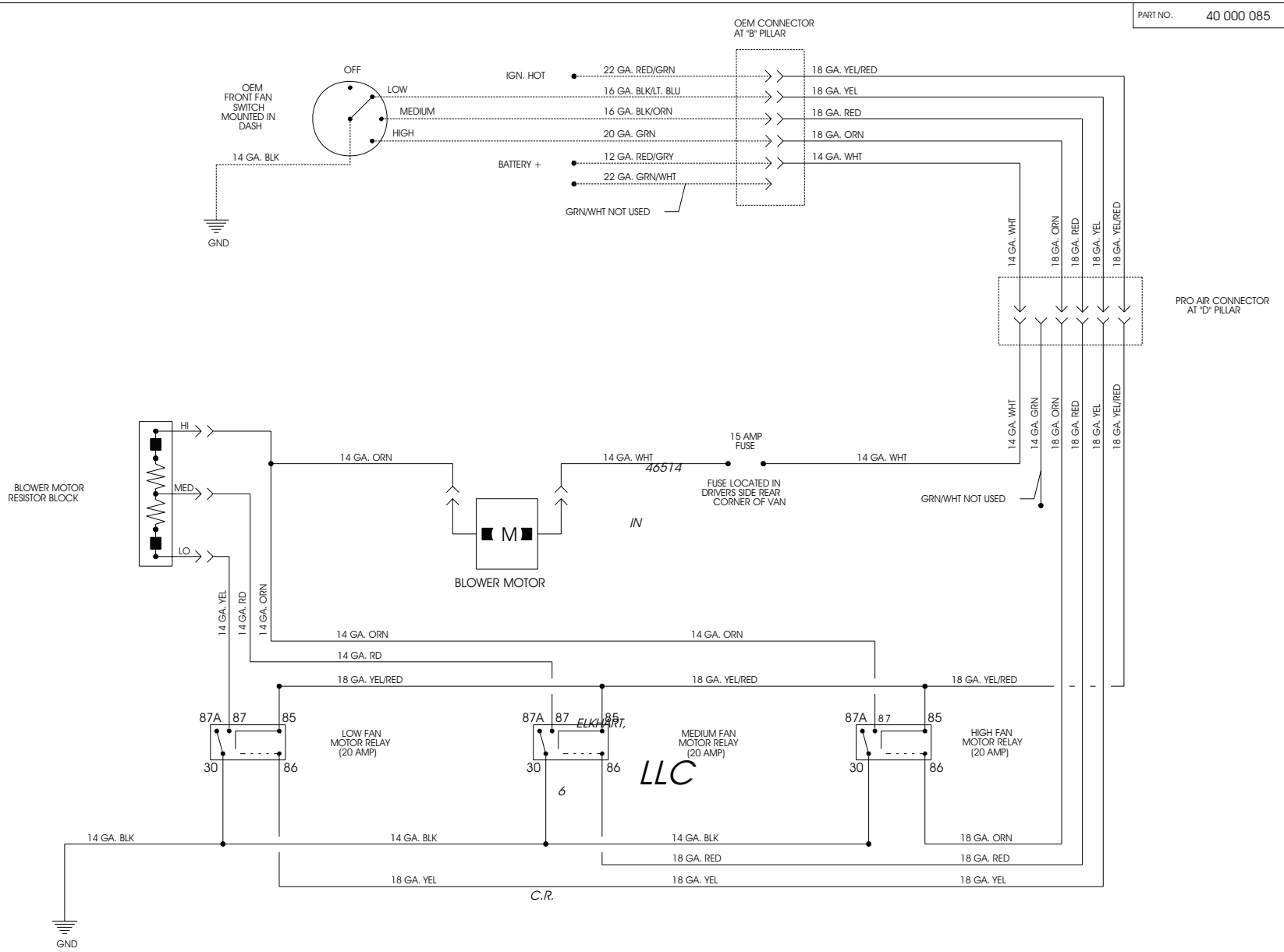
If the following test procedures do not lead you to the correction, please contact ProAir for further assistance.

Chrysler/Dodge B-van
Electrical Concerns—Test Procedures
(Without HBC)

Concern	Possible Cause	Solution
No Blower Speeds	1. No ignition source to switch (check fuse)	1. Check ignition connection at lighter. Check relay under hood. Check battery connection to relay and fuse.
	2. Inoperative switch	2. Replace switch.
	3. Switch disconnected from harness	3. Reconnect and secure to prevent reoccurrence.
	4. Main harness disconnected from resistor harness	4. Reconnect and secure to prevent reoccurrence.
	5. Motor unplugged	5. Reconnect and secure to prevent reoccurrence.
	6. No ground to motor	6. Reground unit.
	7. Inoperative motor	7. Replace motor.
No Low Speed	1. Inoperative switch	1. Replace switch.
	2. Open connection or circuit in yellow wire from dash to rear unit	2. Check circuit. Repair or replace harness.
	3. Inoperative resistor	3. Replace resistor.
No Medium Speed	1. Inoperative switch	1. Replace switch.
	2. Open connection or circuit in red wire from dash to rear unit	2. Check circuit. Repair or replace harness.
	3. Inoperative resistor	3. Replace resistor.
No High Speed	1. Inoperative switch	1. Replace switch.
	2. Open connection or circuit in orange wire from dash to rear unit	2. Check circuit. Repair or replace harness.
Motor Runs Continuously	1. Ignition feed connected to source	1. Diagnose under-hood relay (refer to diagram).
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

PART NO. 40 000 085

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



REV. X

LET.	NO.	REVISION	BY	DATE
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SIGNATURES		DATE
DRAWN	K.F.S.	10/22/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR,
28731

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

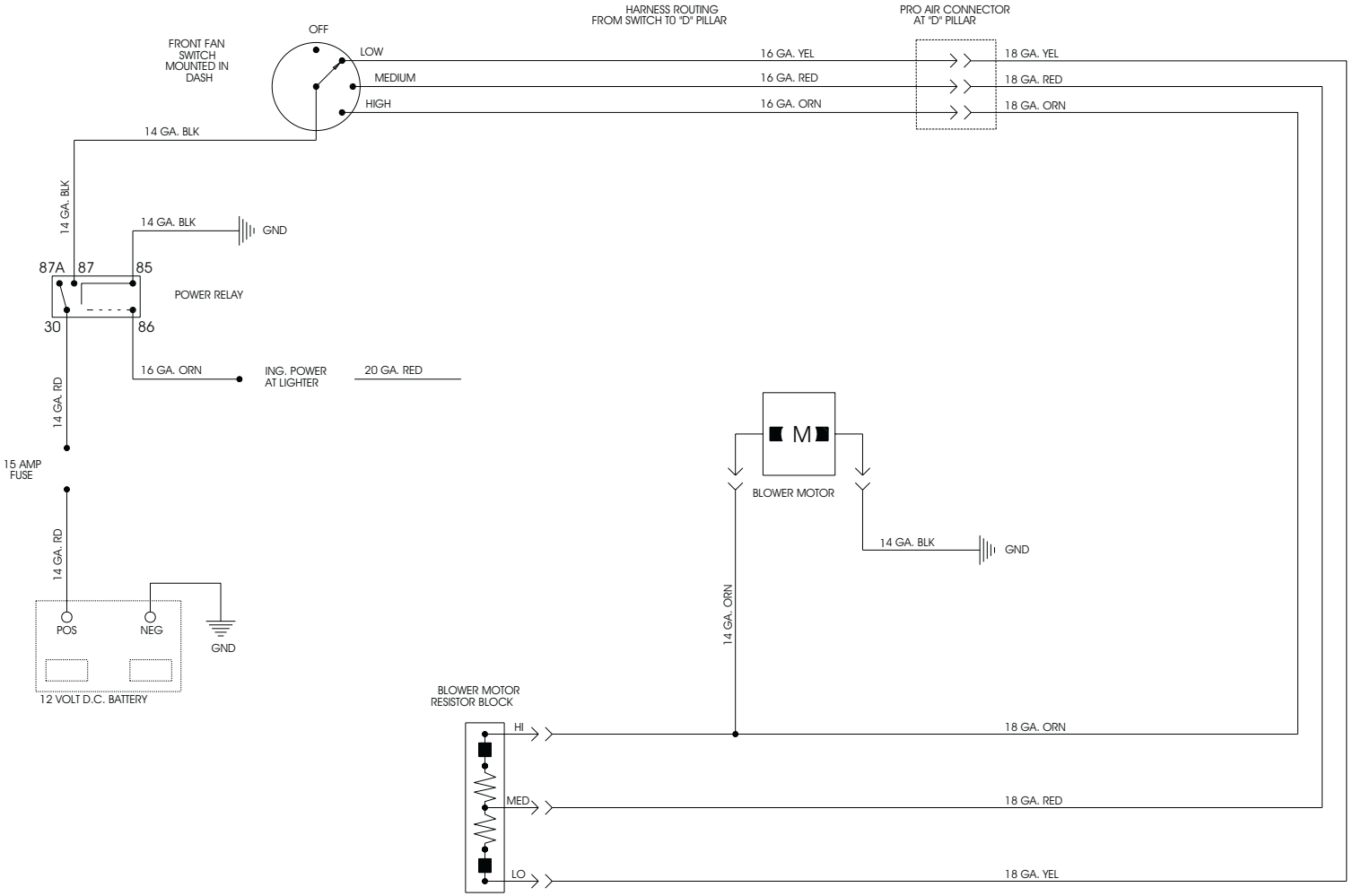
USAGE: DODGE W/HBC

PART NO. 40 000 085
SCALE: 1"=1'-0" SIZE A
SHEET 1 OF 1

ProAir, LLC
1.6A

PART NO. 40 000 086

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES



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SIGNATURES		DATE
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CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: DODGE W/O HBC

PART NO. 40 000 086

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

Chrysler/Dodge B-van
Last Touch Switch Control
(With or Without HBC)

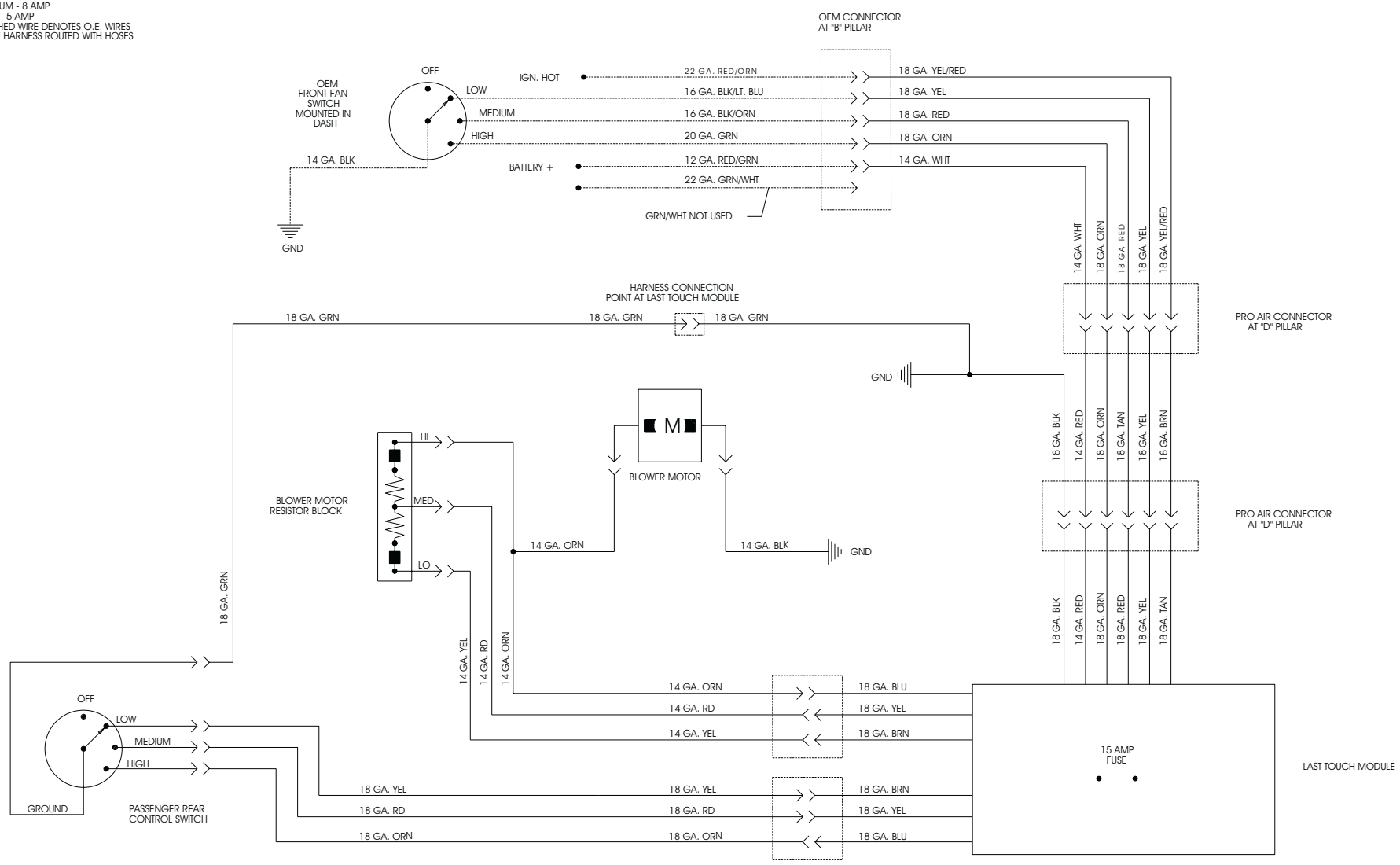
For Chrysler vehicles ProAir offers a switching option called Last Touch Switch Control (LTSC). This system gives driver and passenger control of the rear fan through an electronic module.

Blower speeds are changed based on inputs given by either the front or rear switch: whichever switch was last used is the one that changes the blower speed. The driver's control switch has master shutoff of the system; it must be in a position other than off for the rear switch to work.

The module is located near the rear unit. The following pages contain wiring diagrams and installation instructions for the various modules. Please contact ProAir's customer service department for diagnosis or questions regarding this system.

PART NO. 40 000 087

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



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SIGNATURES		DATE
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CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

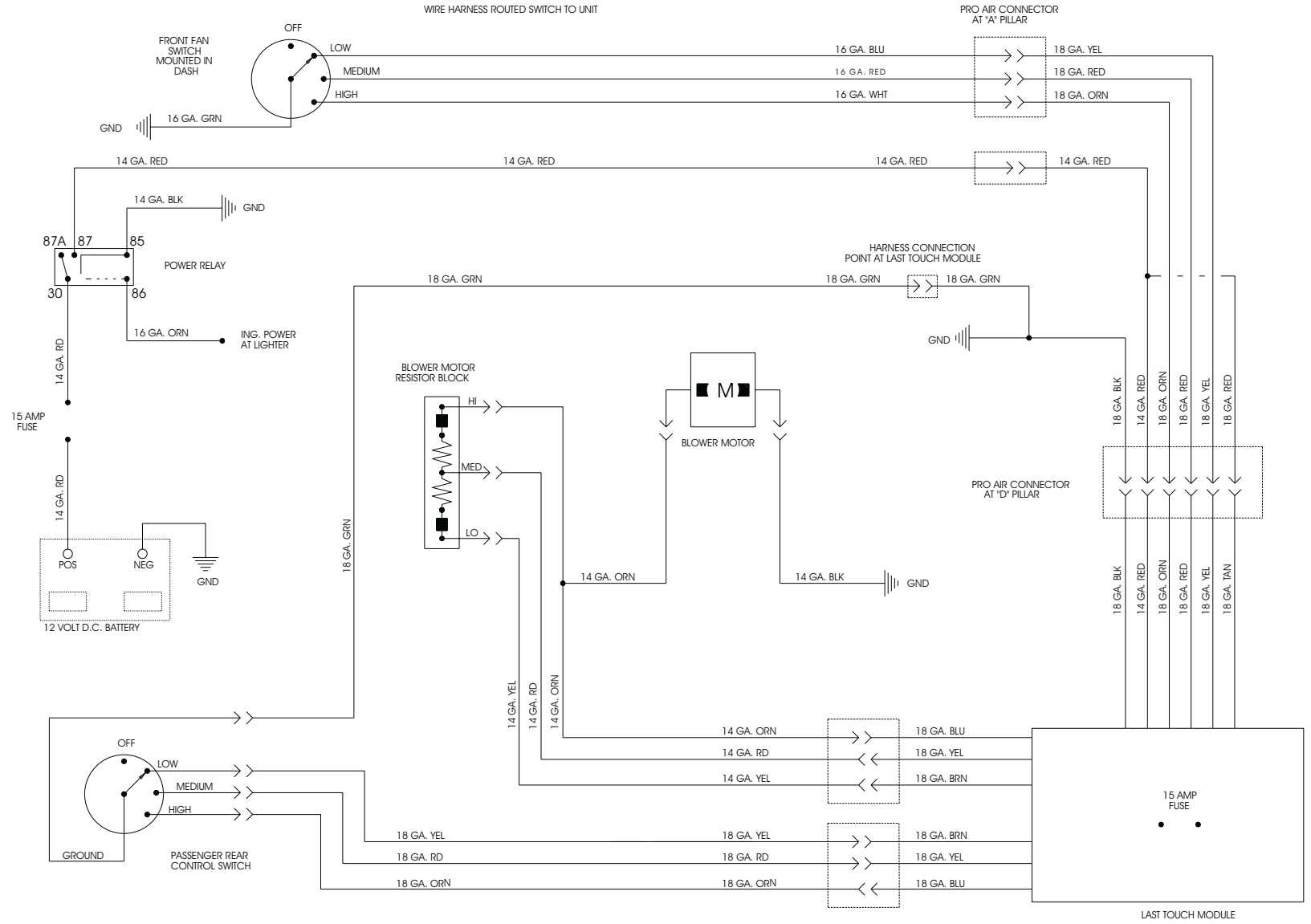
TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: DODGE W/ HBC & LAST TOUCH SW.

PART NO. 40 000 087
SCALE: 1"=1'-0"
SIZE A
SHEET 1 OF 1

PART NO. 40 000 088

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES



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SIGNATURES		DATE
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CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: DODGE W/O HBC & LAST TOUCH SW.

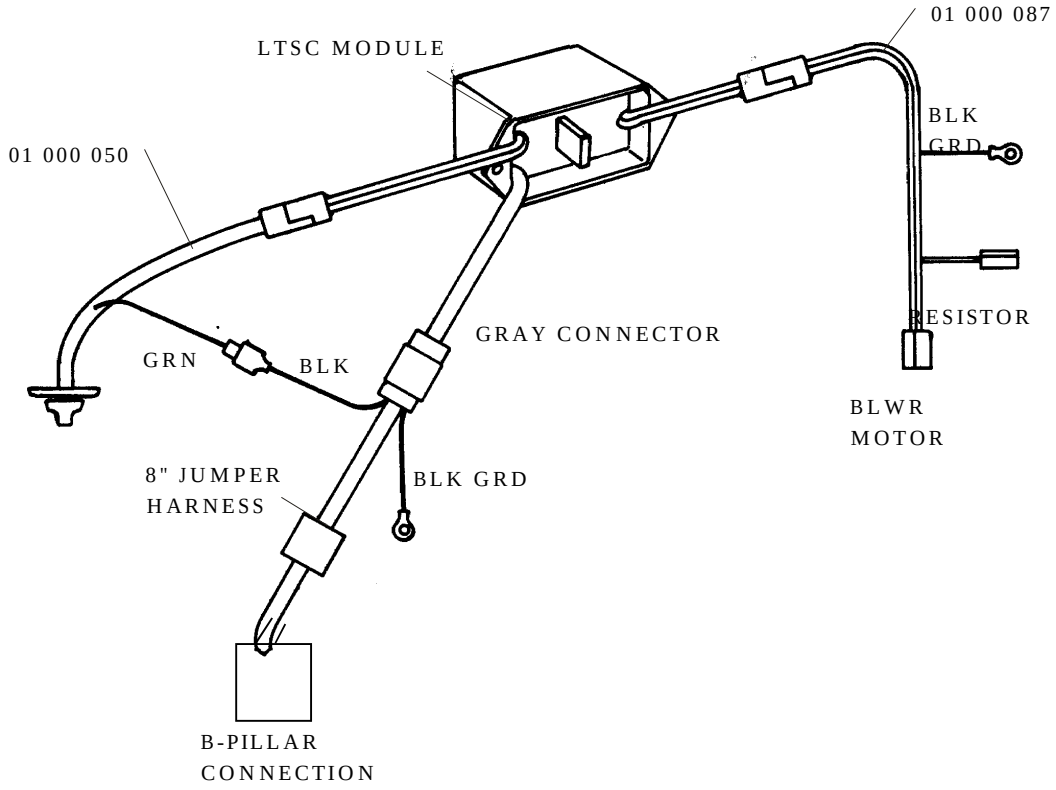
PART NO. 40 000 088
SCALE: 1"=1'-0"
SIZE A
SHEET 1 OF 1

1999 DODGE W/HBC LAST TOUCH SWITCH CONTROL

Connect the harness from the rear switch, (P.N. 01 000 050), to the mating flat plug at the LTSC module. Connect the green wire from this harness to the black wire (with the spade connector), from the short jumper harness.

Plug the short jumper harness into the gray connector on the module, and into the 10' harness which goes to the front.

Plug the harness numbered 01 000 087 into the remaining flat connector at the module and into the motor and resistor at the power pack.

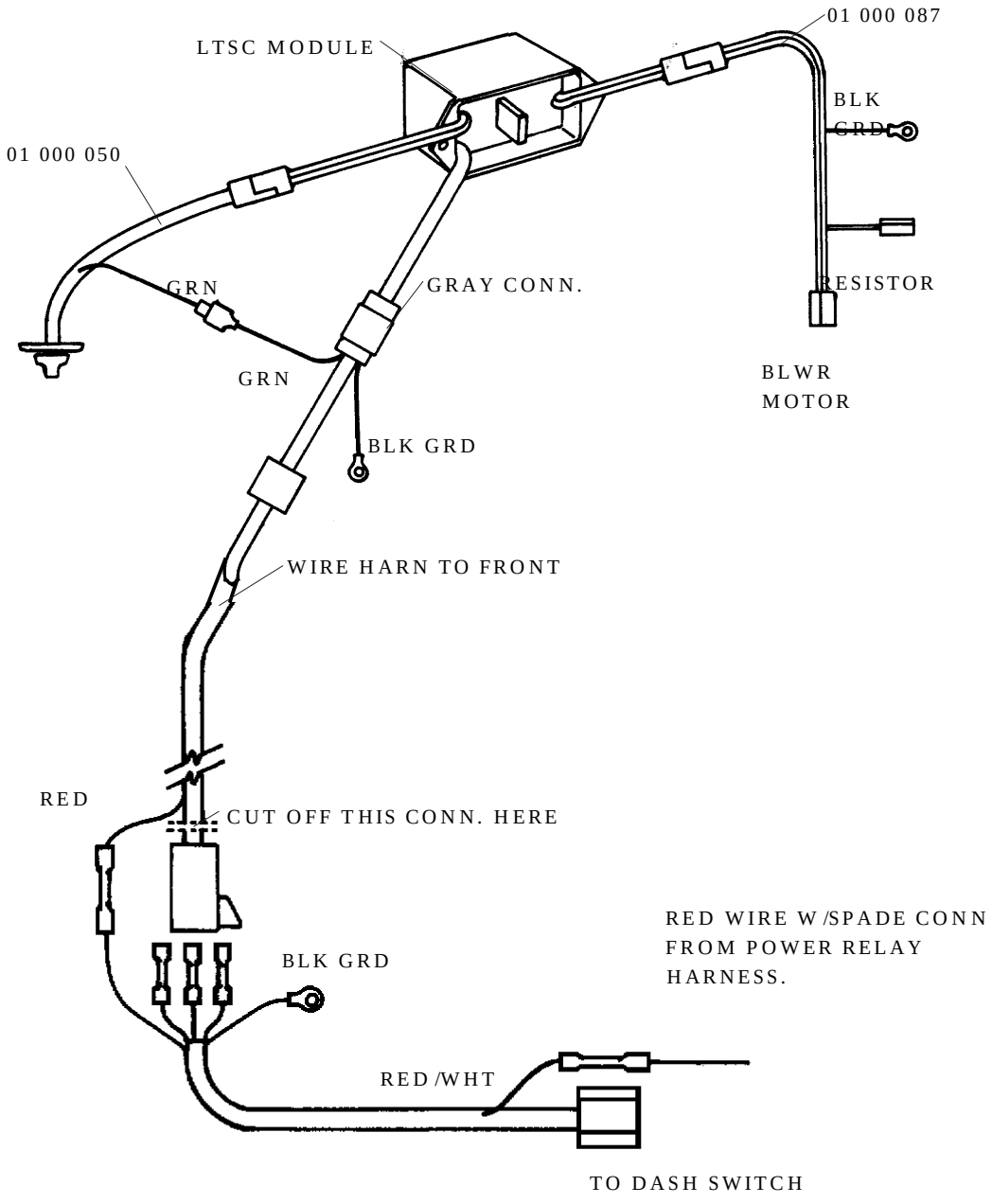


1999 DODGE W/O HBC LAST TOUCH SWITCH CONTROL

Connect the harness from the rear switch, (P.N. 01 000 050), to the mating flat plug at the LTSC module. Connect the green wire from this harness to the green wire from the wire harness that goes to the front.

Plug the harness to the front into the gray connector on the module, and route it to the front alongside the van wall, under the drivers seat in the OEM wire channel. At the end, cut off the black plug and then butt connect the wires to the switch harness, matching the colors. The red wire is connected to the red w/white wire in the switch harness. The other end of this red/white wire is connected to the red wire with the spade connector from the power relay harness.

Plug the harness numbered 01 000 087 into the remaining flat connector at the module and into the motor and resistor at the power pack.



Chrysler/Dodge B-van
Airflow Concerns

The first step in diagnosing any concern is to get as specific as possible with it. In order to help prevent misdiagnosis and ineffective, costly repairs, categorize the airflow concern into one of the following general areas:

Inadequate airflow—front or rear louvers

Inadequate airflow—left or right louvers

Inadequate airflow—all louvers

The following prechecks will help in diagnosis of the airflow concern:

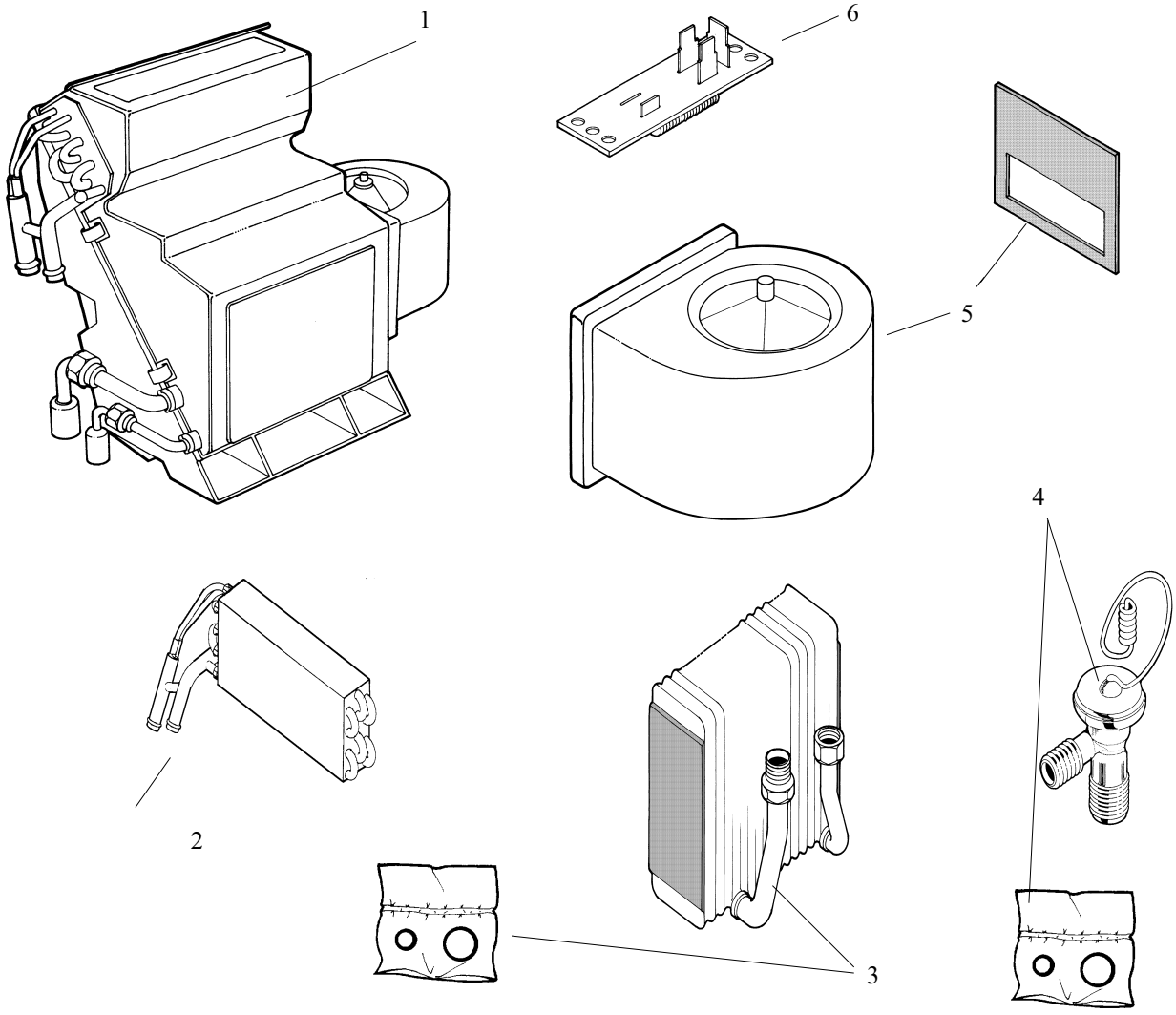
Precheck	**Solution**
Is air inlet blocked?	Remove debris or obstruction.
Is blower inoperative on low, medium, and/or high?	Refer to electrical concerns section for specific chassis.
Is blower wheel not intact?	Refer to blower replacement in repair section.
Is evaporator core iced up?	Refer to cooling concerns section for specific chassis.
Is there debris on blower wheel or coil?	Clean and prevent reoccurrence.
Is there inadequate airflow out of top of unit with duct disconnected?	Check for blocked inlet. Check for debris on core. Check for blower concern.

If any problems exist with these prechecks, they must be rectified before removing interior panels to check the ductwork. Repair procedures for the above concerns can be found in the specific chassis sections of this manual.

If all the above prechecks are all right, then check all louvers for obstructions: fabric, tape, hole cutouts, etc. If louvers are unobstructed, it will be necessary to access duct hose, crossover, and wall extensions to determine the cause of the inadequate airflow.

Consult conversion company's customer service department for procedures to access these components.

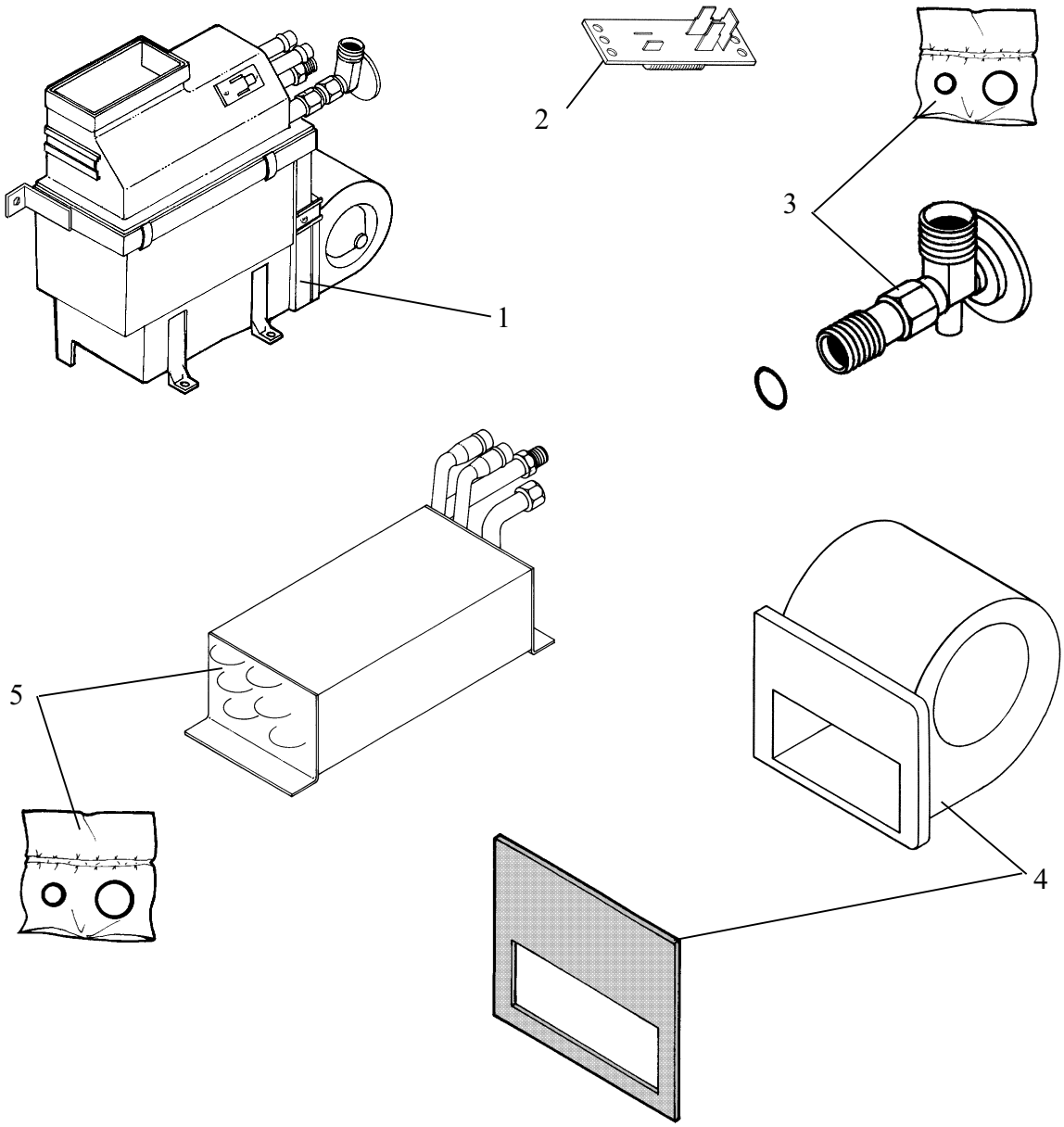
1999 AirTech H/C POWER PACK ASSEMBLY PART NUMBER 60 000 587



1.	60 000 587 POWER PACK ASS'Y
2.	03 000 042 HEAT COIL
3.	03 000 043 EVAPORATOR COIL, 60 000 287 O-RING KIT
4.	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
5.	68 000 005 BLOWER MOTOR W/SEAL
6.	01 000 091 RESISTOR

CUSTOMER SERVICE MANUAL

DODGE POWER PACK 1100 SERIES ASSEMBLY PART NUMBER 66 000 014



1.	66 000 014 POWER PACK ASS'Y
2.	01 000 091 RESISTOR
3.	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
4.	68 000 005 BLOWER MOTOR W/SEAL
5.	03 000 037 COIL, HEAT/COOL, 60 000 287 O-RING KIT

Lengths and fittings may vary depending on the chassis.
ProAir unit serial number and model number should provide a reference point to correctly identify hose assemblies.

Section 2.0
Ford Econoline Van

ProAir Unit Location:

Although location may vary by converter, the ProAir unit is usually located on the driver's side, rear corner, inside the interior wall. A/C and heater hoses are routed over the wheel well, inside the interior wall, and drop through the floor behind the gas fill. The two heater hoses are routed forward to the driver's side B pillar, and the liquid and suction hoses are routed forward into the engine compartment. (See page 2.1 or 2.2, "Factory Connection Points.") The air ducts also attach to the unit at this point and continue up the wall into the ceiling.

CAUTION: Located near the unit and built into the wall is a vent which must be kept clear to maintain adequate airflow through the evaporator. Do not block off this vent. Also, the louvers in the ceiling must be partially open while the unit is operating. If the louvers are completely closed, air backup will result in possible damage to the blower assembly.

ProAir Unit Operation:

The rear air conditioning system will function with the dash mode control positioned in one of the air conditioning settings. The rear heating system will function to its maximum potential with the dash mode control positioned in the "FLOOR" location. (Verify that the unit is not cool-only; it must be a heat/cool unit.) When the dash mode control is positioned in the "DEFROST" mode, the air conditioner continues to cycle and circulate refrigerant throughout the system. The output of rear heat will be moderated in the "DEFROST" position.

ProAir Unit Requirements:

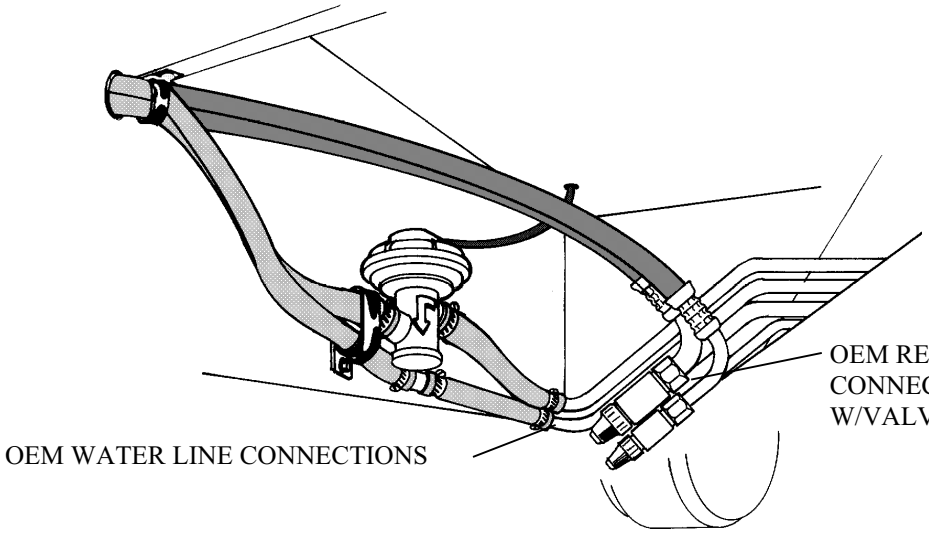
This ProAir unit contains Refrigerant-134a (R-134a). **DO NOT** add or replace with Refrigerant-12 (R-12/Freon). Adding R-12 to an R-134a system may cause component damage or poor A/C system performance. Use only PAG (polyalkylene glycol) synthetic lubricant within an R-134a system.

System Capacities			
Fluids	**ProAir Rear Unit**	**OEM Dash Unit**	**Total**
Refrigerant-134a (R-134a)**—1100**	14 oz (0.88 lb)	44 oz (2.75 lb)	58 oz (3.62 lb)
Refrigerant-134a (R-134a)**—AirTech®**	16 oz (1.00 lb)	44 oz (2.75 lb)	60 oz (3.75 lb)
PAG lubricant (Daphne Hermetic Oil FD46XG)**—all units**	3 oz	9 oz	12 oz
Anti-freeze**—all units**	Add approximately ½ gallon of a 50/50 mixture of anti-freeze and water to the van's cooling system when installing a ProAir rear unit.		

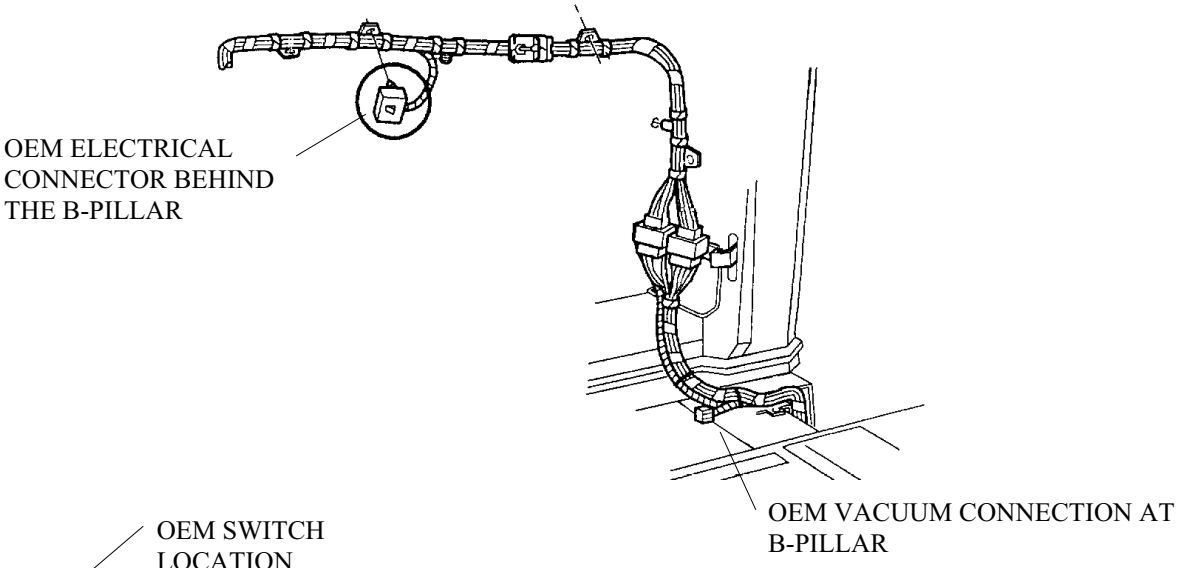
NOTE: The refrigerant capacity for the ProAir rear unit should not be confused with the factory auxiliary rear unit, which requires 20 oz (1.25 lb) of R-134a and is stated on the OEM sticker in the engine compartment on the driver's side radiator support. The ProAir sticker is located in this same area.

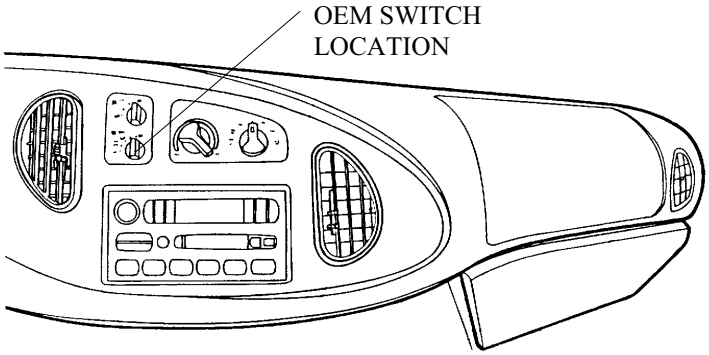
FORD ECONOLINE FACTORY CONNECTION POINTS

Ford Motor Company has provided for upfitters, OEM connection points to interface with OEM heating, cooling and electrical systems. These packages are labeled 57L and 57X.



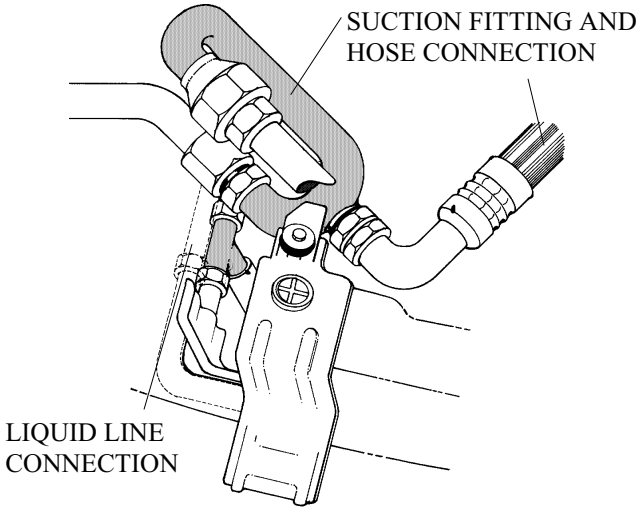
BELOW FLOOR OEM REFRIGERANT AND HEATER HOSE CONNECTIONS



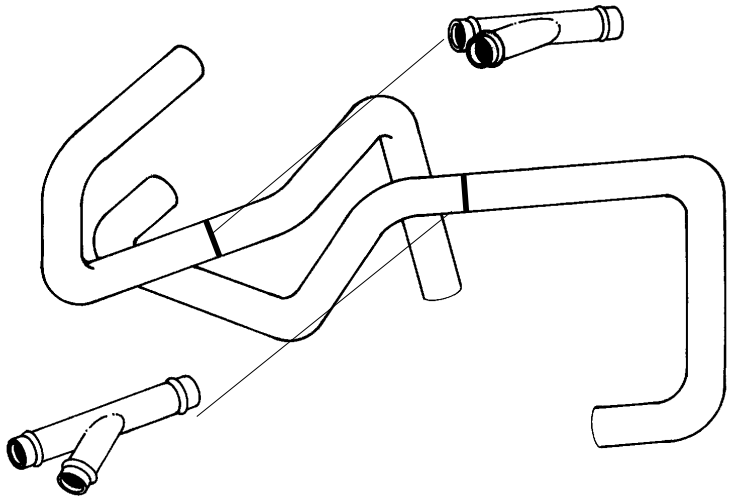


99 FORD DASH SHOWING SWITCH LOCATION

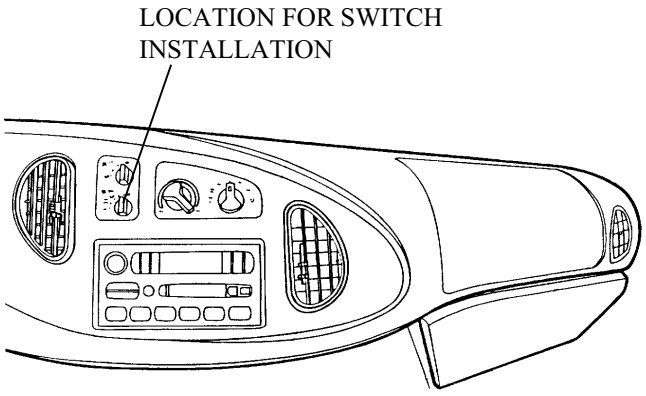
Ford Motor Company has provided for upfitters, on vehicles without the connector package the connections shown below for the refrigerant hoses and heater hoses.



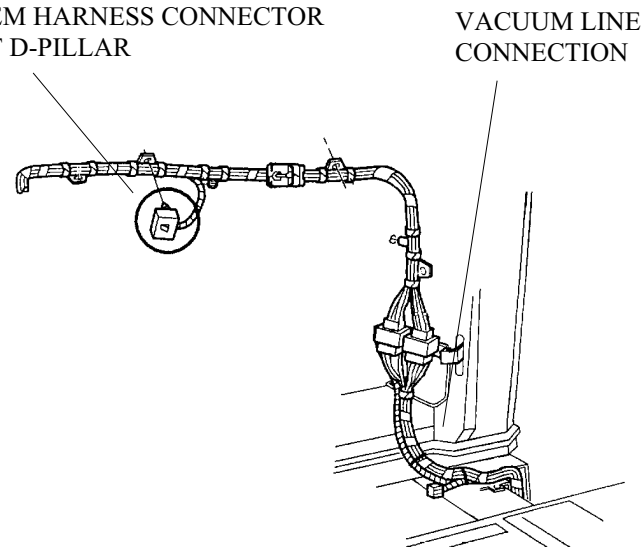
Refrigerant hose connection points on vehicles without the connector package located between battery and radiator.



Heater hose connections on vehicles without the connector package. Water wyes should be installed as shown in heater lines to heater core.



On vehicles without the connector package, a switch must be installed in the dash at the location shown.

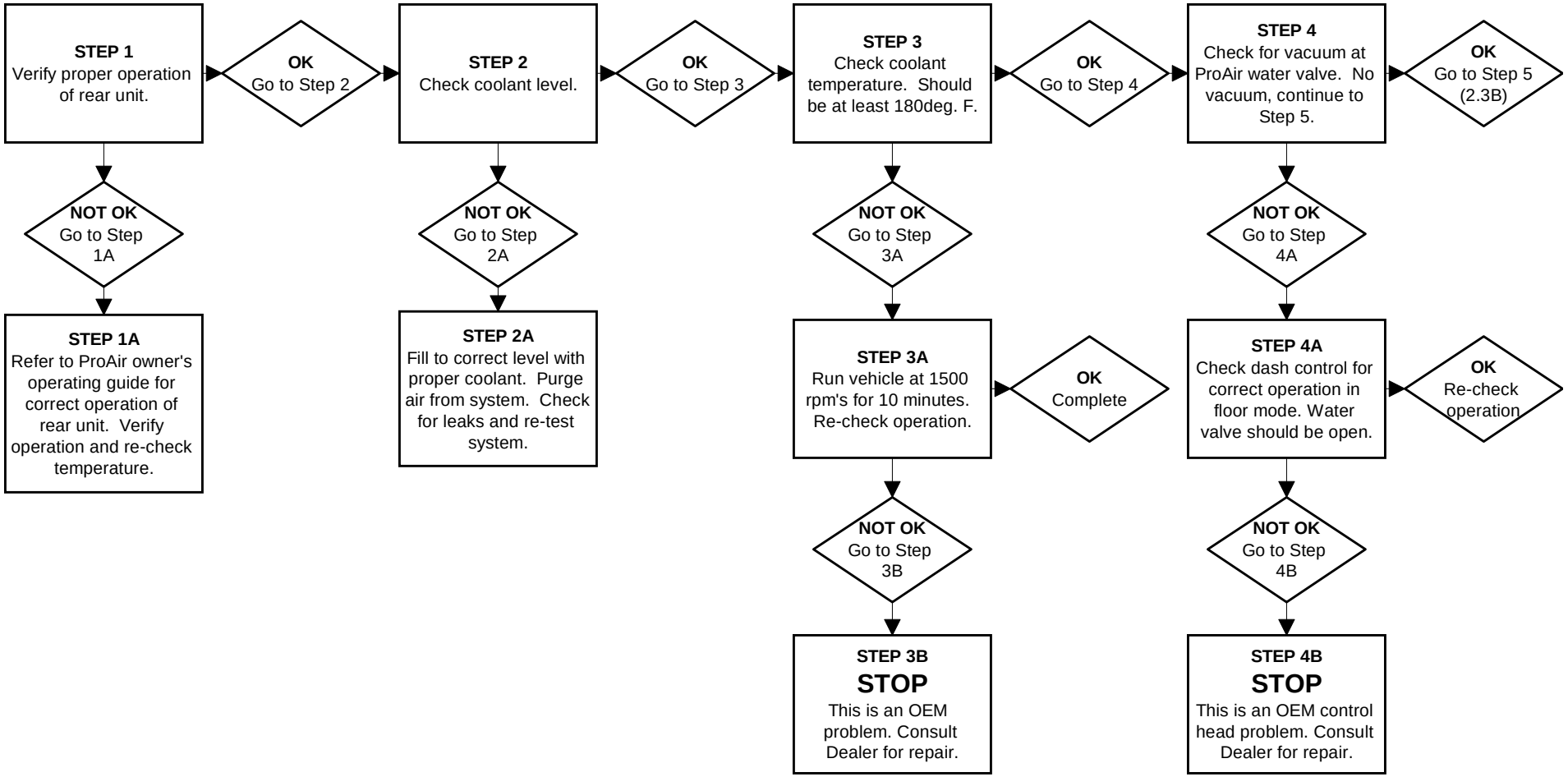


Wire harness from the power pack will plug into the OEM harness at the D-pillar. The vacuum line connection is made at the B pillar.

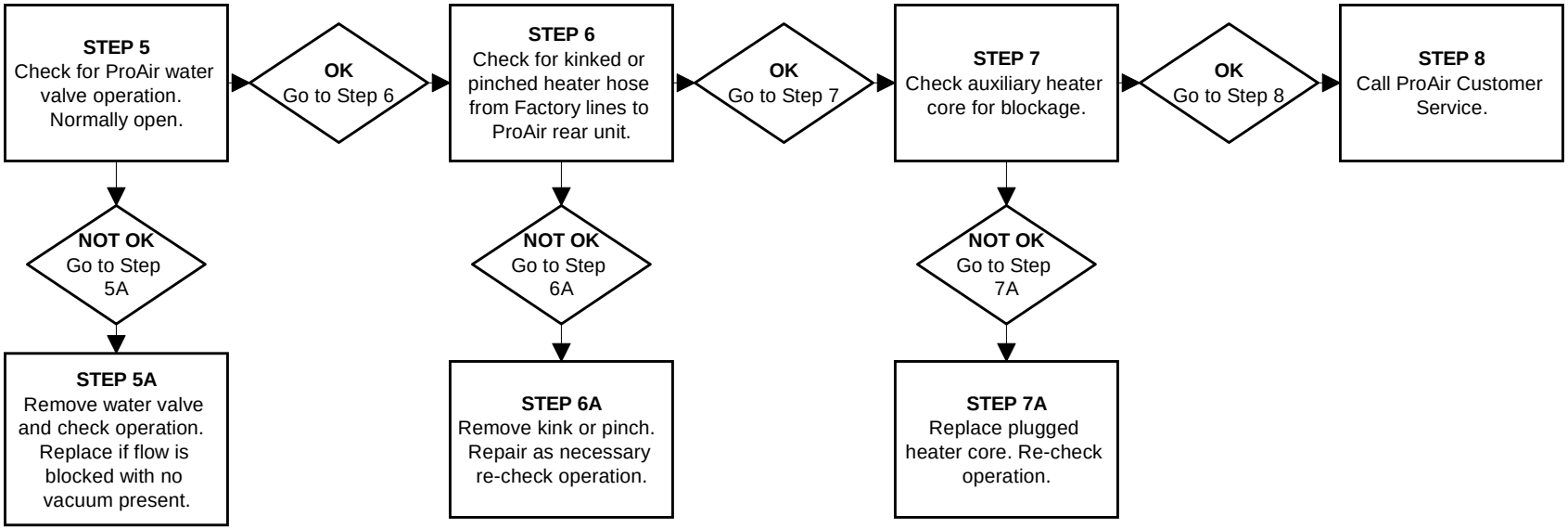
Ford Econoline Van Diagnosis Flow Chart
Heat Concerns w/57X

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



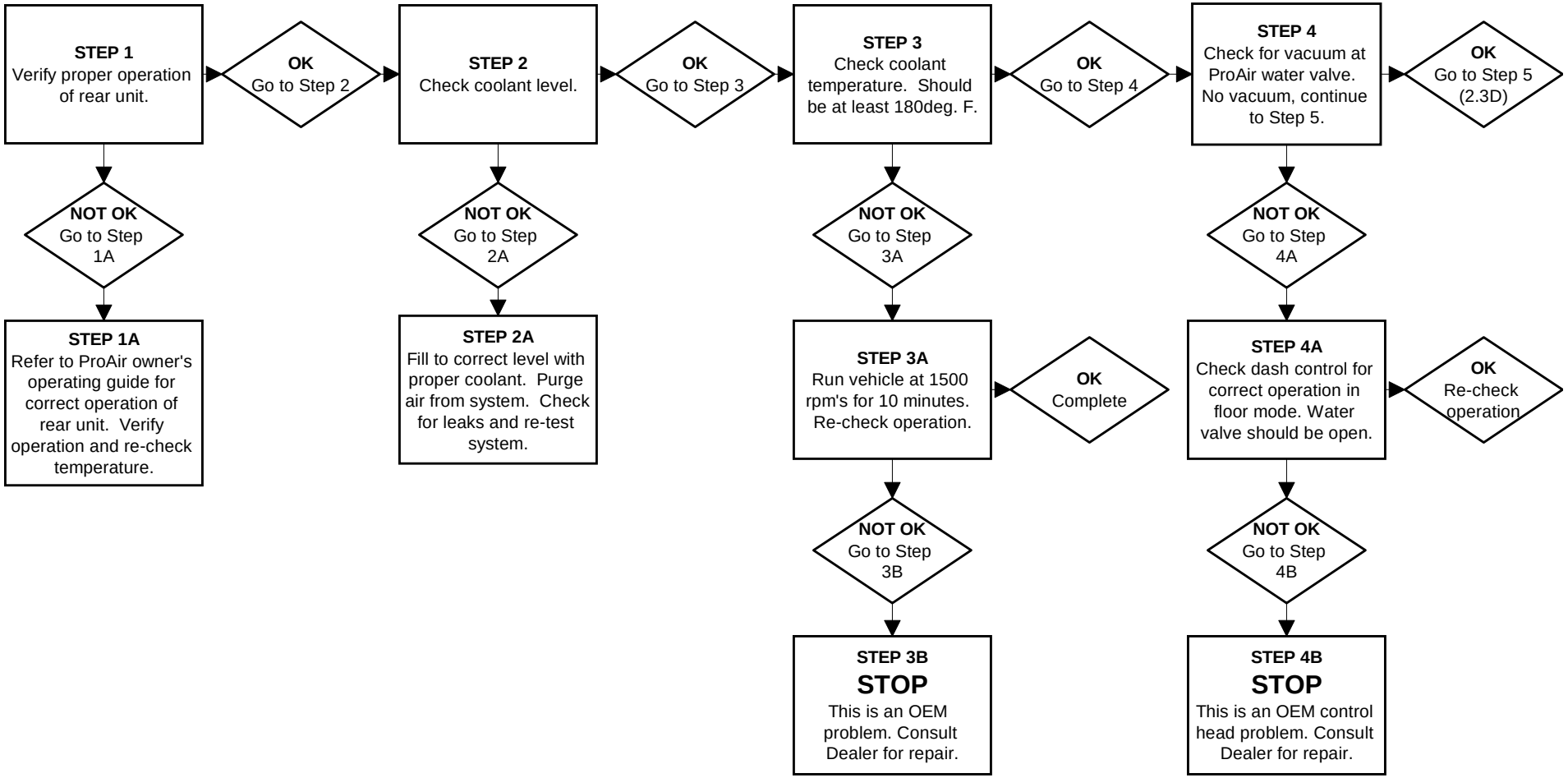
2000 Ford Econoline Van Diagnosis Flow Chart
Heat Concerns w/57X



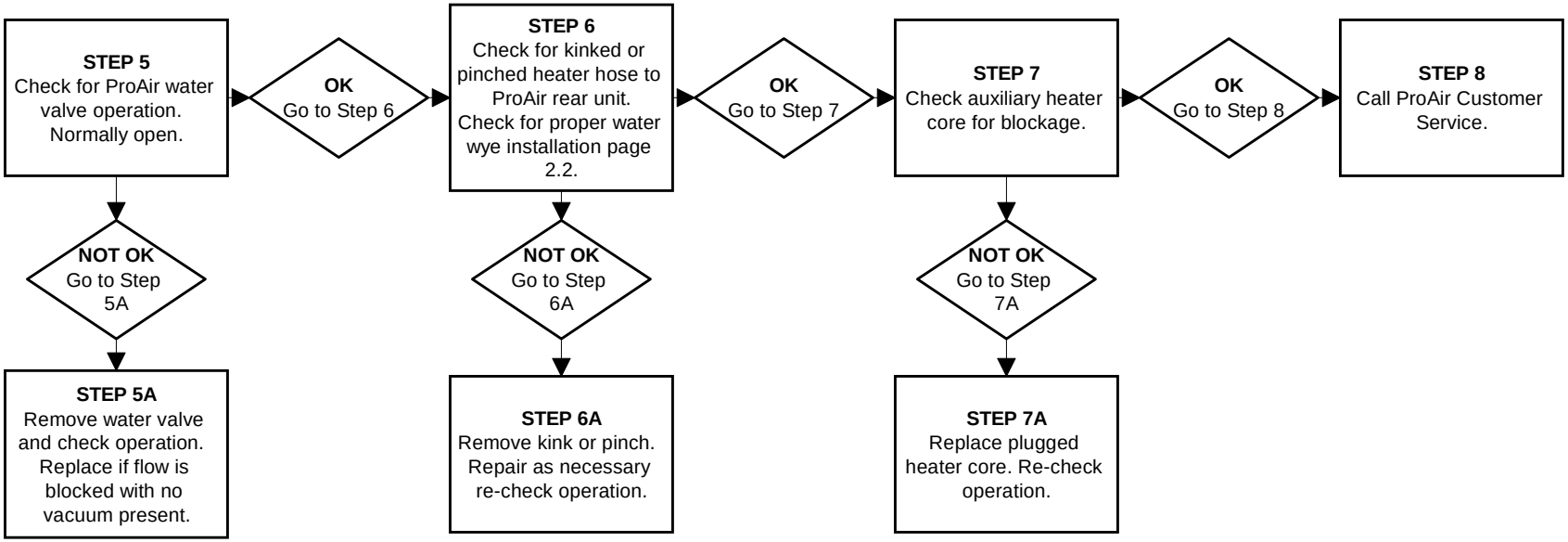
Ford Econoline Van Diagnosis Flow Chart
Heat Concerns w/o 57X

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



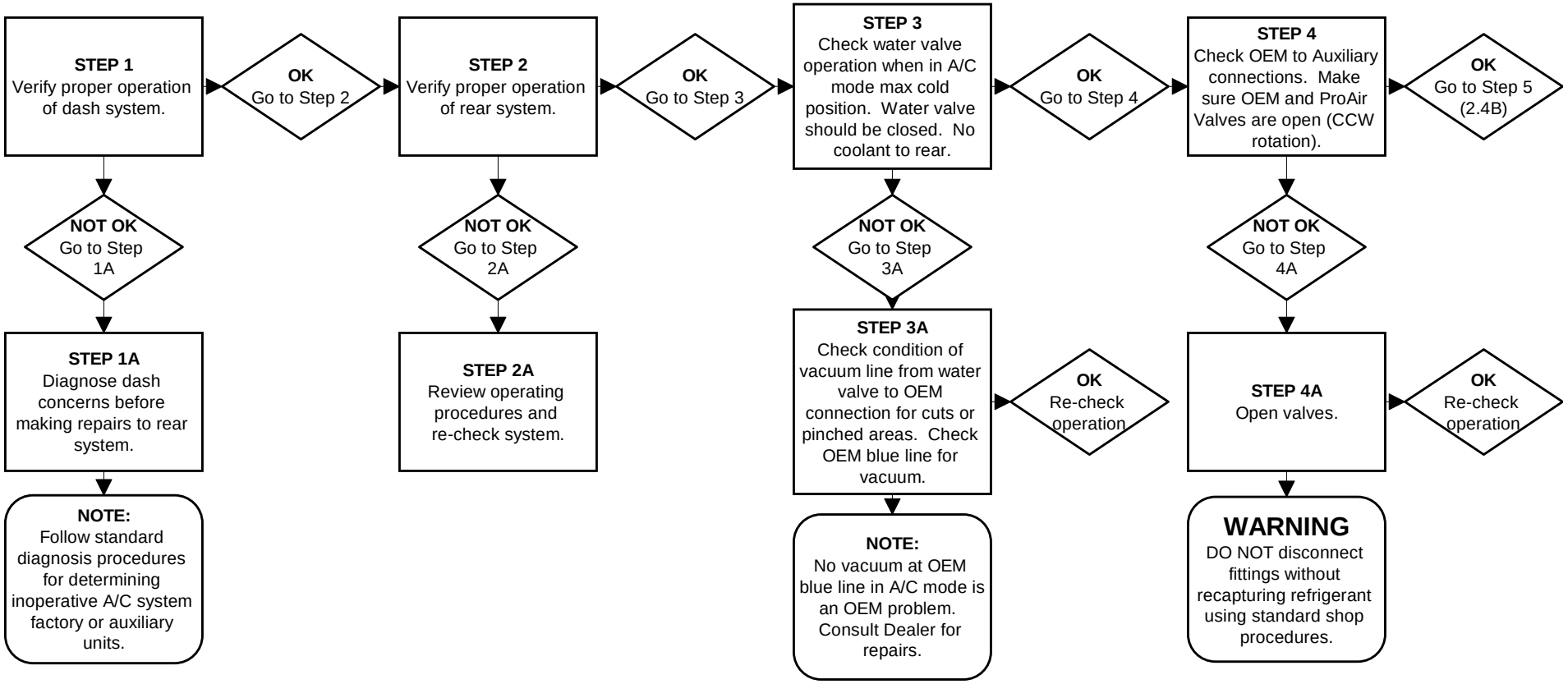
2000 Ford Econoline Van Diagnosis Flow Chart
Heat Concerns w/o 57X



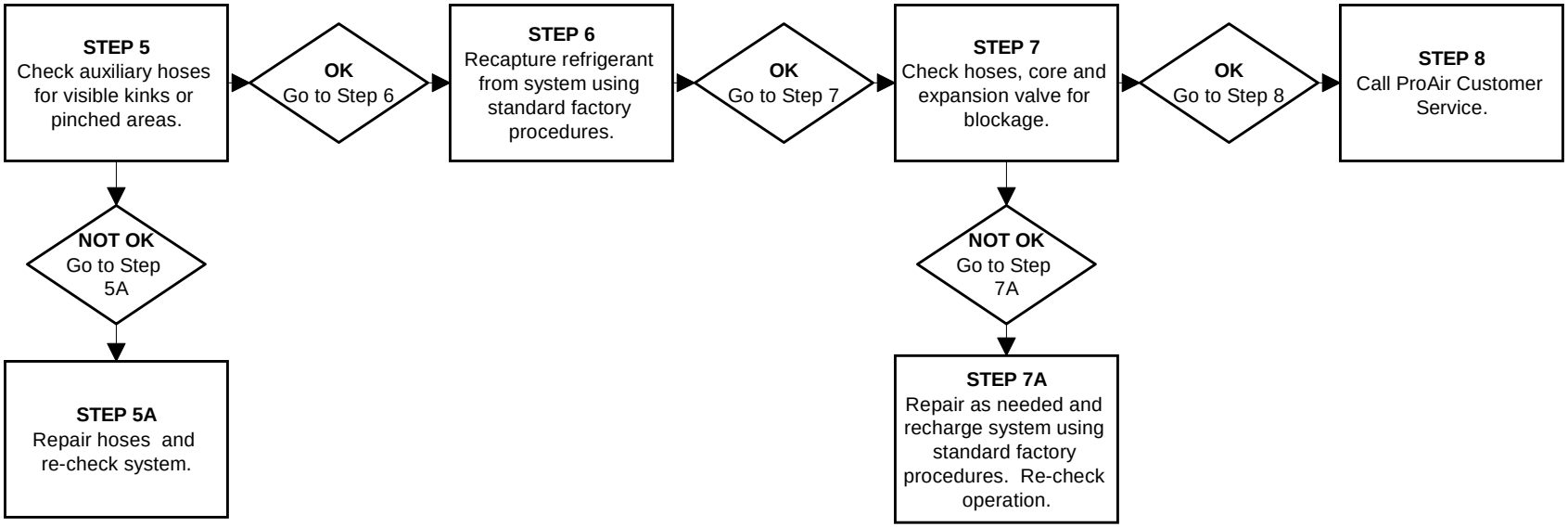
Ford Econoline Van Diagnosis Flow Chart
Cooling Concerns w/57X

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head should be set in the "MAX A/C" mode.
5) The vehicle's temperature control lever should be at the cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



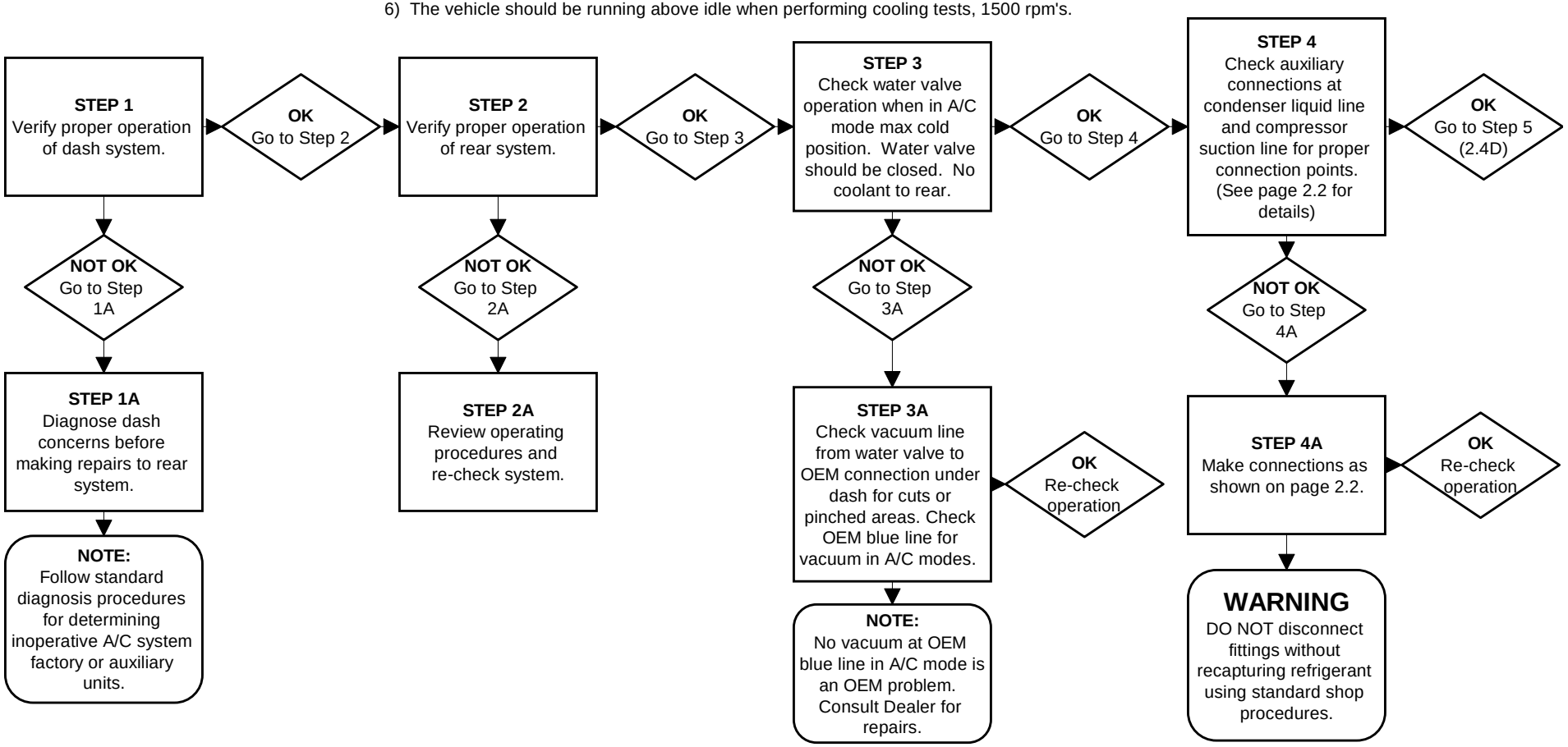
2000 Ford Econoline Van Diagnosis Flow Chart
Cooling Concerns w/57X



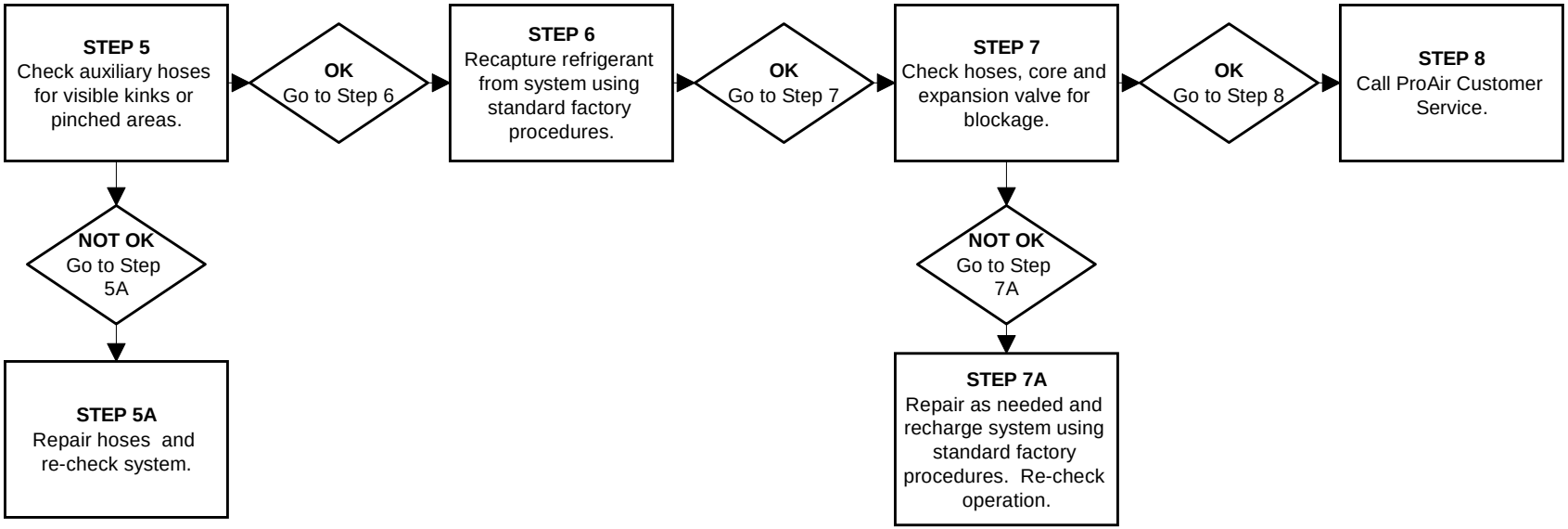
Ford Econoline Van Diagnosis Flow Chart
Cooling Concerns w/o 57X

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head should be set in the "MAX A/C" mode.
5) The vehicle's temperature control lever should be at the cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



2000 Ford Econoline Van Diagnosis Flow Chart
Cooling Concerns w/o 57X



Ford Econoline
Electrical Concerns
(With 57X or 57L)

The Econoline vans are equipped with OEM wiring from the dash-mounted auxiliary fan switch to the driver's side D-pillar location. Start diagnosis of electrical concerns at the OEM connector.

The electrical system on Econoline vehicles is 12 volts (DC). The switching to the auxiliary unit is done on the ground side of the circuit.

When starting diagnosis of the electrical concern, disconnect the ProAir harness from the OEM harness and check the chassis connector for the following inputs:

Gray Connector

Green wire with white tracer	Grounded in 1st position—low 1 on auxiliary switch
Yellow wire with red tracer	Grounded in 2d position—low 2 on auxiliary switch
Blue wire with white tracer	Grounded in 3d position—medium on auxiliary switch
Red wire with white tracer	Grounded in 4th position—high on auxiliary switch
Yellow wire with black tracer	12V (DC) battery hot
Yellow wire with red tracer	12V (DC) ignition hot

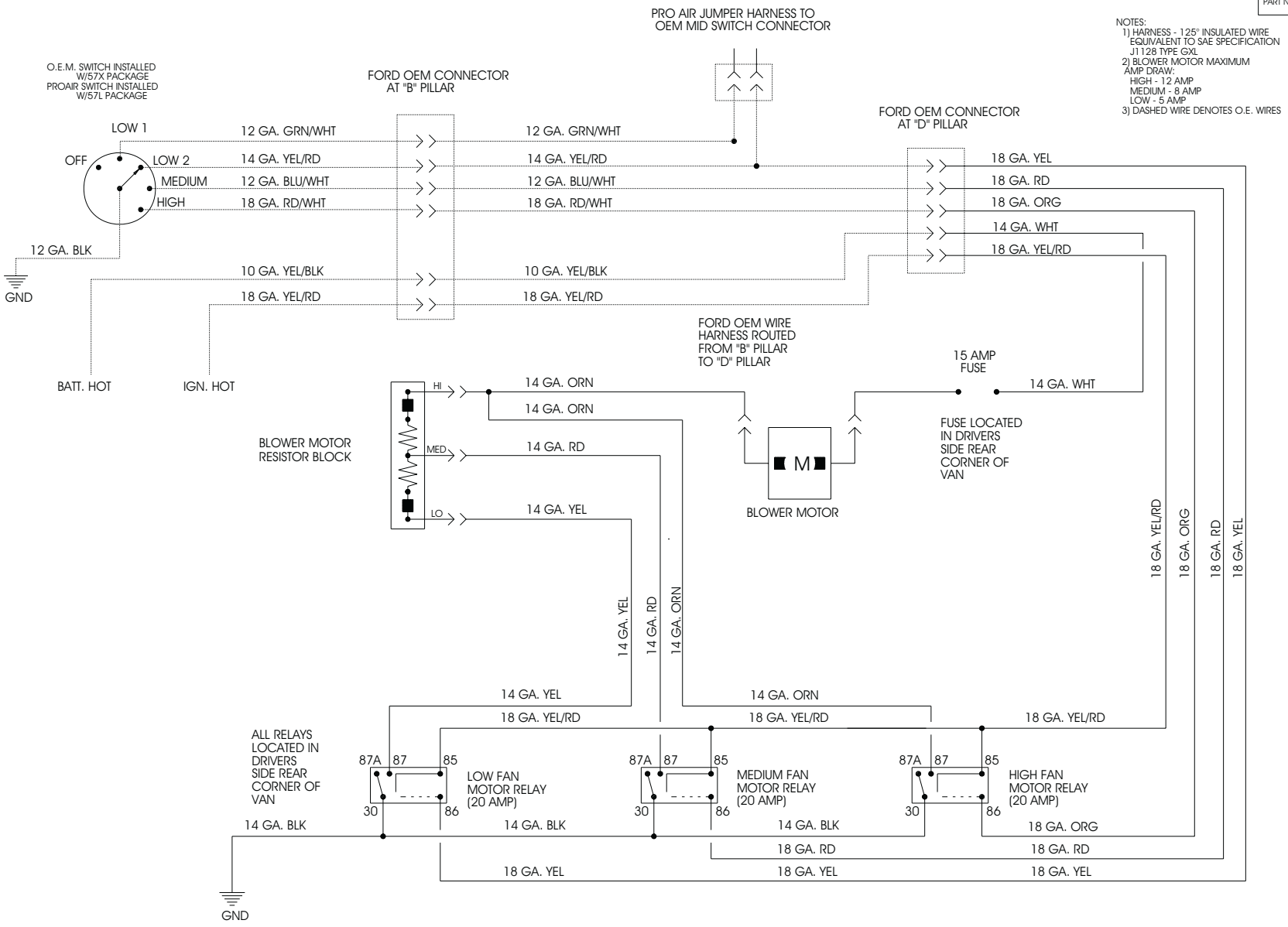
If all inputs are present from the OEM system, reconnect the ProAir harness to the OEM connector and continue checking at the rear unit. (See next page.)

If the following test procedures do not lead you to the correction, please contact ProAir for further assistance.

Ford Econoline
Electrical Concerns—Test Procedures
(With 57X or 57L)

Concern	Possible Cause	Solution
No Blower Speeds	1. No 12V signal from OEM source	1. Consult OEM manual for diagnosis of this circuit.
	2. No 12V power on motor plug	2. Repair open in circuit from source to connection.
	3. Motor plug disconnected	3. Reconnect and secure to prevent reoccurrence.
No Low Speed	1. Open circuit on yellow wire	1. Check yellow wire from ProAir connector to resistor. Repair open in line.
	2. Loose resistor connection	2. Check connection terminal. Repair as necessary.
	3. Inoperative resistor	3. Replace resistor.
No Medium Speed	1. Open circuit on red wire	1. Check red wire from ProAir connector to resistor. Repair open in line.
	2. Loose resistor connection	2. Check connection terminal. Repair as necessary.
	3. Inoperative resistor	3. Replace resistor.
No High Speed	1. Open circuit on orange wire	1. Check orange wire from ProAir connector to resistor. Repair open in line.
	2. No ground to relay	2. Check ground source. Reground if necessary.
	3. Inoperative high-blower relay	3. Replace relay.
	4. No ignition power to relay	4. Check for open circuit in pink wire or open relay connection. Repair open in line.
Motor Runs Continuously	1. Stuck high-speed relay	1. Replace relay.
	2. Red, yellow, or orange wire shorted to ground	2. Isolate each circuit to determine cause. Repair short to ground.
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

PART NO. 40 000 022



REV. X

LET.	NO.	REVISION	BY	DATE
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SIGNATURES		DATE
DRAWN	K.F.S.	4/17/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT/COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: FORD VAN W/57X & 57L & NO REAR SW.

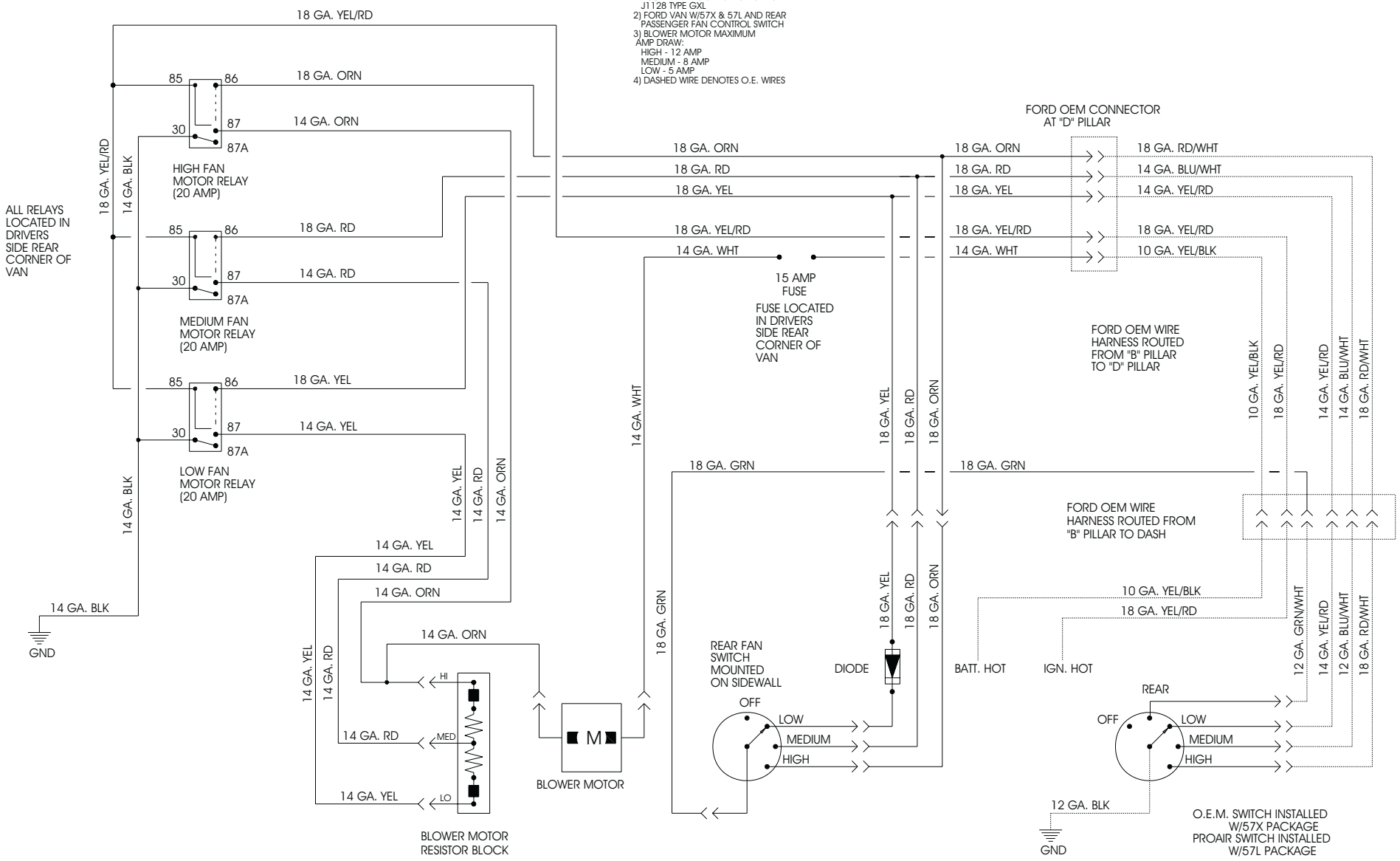
PART NO. 40 000 022

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

PART NO. 40 000 021

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) FORD VAN W/57X & 57L AND REAR PASSENGER FAN CONTROL SWITCH
3) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
4) DASHED WIRE DENOTES O.E. WIRES



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SIGNATURES		DATE
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CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT/COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

PART NO. 40 000 021

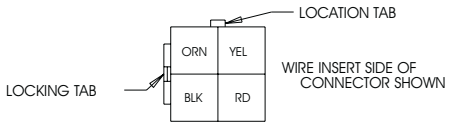
SCALE: 1"=1'-0" SIZE A

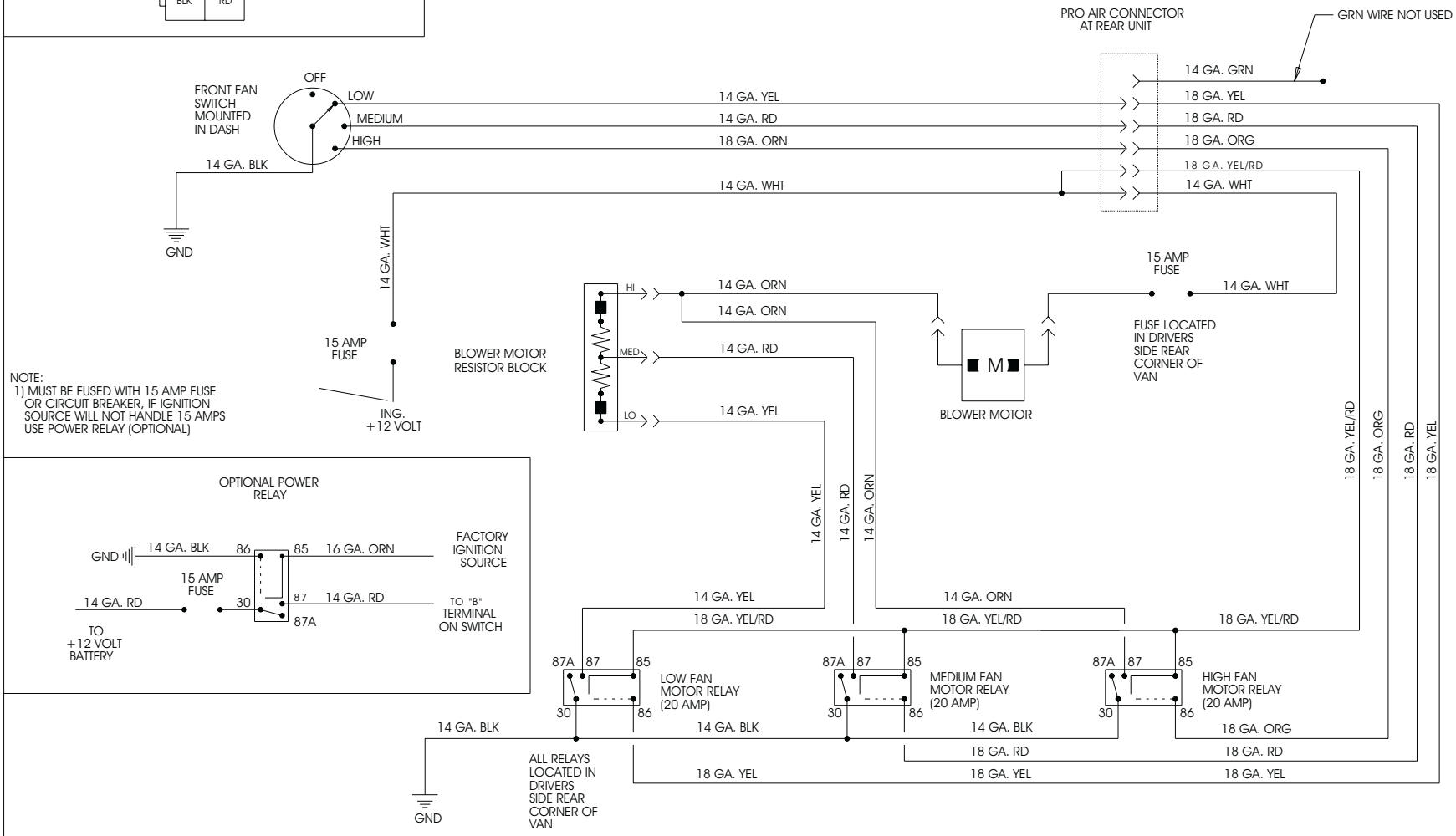
USAGE: SEE NOTE #2

SHEET 1 OF 1

PART NO. 40 000 018

WIRING OF SWITCH PLUG FOR PLUMBERS VAN





REV. 1

LET.	NO.	REVISION	BY	DATE
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SIGNATURES		DATE
DRAWN	K.F.S.	4/16/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT/COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: 1999 FORD W/O 57X/57L (PLUMBERS)

PART NO. 40 000 018

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) WIRE HARNESS ROUTED WITH HOSES

Ford Econoline
Airflow Concerns

The first step in diagnosing any concern is to get as specific as possible with it. In order to help prevent misdiagnosis and ineffective, costly repairs, categorize the airflow concern into one of the following general areas:

Inadequate airflow—front or rear louvers

Inadequate airflow—left or right louvers

Inadequate airflow—all louvers

The following prechecks will help in diagnosis of the airflow concern:

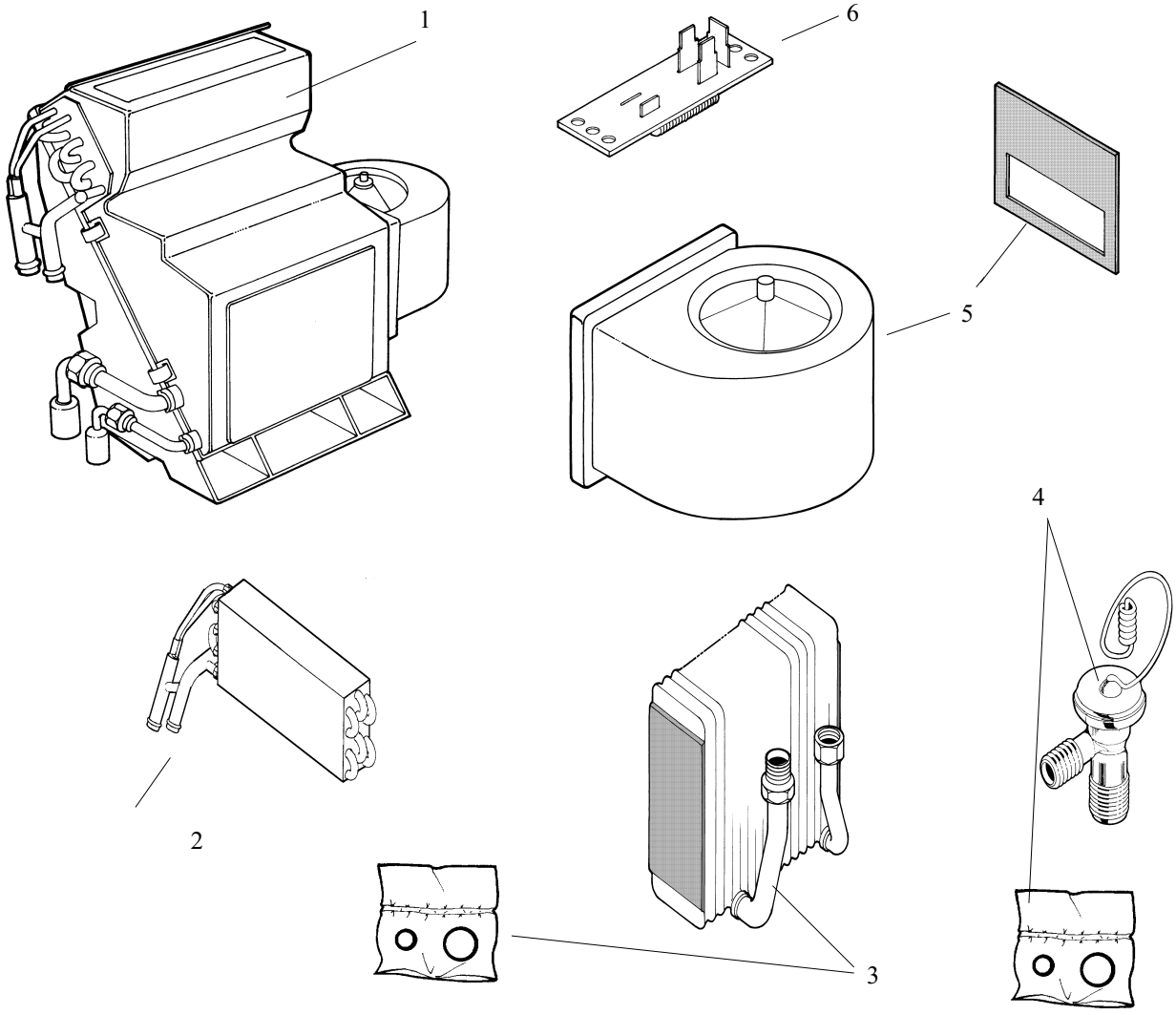
Precheck	**Solution**
Is air inlet blocked?	Remove debris or obstruction.
Is blower inoperative on low, medium, and/or high?	Refer to electrical concerns section for specific chassis.
Is blower wheel not intact?	Refer to blower replacement in repair section.
Is evaporator core iced up?	Refer to cooling concerns section for specific chassis.
Is there debris on blower wheel or coil?	Clean and prevent reoccurrence.
Is there inadequate airflow out of top of unit with duct disconnected?	Check for blocked inlet. Check for debris on core. Check for blower concern.

If any problems exist with these prechecks, they must be rectified before removing interior panels to check the ductwork. Repair procedures for the above concerns can be found in the specific chassis sections of this manual.

If all the above prechecks are all right, then check all louvers for obstructions: fabric, tape, hole cutouts, etc. If louvers are unobstructed, it will be necessary to access duct hose, crossover, and wall extensions to determine the cause of the inadequate airflow.

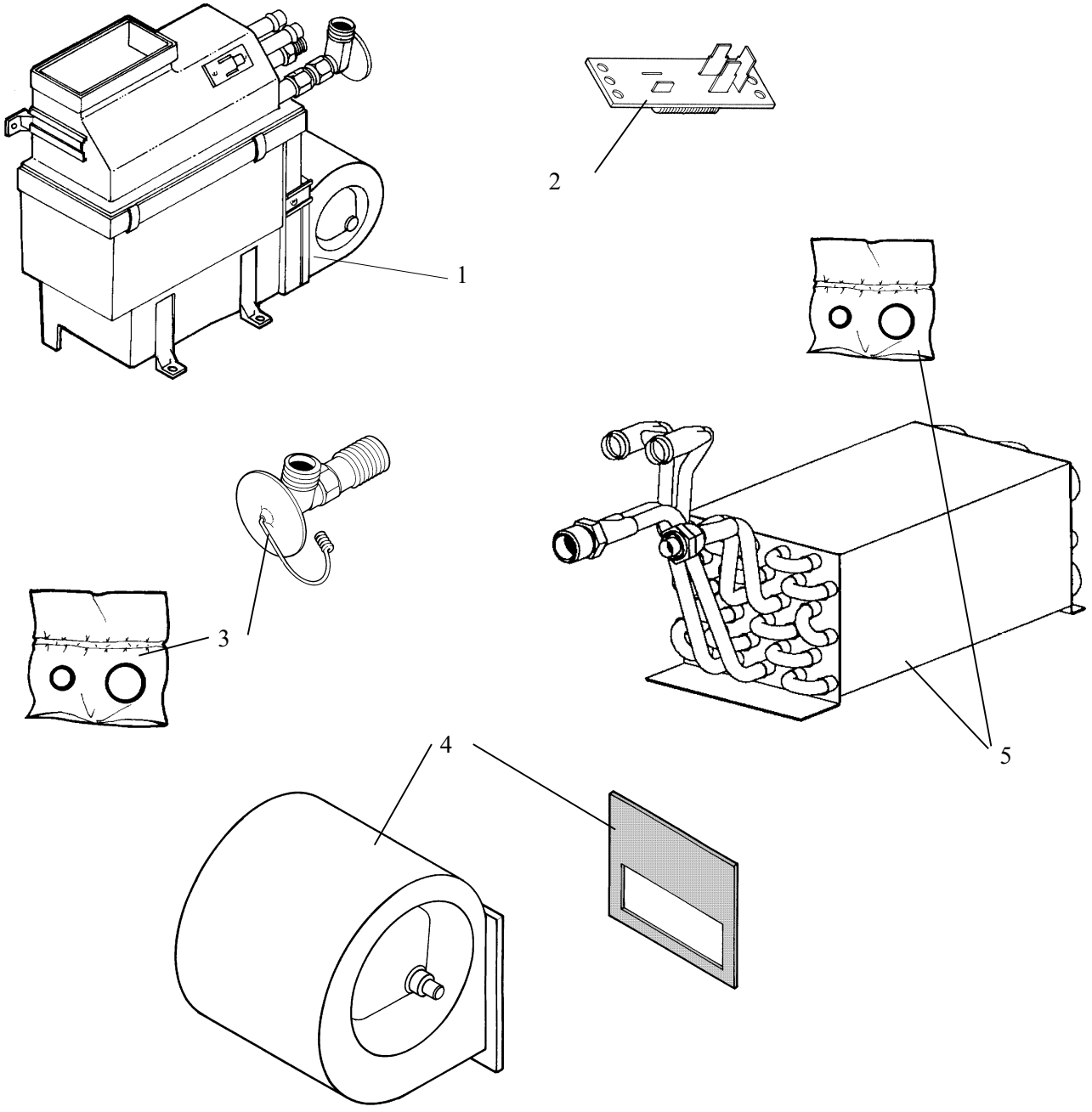
Consult conversion company's customer service department for procedures to access these components.

1999 AirTech H/C POWER PACK ASSEMBLY PART NUMBER 60 000 587



1.	60 000 587 POWER PACK ASS'Y
2.	03 000 042 HEAT COIL
3.	03 000 043 EVAPORATOR COIL, 60 000 287 O-RING KIT
4.	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
5.	68 000 005 BLOWER MOTOR W/SEAL
6.	01 000 091 RESISTOR

1 FORD ECONOLINE POWER PACK 1100 SERIES ASSEMBLY PART NUMBER 66 000 009



1.	66 000 009 POWER PACK ASS'Y
2.	01 000 091 RESISTOR
3.	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
4.	68 000 005 BLOWER MOTOR W/SEAL
5.	03 000 037 COIL, HEAT/COOL, 60 000 287 O-RING KIT

Lengths and fittings may vary depending on the chassis.
ProAir unit serial number and model number should provide a reference point to correctly identify hose assemblies.

Section 3.0
General Motors G-Van (GMT600)

ProAir Unit Location:

Although location may vary by converter, the ProAir unit is usually located on the driver's side, rear corner, inside the interior wall. A/C and heater hoses drop through the floor at this point with the liquid hose and the two heater hoses routed to the driver's side B pillar, and the suction hose routed forward into the engine compartment. (See page 3.1 or 3.2, "Factory Connection Points.") The air ducts also attach to the unit at this point and continue up the wall into the ceiling.

CAUTION: Located near the unit and built into the wall is a vent which must be kept clear to maintain adequate airflow through the evaporator. Do not block off this vent. Also, the louvers in the ceiling must be partially open while the unit is operating. If the louvers are completely closed, air backup will result in possible damage to the blower assembly.

ProAir Unit Operation:

The rear air conditioning system will function with the dash mode control positioned in one of the air conditioning settings. The rear heating system will function to its maximum potential with the dash mode control positioned in the "FLOOR" location. (Verify that the unit is not cool-only; it must be a heat/cool unit.) When the dash mode control is positioned in the "DEFROST" or "FLOOR/DEFROST" mode, the air conditioner continues to cycle and circulate refrigerant throughout the system. The output of rear heat will be moderated in the "DEFROST" or "FLOOR/DEFROST" position.

ProAir Unit Requirements:

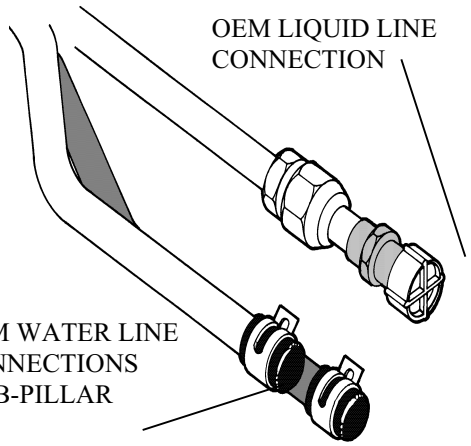
This ProAir unit contains Refrigerant-134a (R-134a). **DO NOT** add or replace with Refrigerant-12 (R-12/Freon). Adding R-12 to an R-134a system may cause component damage or poor A/C system performance. Use only PAG (polyalkylene glycol) synthetic lubricant within an R-134a system.

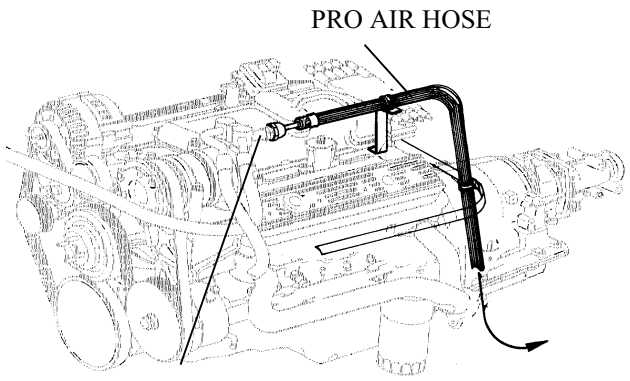
System Capacities			
Fluids	**ProAir Rear Unit**	**OEM Dash Unit**	**Total**
Refrigerant-134a (R-134a)**—1100**	14 oz (0.88 lb)	48 oz (3.00 lb)	62 oz (3.88 lb)
Refrigerant-134a (R-134a)**—AirTech®**	16 oz (1.00 lb)	48 oz (3.00 lb)	64 oz (4.00lb)
PAG lubricant (54H or GM equivalent)**—all units**	3 oz	8 oz	11 oz
Anti-freeze (DEX-COOL™) **—all units**	**USE GM'S DEX-COOL™ COOLANT ONLY.** Add approximately ½ gallon of a 50/50 mixture of anti-freeze and water to the van's cooling system when installing a ProAir rear unit.		

NOTE: The refrigerant capacity for the ProAir rear unit should not be confused with the factory auxiliary rear unit, which requires 24 oz (1.50 lb) of R-134a and is stated on the OEM sticker in the engine compartment on the front evaporator housing. The ProAir sticker is located in this same area.

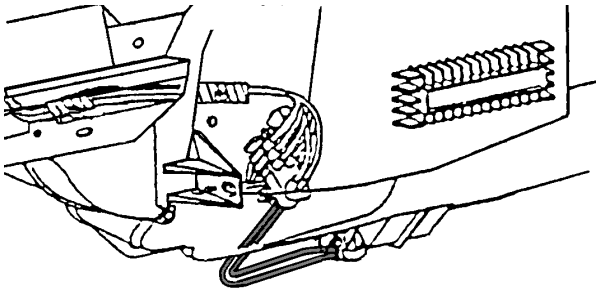
GENERAL MOTORS, G-VAN (GMT600) FACTORY CONNECTION POINTS

General Motors has procided for upfitters, OEM connection points to interface with OEM heating, cooling and electrical systems. This package is labeled YF7 and consists of the following:

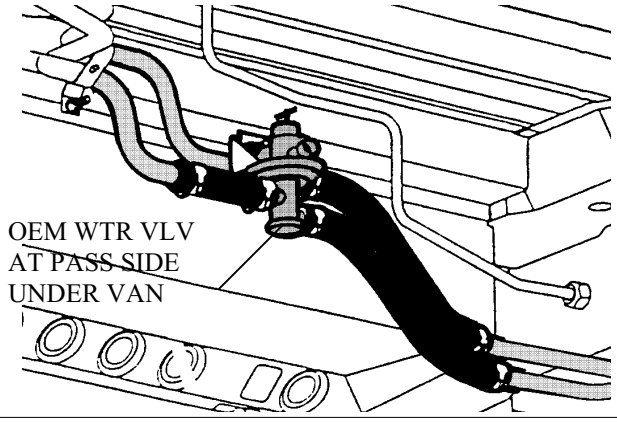




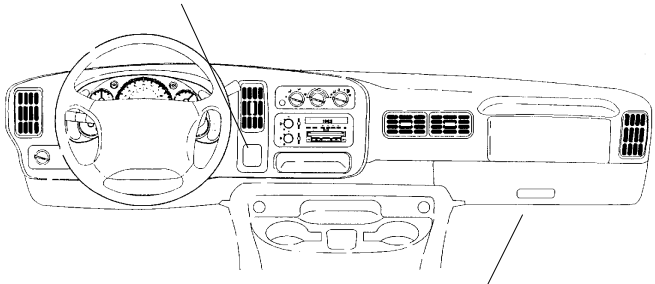
OEM SUCTION LINE CONNECTION AT ENGINE COMPRESSOR



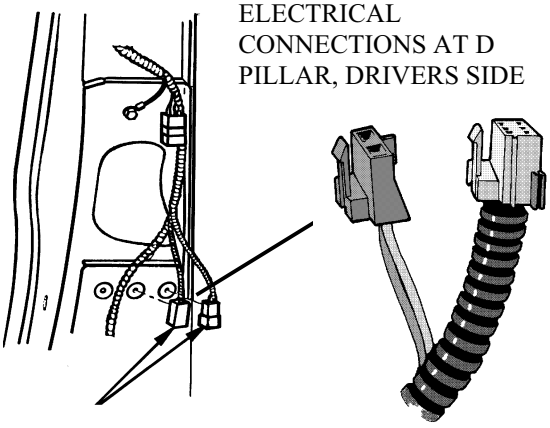
OEM VACUUM CONNECTION LOCATION UNDER THE DASH AT THE PASSENGER SIDE



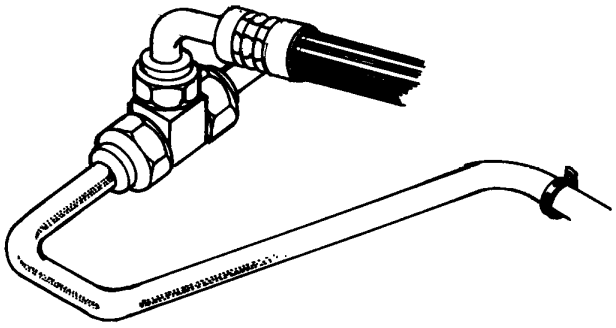
INSTRUMENT PANEL SWITCH LOCATION



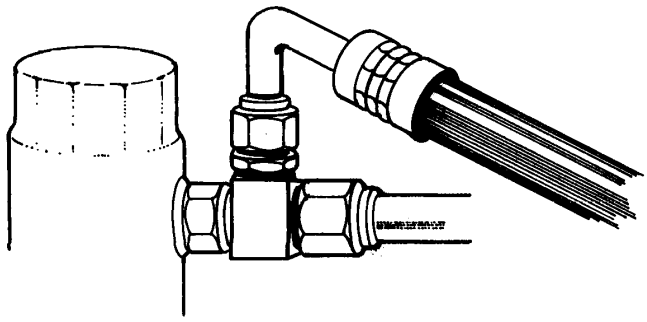
VACUUM TEE LOCATION



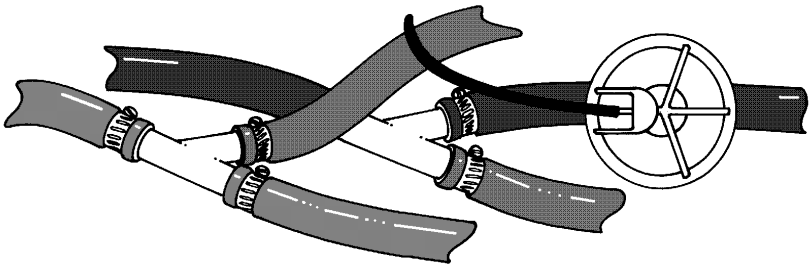
General Motors has provided for upfitters, on vehicles without the connector package the connections shown below for the refirgerant hoses and heater hoses.



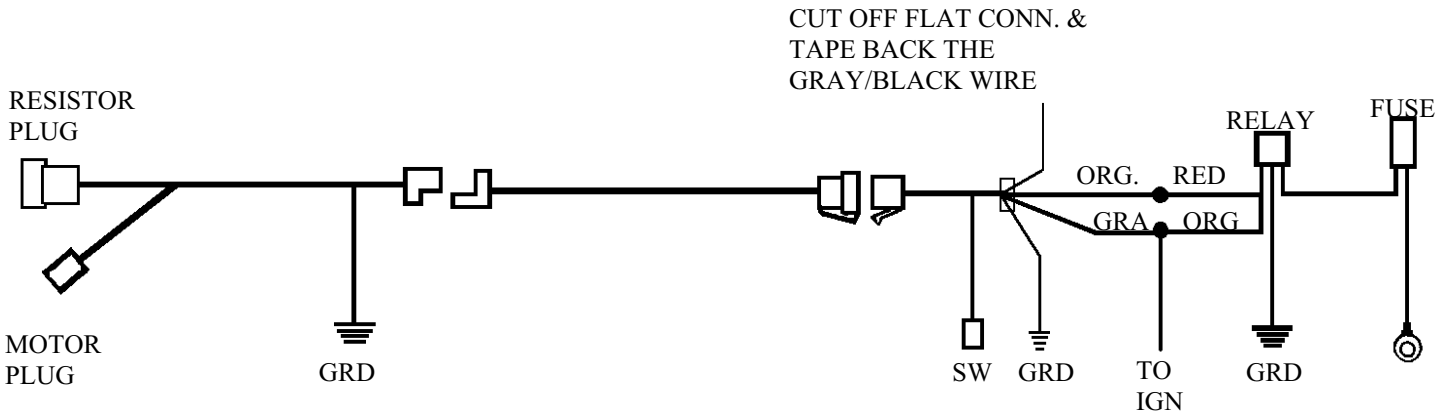
LIQUID LINE CONNECTION POINT W/O CONNECTOR PACKAGE



SUCTION LINE CONNECTION POINT W/O CONNECTOR PACKAGE



HEATER HOSE CONNECTIONS AND WATER VALVE INSTALLTION W/O CONNECTOR PACKAGE.

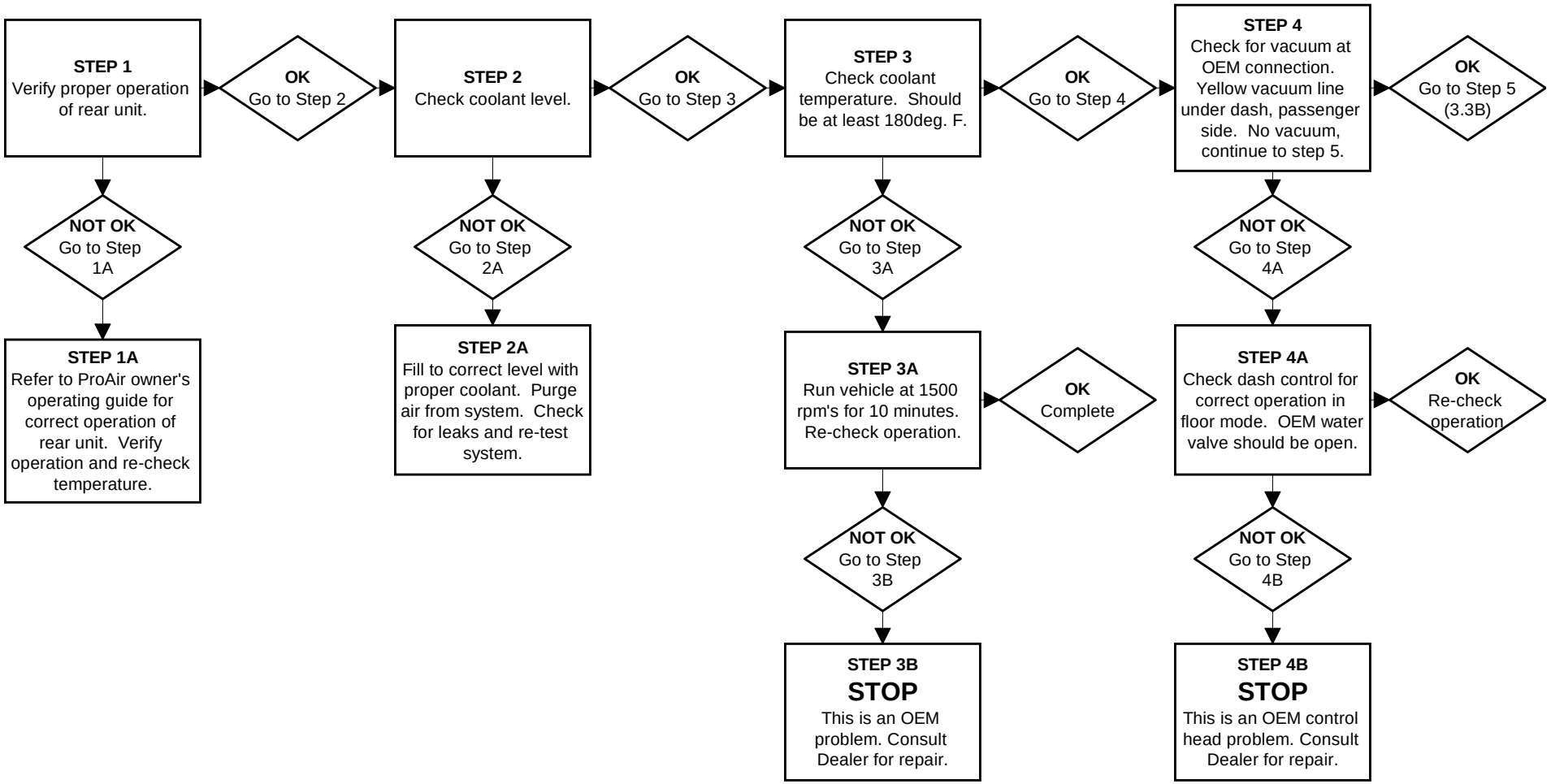


ELECTRICAL CONNECTIONS ON VEHICLES W/O CONNECTOR PACKAGE

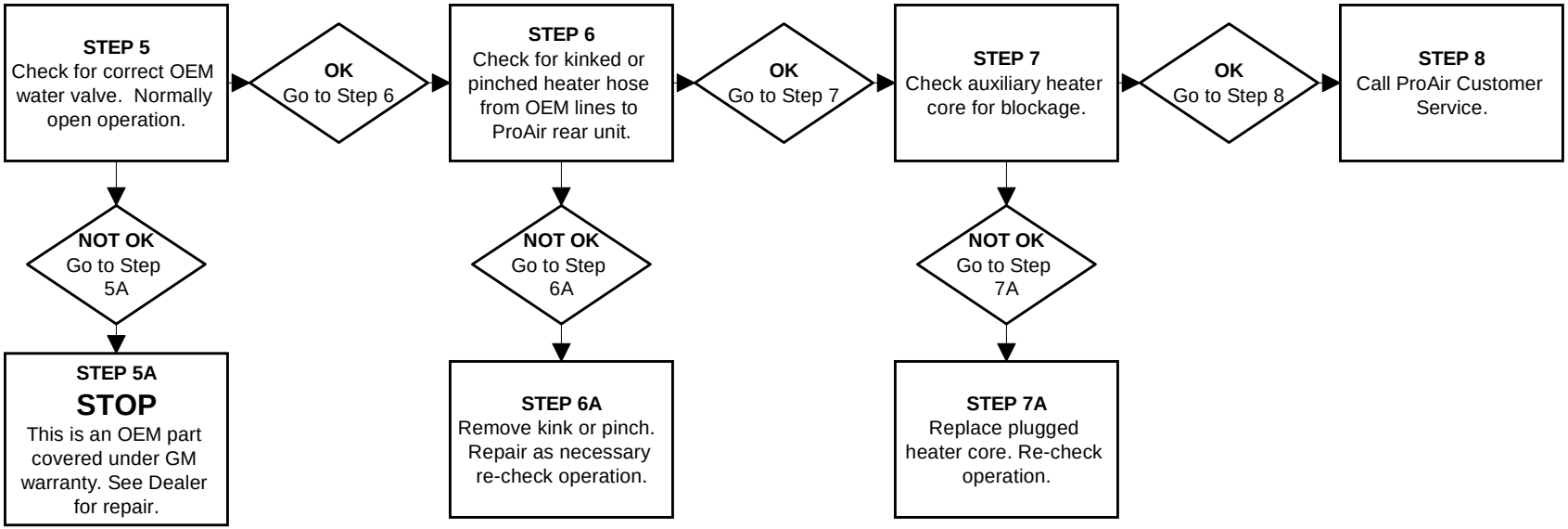
General Motors G-Van (GMT600) Diagnosis Flow Chart
Heat Concerns w/YF7

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



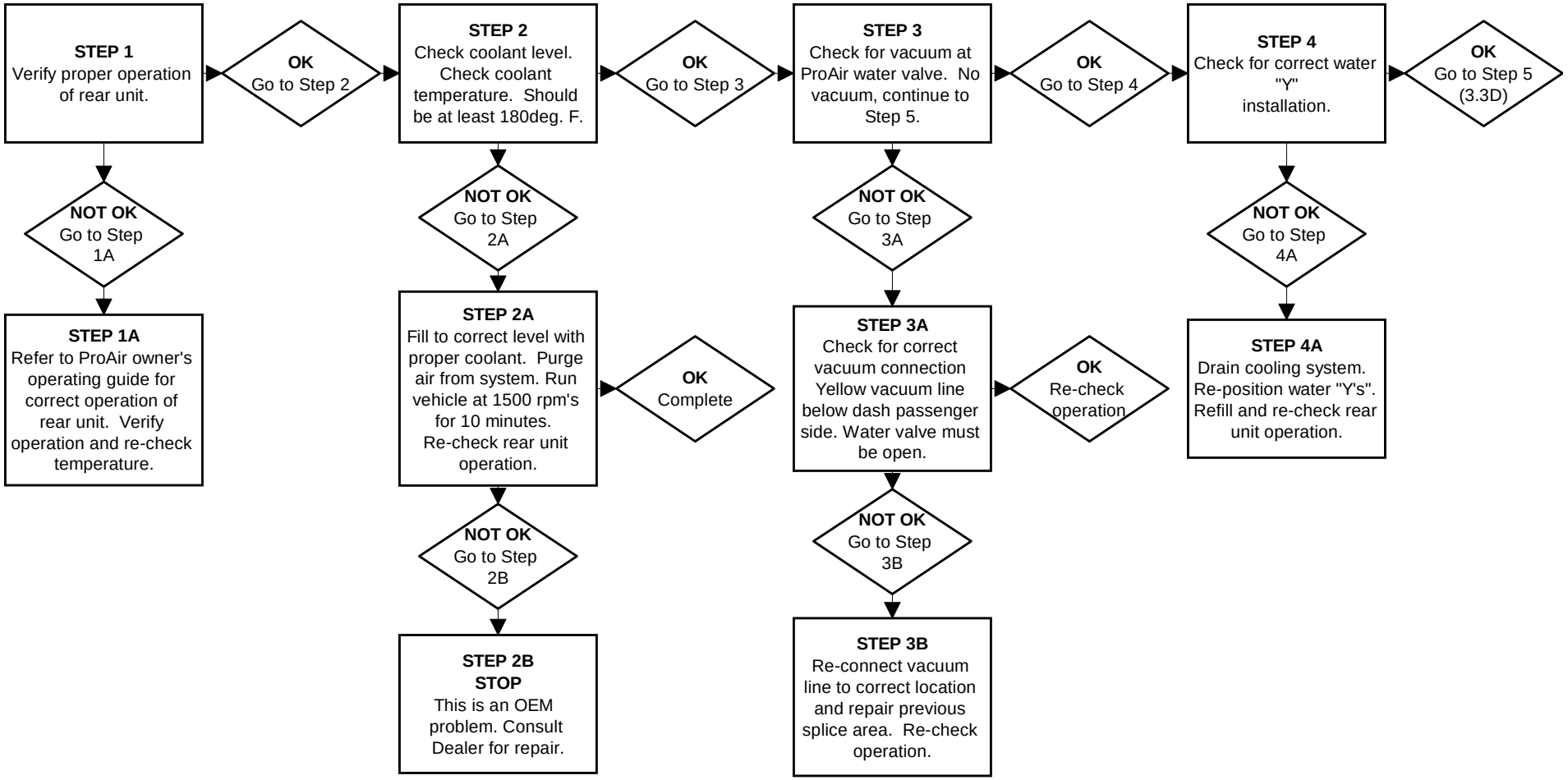
2000 General Motors G-Van (GMT600) Diagnosis Flow Chart
Heat Concerns w/YF7



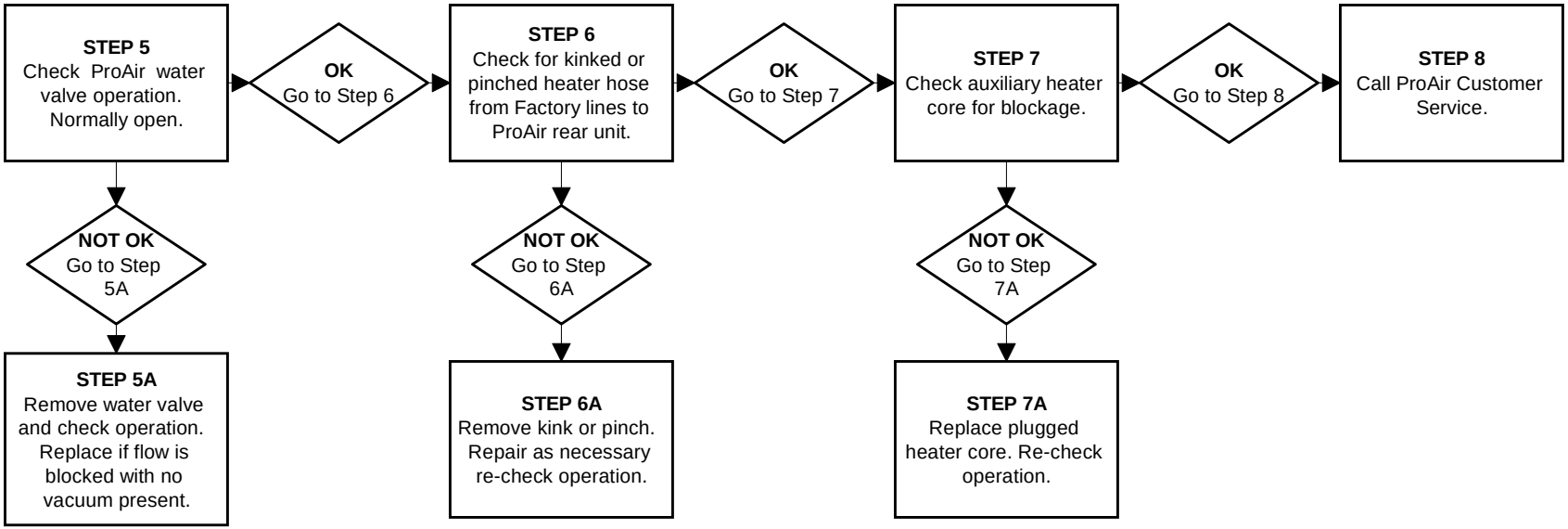
General Motors G-Van (GMT600) Diagnosis Flow Chart
Heat Concerns w/o YF7

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



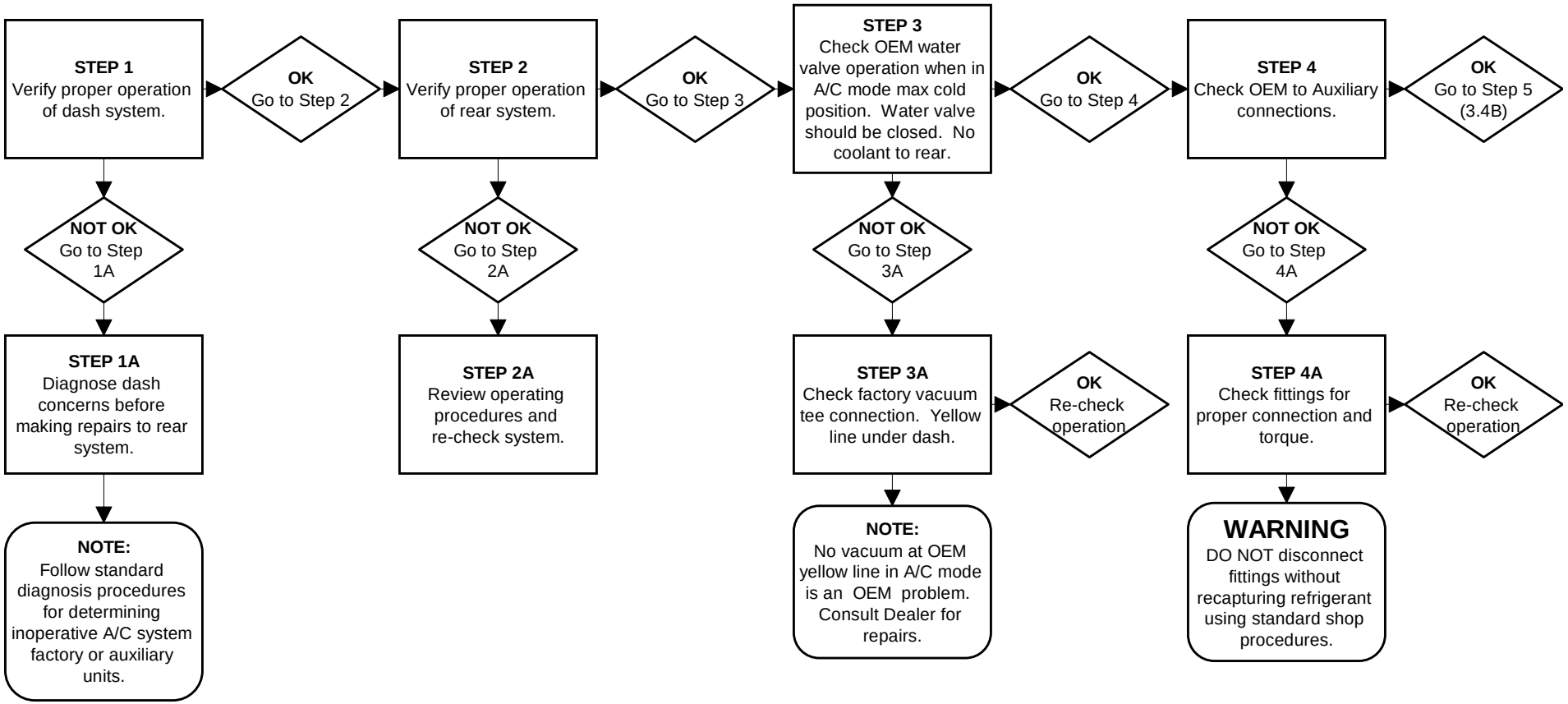
2000 General Motors G-Van (GMT600) Diagnosis Flow Chart
Heat Concerns w/o YF7



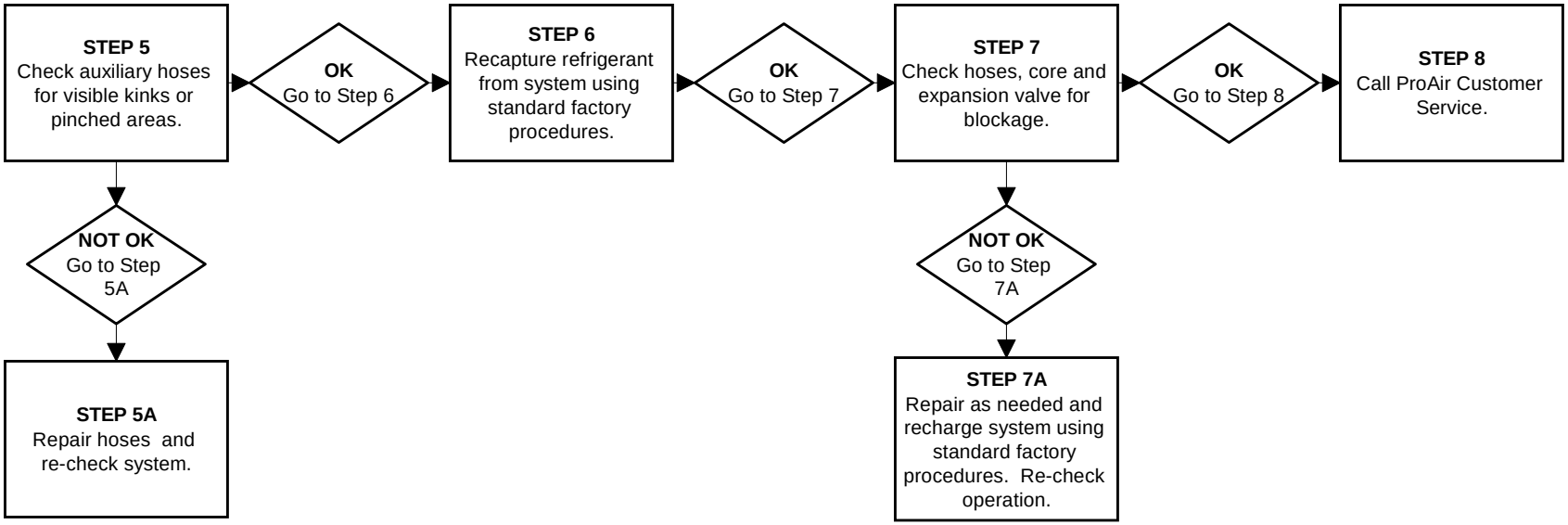
General Motors G-Van (GMT600) Diagnosis Flow Chart
Cooling Concerns w/YF7

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head should be set in the "MAX A/C" mode.
5) The vehicle's temperature control lever should be at the cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



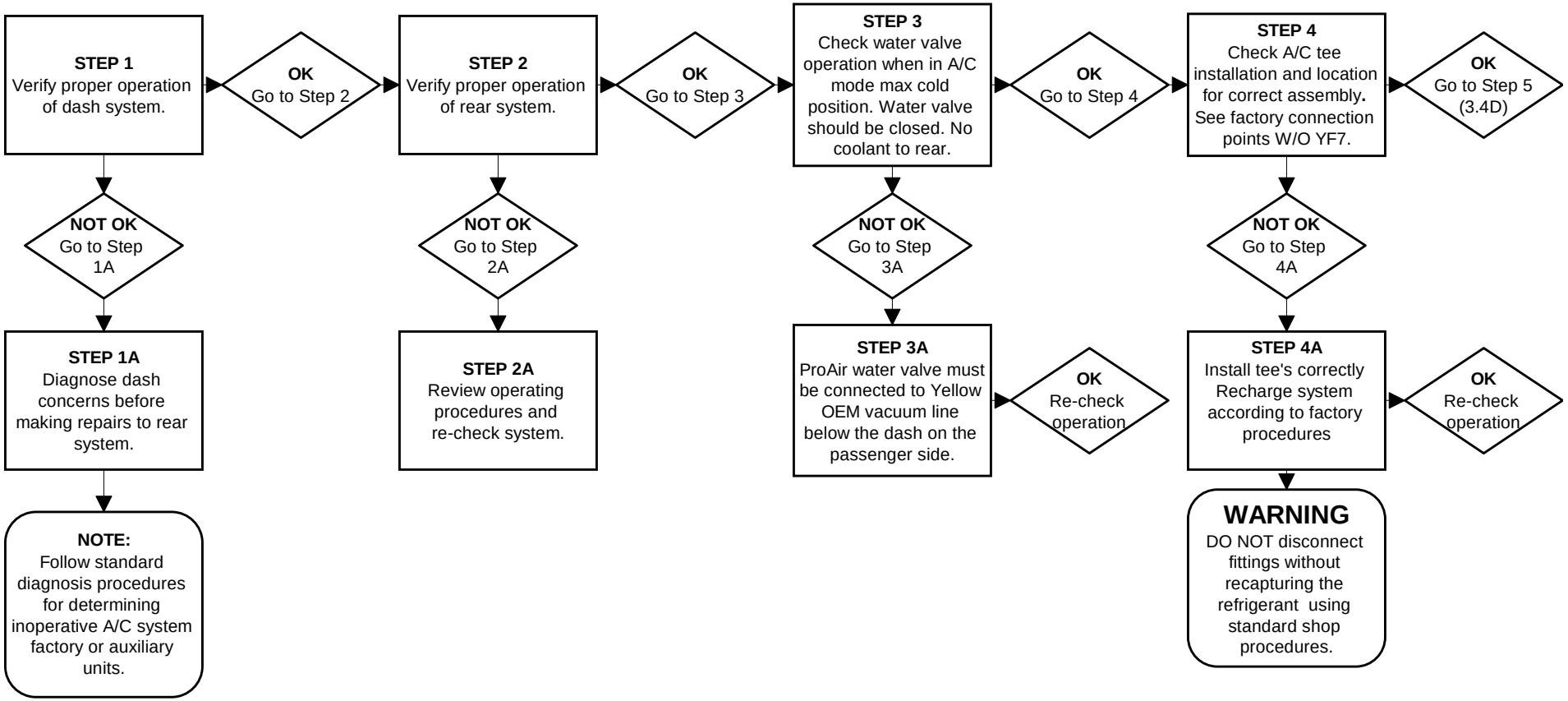
2000 General Motors G-Van (GMT600) Diagnosis Flow Chart
Cooling Concerns w/YF7



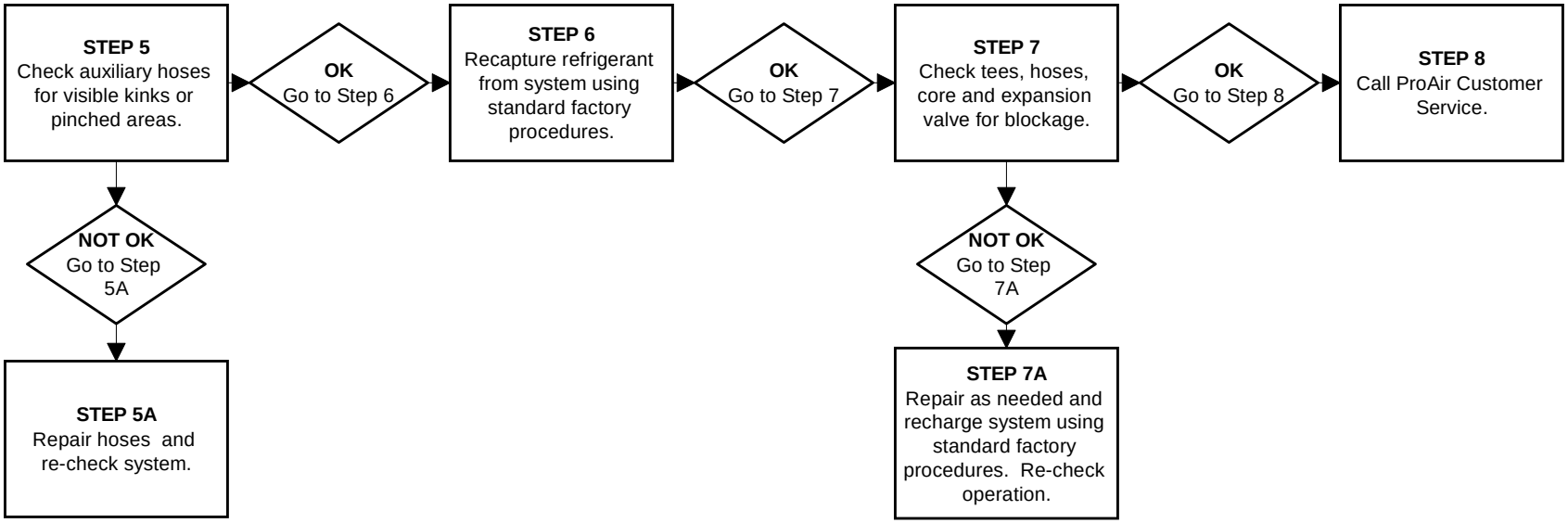
General Motors G-Van (GMT600) Diagnosis Flow Chart
Cooling Concerns w/o YF7

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head must be set to "MAX A/C"
5) The vehicle's temperature control lever should be at the max cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



2000 General Motors G-Van (GMT600) Diagnosis Flow Chart
Cooling Concerns w/o YF7



General Motors G-van (GMT600)
Electrical Concerns
(With of Without YF7)

The GMT600 vans are equipped with OEM wiring from the dash-mounted switch to the driver's side D pillar of the van. Start diagnosis of electrical concerns at the D pillar connectors.

The electrical system on GMT600 vehicles is 12 volts (DC). The switching to the auxiliary unit is done on the ground side of the circuit.

When starting diagnosis of the electrical concern, disconnect the ProAir harness from the OEM harness and check the chassis connectors for the following inputs:

Black Connector

Red wire	12V (DC) battery positive
Black wire	Chassis ground

Gray Connector

Brown wire	12V (DC) ignition switched with key
Yellow wire	Grounded in low speed on auxiliary dash switch
Tan wire	Grounded in medium speed on auxiliary dash switch
Orange wire	Grounded in high speed on auxiliary dash switch

These conditions must be met in order for the auxiliary unit to operate. To diagnose any problems with the OEM wiring, consult dealer service manuals.

If all inputs are present from the OEM system, reconnect the ProAir harness to the OEM plugs and continue checking at the rear unit. (See next page.)

If the following test procedures do not lead you to the correction, please contact ProAir for further assistance.

General Motors G-van (GMT600)
Electrical Concerns—Test Procedures
(With or Without YF7)

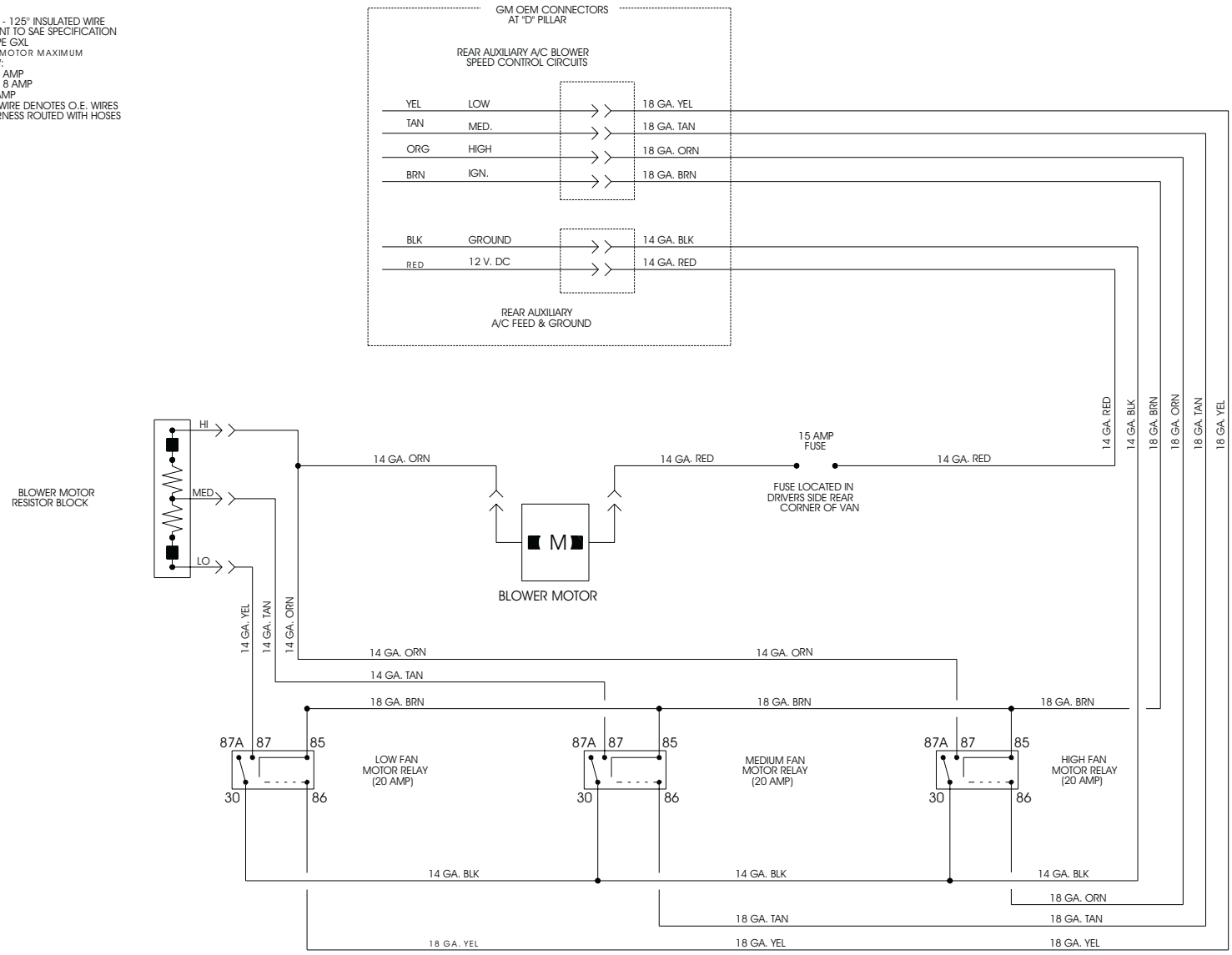
Concern	Possible Cause	Solution
No Blower Speeds	1. 15A fuse at unit blown 2. No battery voltage at fuse connector 3. Motor lead disconnected 4. No ground signal to terminal 30 of relays 5. No ground at motor 6. Inoperative motor	1. Replace fuse. Check for short in system. 2. Repair open wire or connector at D pillar. 3. Reconnect and secure to prevent reoccurrence. 4. Repair open wire or connector at D pillar. 5. Repair open relay connection or replace relay. 6. Replace motor assembly.
No Low Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal out of resistor 5. No ground signal to motor plug	1. Repair open in circuit between D pillar and relay. 2. Replace low-speed relay. 3. Repair open wire to resistor. 4. Replace resistor. 5. Repair open in wire or connector at motor plug.
No Medium Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal out of resistor 5. No ground signal to motor plug	1. Repair open in circuit between D pillar and relay. 2. Replace medium-speed relay. 3. Repair open wire to resistor. 4. Replace resistor. 5. Repair open in wire or connector at motor plug.
No High Speed	1. No ground signal to relay 2. Inoperative relay 3. No ground signal to resistor 4. No ground signal to motor plug	1. Repair open in circuit between D pillar and relay. 2. Replace high-speed relay. 3. Repair open wire to resistor. 4. Repair open in wire or connector at motor plug.
Motor Runs Continuously	1. Stuck relay 2. Improperly wired connector 3. Shorted wire	1. Replace relay. 2. Check connector. Rewire harness. 3. Check for screw in harness.
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

General Motors G-van (GMT600)
Electrical Concerns—Test Procedures
(Without YF7)

Concern	Possible Cause	Solution
No Blower Speeds	1. ProAir harness disconnected from OEM plug 2. ProAir harness disconnected from rear resistor harness 3. Resistor plug disconnected from motor plug 4. No or inadequate chassis ground 5. Inoperative motor 6. No power from relay harness to switch harness	1. Reconnected and secure to prevent reoccurrence. 2. Reconnected and secure to prevent reoccurrence. 3. Reconnected and secure to prevent reoccurrence. 4. Check wire terminal end and reground to chassis. 5. Replace motor. 6. Diagnose relay power harness. (See page 3.2 for location.)
No Low Speed	1. Open circuit in yellow wire or connector(s) 2. Inoperative resistor	1. Check circuit. Repair connector or open wire. 2. Replace resistor.
No Medium Speed	1. Open circuit in red wire or connector(s) 2. Inoperative resistor	1. Check circuit. Repair connector or open wire. 2. Replace resistor.
No High Speed	1. Open circuit in orange wire or connector(s)	1. Check circuit. Repair connector or open wire.
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

PART NO. 40 000 091

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



LET.	NO.	REVISION	BY	DATE
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SIGNATURES		DATE
DRAWN	K.F.S.	10/26/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: GMT W/YF7

REV. X

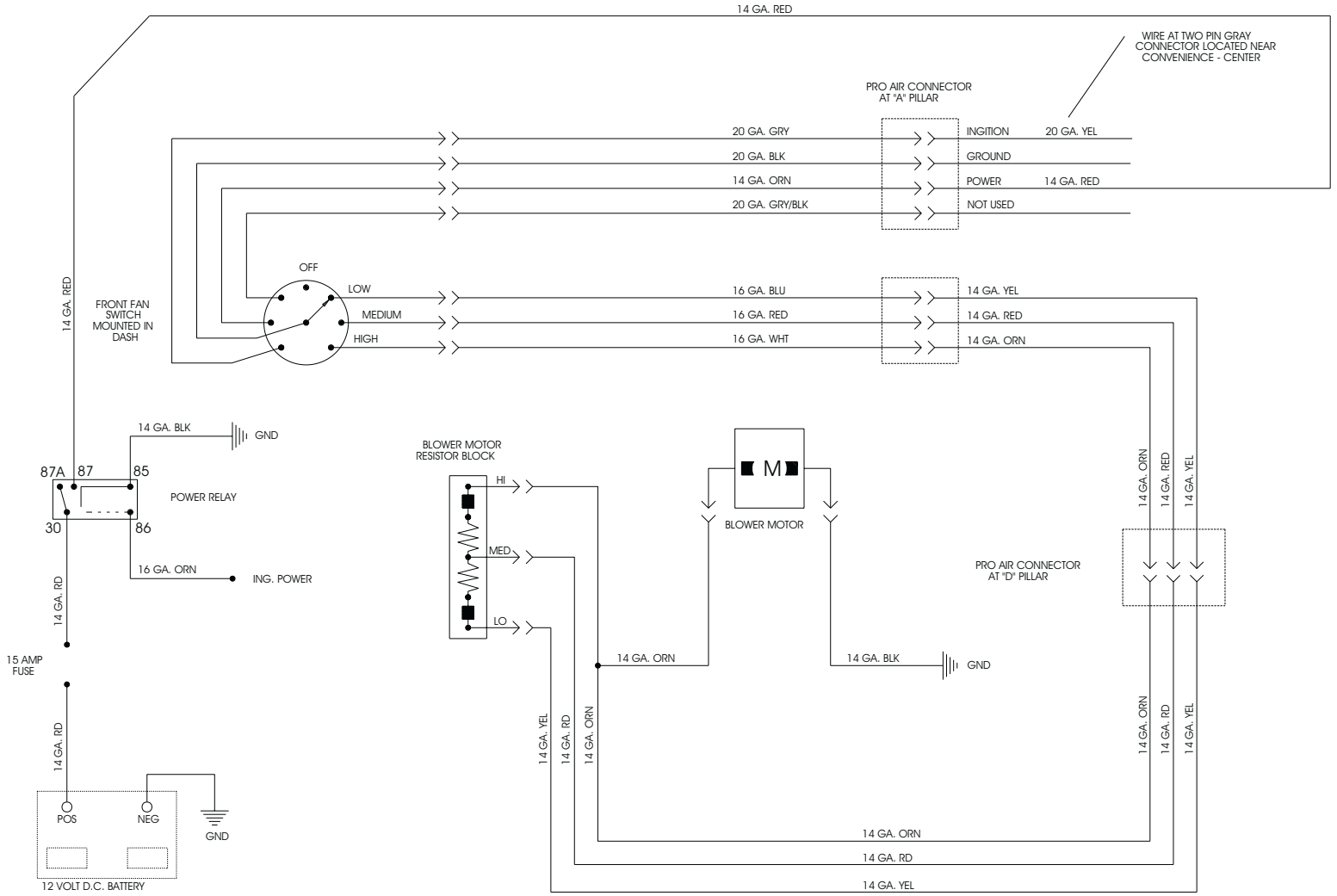
PART NO. 40 000 091

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

PART NO. 40 000 092

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



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SIGNATURES		DATE
DRAWN	K.F.S.	10/26/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: GMT W/0 YF7

REV. X

PART NO. 40 000 092

SCALE: 1"=1'-0"

SIZE A

SHEET 1 OF 1

General Motors G-van (GMT600)
Last Touch Switch Control
(With or Without YF7)

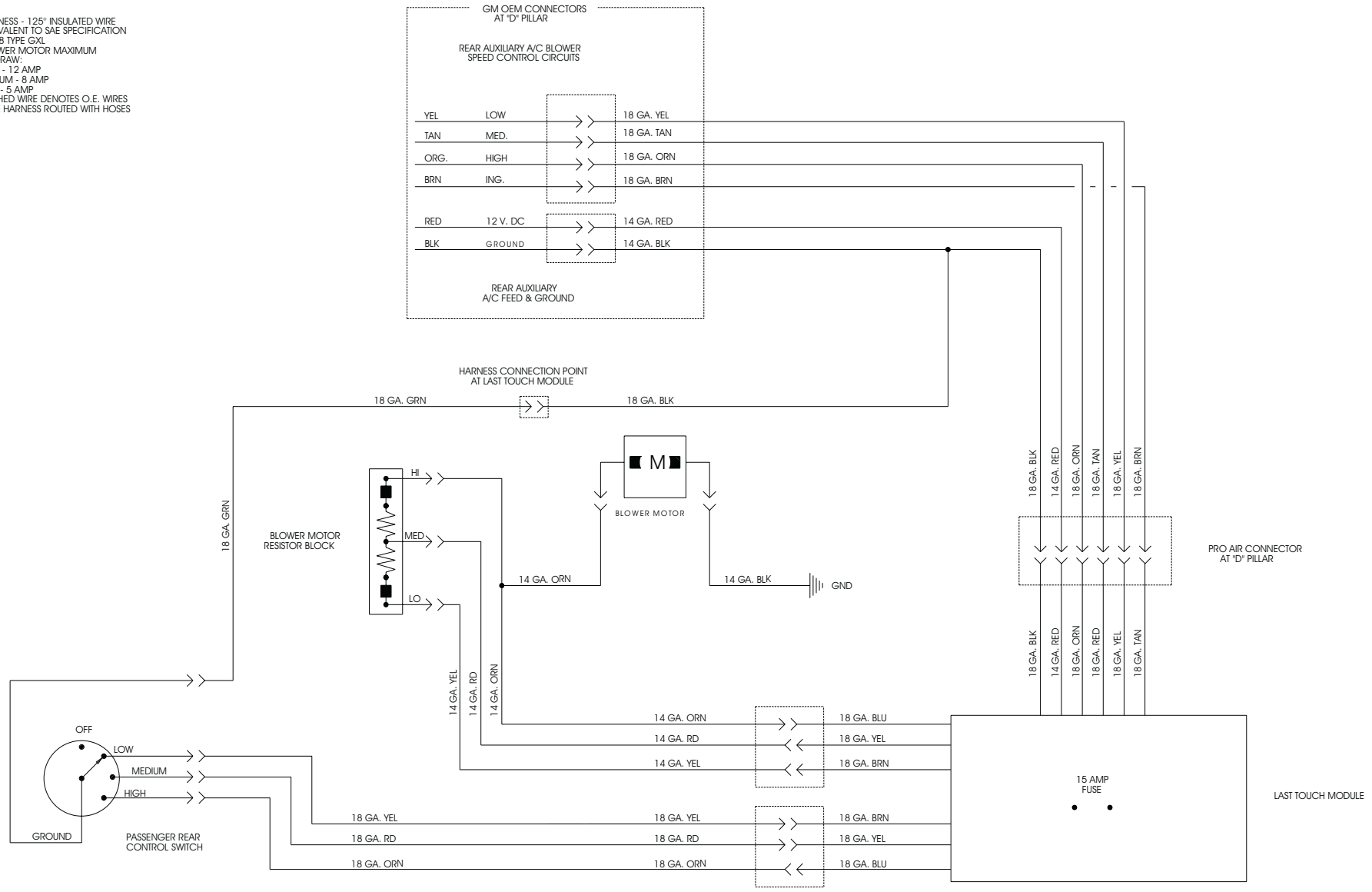
For General Motors vehicles ProAir offers a switching option called Last Touch Switch Control (LTSC). This system gives driver and passenger control of the rear fan through an electronic module.

Blower speeds are changed based on inputs given by either the front or rear switch: whichever switch was last used is the one that changes the blower speed. The driver's control switch has master shutoff of the system; it must be in a position other than off for the rear switch to work.

The module is located near the rear unit. The following pages contain wiring diagrams and installation instructions for the various modules. Please contact ProAir's customer service department for diagnosis or questions regarding this system.

PART NO. 40 000 093

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



LET.	NO.	REVISION	BY	DATE
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X	X	X	X	X

SIGNATURES		DATE
DRAWN	K.F.S.	10/26/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: GMT W/YF7 & LAST TOUCH SW.

REV. X

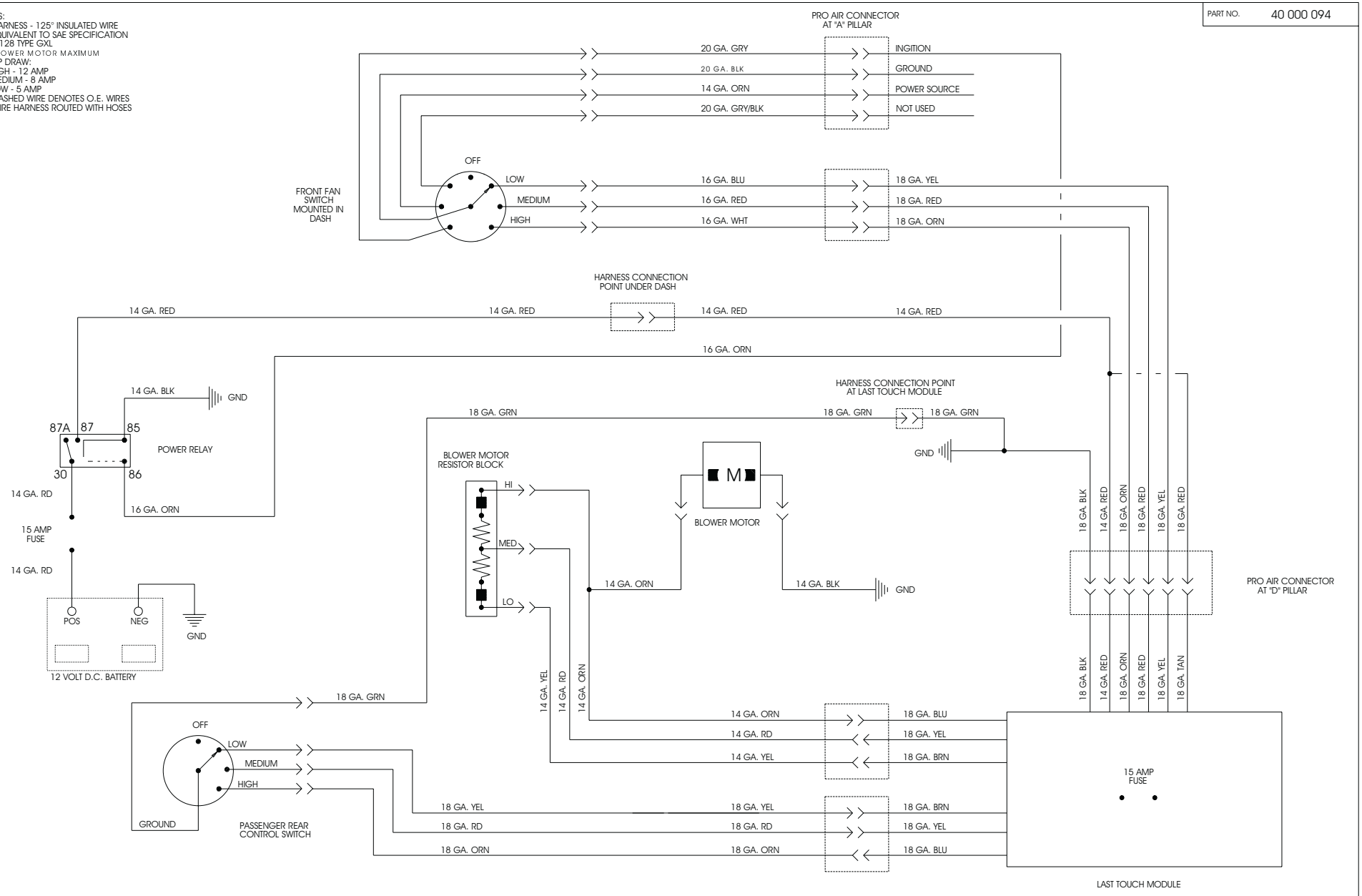
PART NO. 40 000 093

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES

PART NO. 40 000 094



REV. X

LET.	NO.	REVISION	BY	DATE
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SIGNATURES		DATE
DRAWN	K.F.S.	10/26/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: GMT W/0 YF7 & LAST TOUCH SW.

PART NO. 40 000 094
SCALE: 1"=1'-0"
SIZE A
SHEET 1 OF 1

General Motors GMT600 (G-van)
Airflow Concerns

The first step in diagnosing any concern is to get as specific as possible with it. In order to help prevent misdiagnosis and ineffective, costly repairs, categorize the airflow concern into one of the following general areas:

Inadequate airflow—front or rear louvers

Inadequate airflow—left or right louvers

Inadequate airflow—all louvers

The following prechecks will help in diagnosis of the airflow concern:

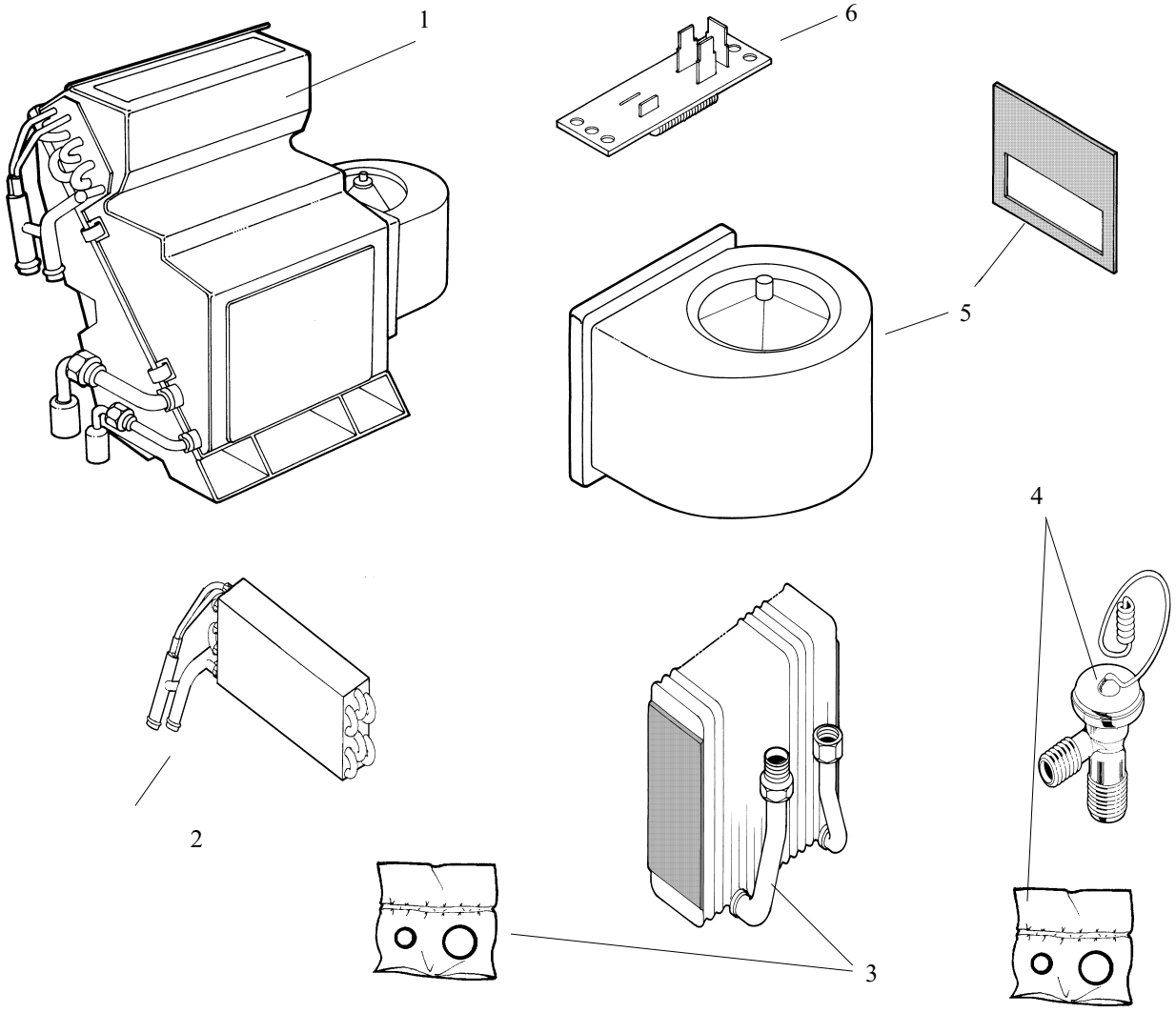
Precheck	**Solution**
Is air inlet blocked?	Remove debris or obstruction.
Is blower inoperative on low, medium, and/or high?	Refer to electrical concerns section for specific chassis.
Is blower wheel not intact?	Refer to blower replacement in repair section.
Is evaporator core iced up?	Refer to cooling concerns section for specific chassis.
Is there debris on blower wheel or coil?	Clean and prevent reoccurrence.
Is there inadequate airflow out of top of unit with duct disconnected?	Check for blocked inlet. Check for debris on core. Check for blower concern.

If any problems exist with these prechecks, they must be rectified before removing interior panels to check the ductwork. Repair procedures for the above concerns can be found in the specific chassis sections of this manual.

If all the above prechecks are all right, then check all louvers for obstructions: fabric, tape, hole cutouts, etc. If louvers are unobstructed, it will be necessary to access duct hose, crossover, and wall extensions to determine the cause of the inadequate airflow.

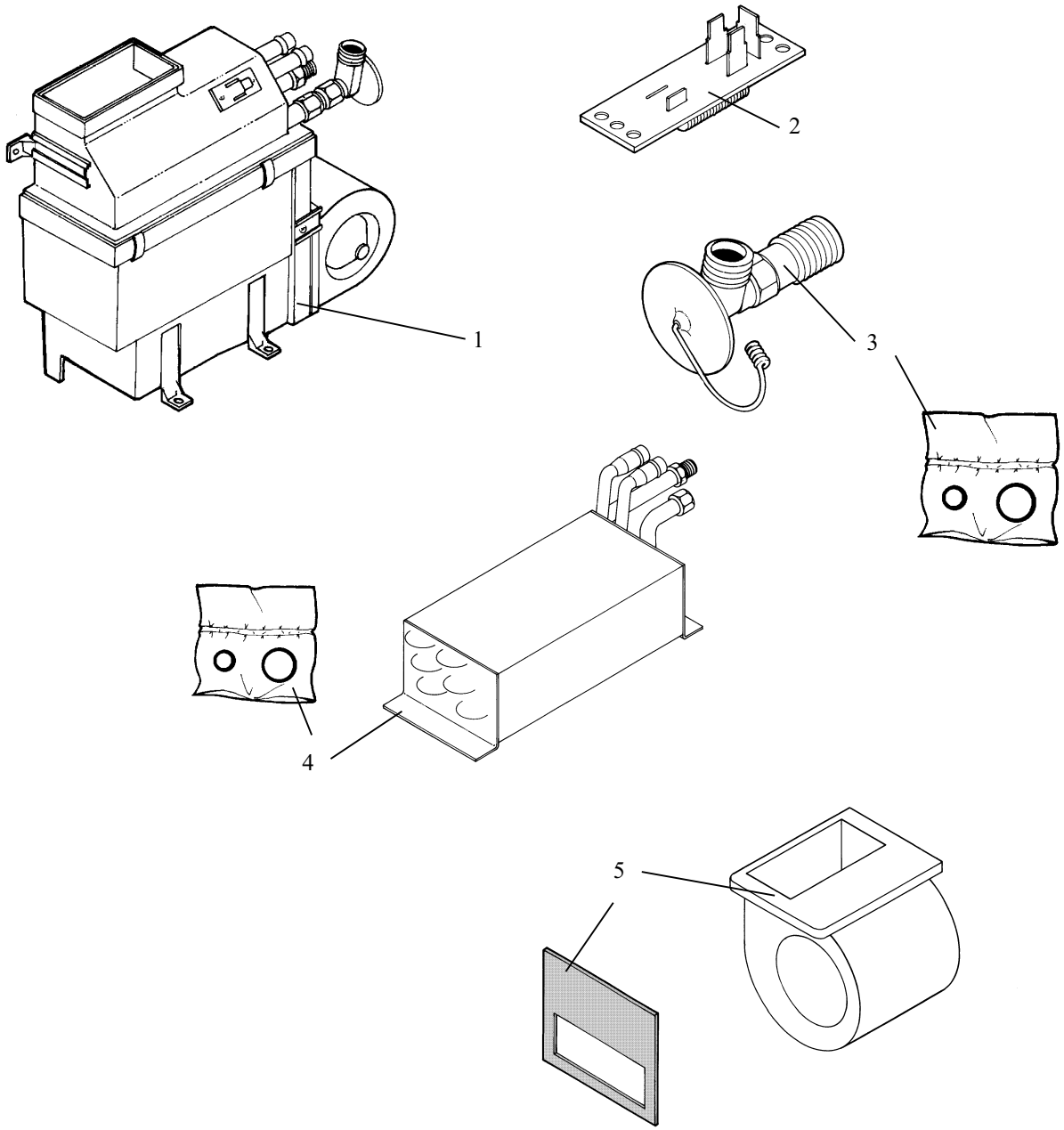
Consult conversion company's customer service department for procedures to access these components.

1999 AirTech H/C POWER PACK ASSEMBLY PART NUMBER 60 000 587



1.	60 000 587 POWER PACK ASS'Y
2.	03 000 042 HEAT COIL
3.	03 000 043 EVAPORATOR COIL, 60 000 287 O-RING KIT
4.	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
5.	68 000 005 BLOWER MOTOR W/SEAL
6.	01 000 091 RESISTOR

GM, (GMT600) POWER PACK 1100 SERIES ASSEMBLY, PART NUMBER 66 000 011



1.	66 000 011 Power pack ass'y
2.	01 000 091 Resistor
3.	05 000 141 Expansion valve, 60 000 287 O-ring kit
4.	03 000 037 Coil, heat/cool, 60 000 287 O-ring kit
5.	68 000 005 Blower motor w/seal

Lengths and fittings may vary depending on the chassis.
ProAir unit serial number and model number should provide a reference point to correctly identify hose assemblies.

Section 4.0
General Motors Astro/Safari Van

ProAir Unit Location:

Although location may vary by converter, the ProAir unit is usually located on the driver's side, rear corner, inside the interior wall. A/C and heater hoses are routed over the wheel well, inside the interior wall, and drop through the floor behind the gas fill. The two heater hoses are routed forward to the driver's side B pillar, and the liquid and suction hoses are routed forward into the engine compartment. (See page 4.1 or 4.2, "Factory Connection Points.") The air ducts also attach to the unit at this point and continue up the wall into the ceiling.

CAUTION: Located near the unit and built into the wall is a vent which must be kept clear to maintain adequate airflow through the evaporator. Do not block off this vent. Also, the louvers in the ceiling must be partially open while the unit is operating. If the louvers are completely closed, air backup will result in possible damage to the blower assembly.

ProAir Unit Operation:

The rear air conditioning system will function with the dash mode control positioned in one of the air conditioning settings. The rear heating system will function to its maximum potential with the dash mode control positioned in the "FLOOR" location. (Verify that the unit is not cool-only; it must be a heat/cool unit.) When the dash mode control is positioned in the "DEFROST" or "FLOOR/DEFROST" mode, the air conditioner continues to cycle and circulate refrigerant throughout the system. The output of rear heat will be moderated in the "DEFROST" or "FLOOR/DEFROST" position.

ProAir Unit Requirements:

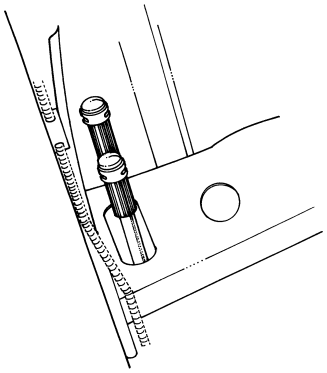
This ProAir unit contains Refrigerant-134a (R-134a). **DO NOT** add or replace with Refrigerant-12 (R-12/Freon). Adding R-12 to an R-134a system may cause component damage or poor A/C system performance. Use only PAG (polyalkylene glycol) synthetic lubricant within an R-134a system.

System Capacities			
Fluids	**ProAir Rear Unit**	**OEM Dash Unit**	**Total**
Refrigerant-134a (R-134a)**—1100**	14 oz (0.88 lb)	36 oz (2.25 lb)	50 oz (3.13 lb)
Refrigerant-134a (R-134a)**—MiniMax®**	14 oz (0.88 lb)	36 oz (2.25 lb)	50 oz (3.13 lb)
PAG lubricant (54H or GM equivalent)**—all units**	3 oz	8 oz	11 oz
Anti-freeze (DEX-COOL™) **—all units**	**USE GM'S DEX-COOL™ COOLANT ONLY.** Add approximately ½ gallon of a 50/50 mixture of anti-freeze and water to the van's cooling system when installing a ProAir rear unit.		

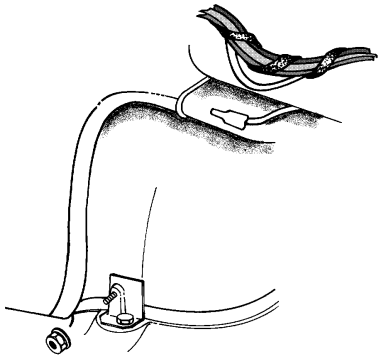
NOTE: The refrigerant capacity for the ProAir rear unit should not be confused with the factory auxiliary rear unit, which requires 12 oz (0.75 lb) of R-134a and is stated on the OEM sticker in the engine compartment on the front evaporator housing. The ProAir sticker is located in this same area.

ASTRO / SAFARI FACTORY CONNECTION POINTS

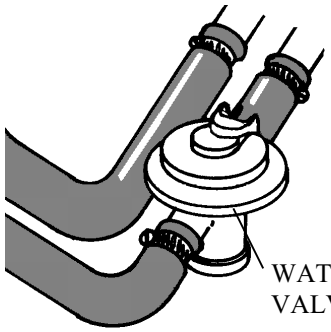
General Motors has provided for upfitters, OEM connection points to interface with OEM heating, cooling and electrical systems. This package is labeled YF7 and consists of the following.



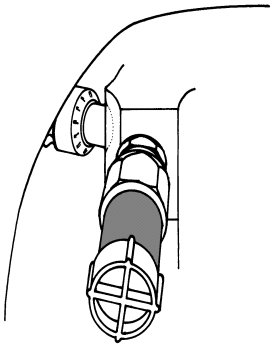
OEM WATER LINE CONNECTIONS AT B-PILLAR



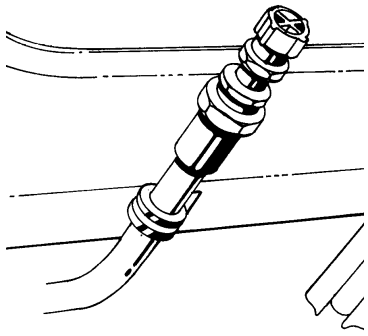
OEM VAC LINE CONNECTION BELOW RADIO



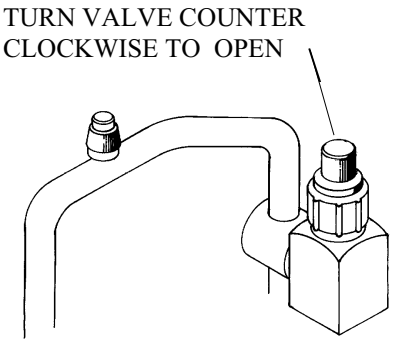
OEM WATER VALVE UNDER THE ACCUMULATOR



OEM SUCTION LINE CONNECTION AT COMP.

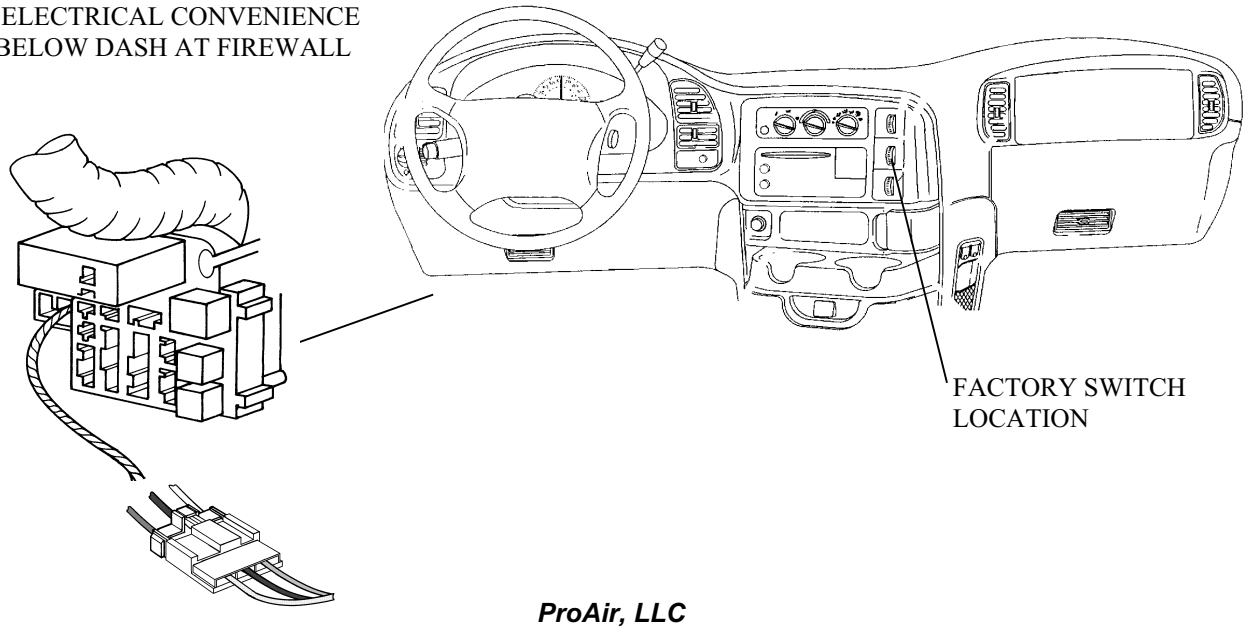


OEM LIQUID LINE CONNECTION NEAR TRANS.

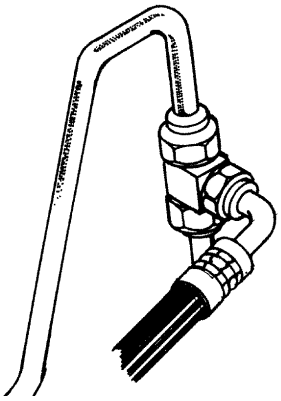


OEM LIQUID LINE VALVE, AT THE RIGHT OF ACCUMULATOR

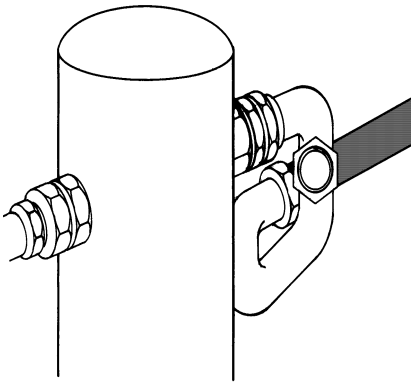
OEM ELECTRICAL CONVENIENCE CTR BELOW DASH AT FIREWALL



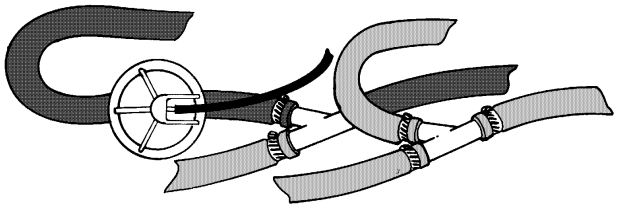
General Motors has provided for upfitters, on vehicles without the connector package the connections shown below for the refrigerant hoses and heater hoses.



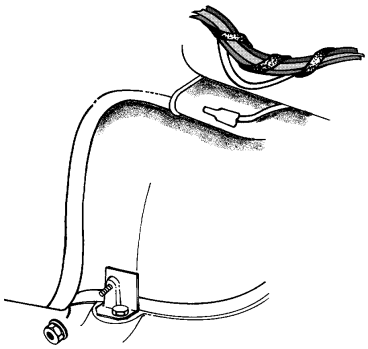
OEM LIQUID LINE CONNECTION W/O YF7
LOCATED BY ACCUMULATOR



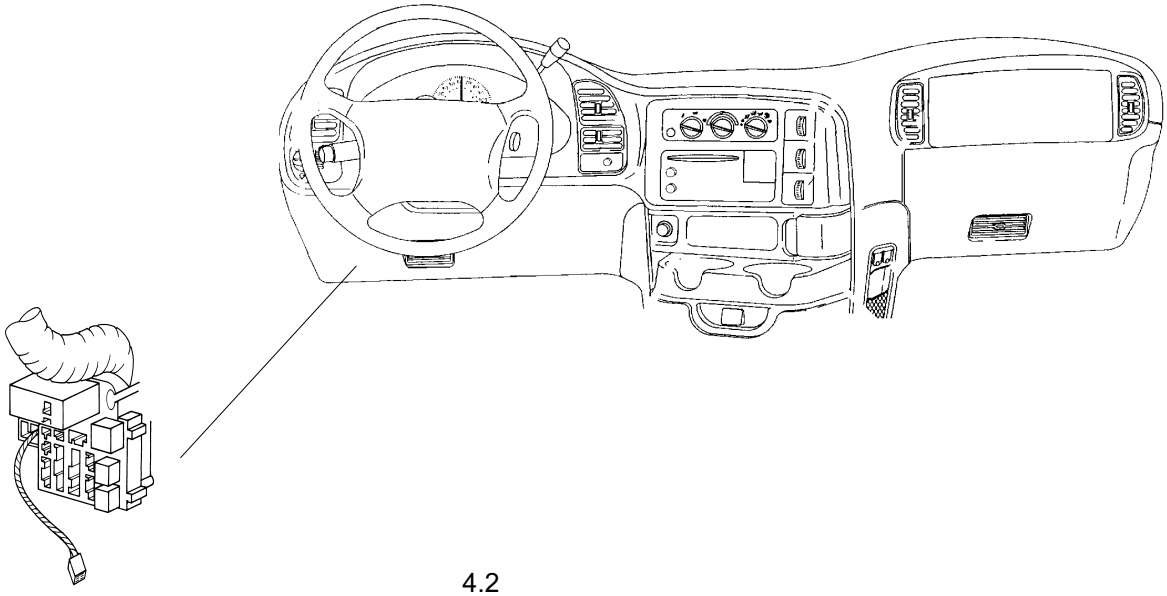
OEM SUCTION LINE CONNECTION W/O YF7
LOCATED AT ACCUMULATOR



OEM WATER LINE AND WATER VALVE
CONNECTIONS LOCATED UNDER HOOD



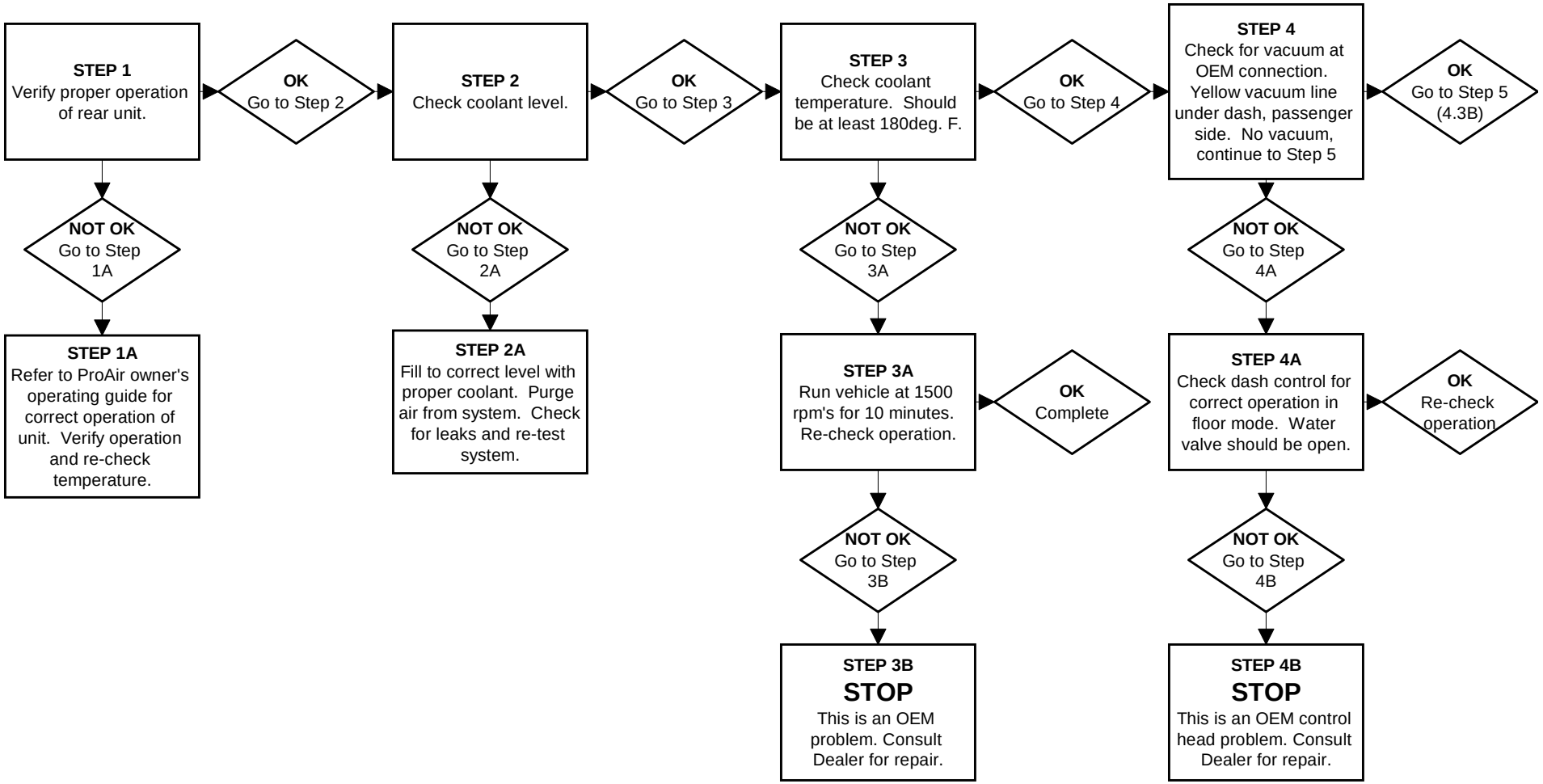
OEM VACUUM LINE CONNECTION LOCATED
BEHIND RADIO



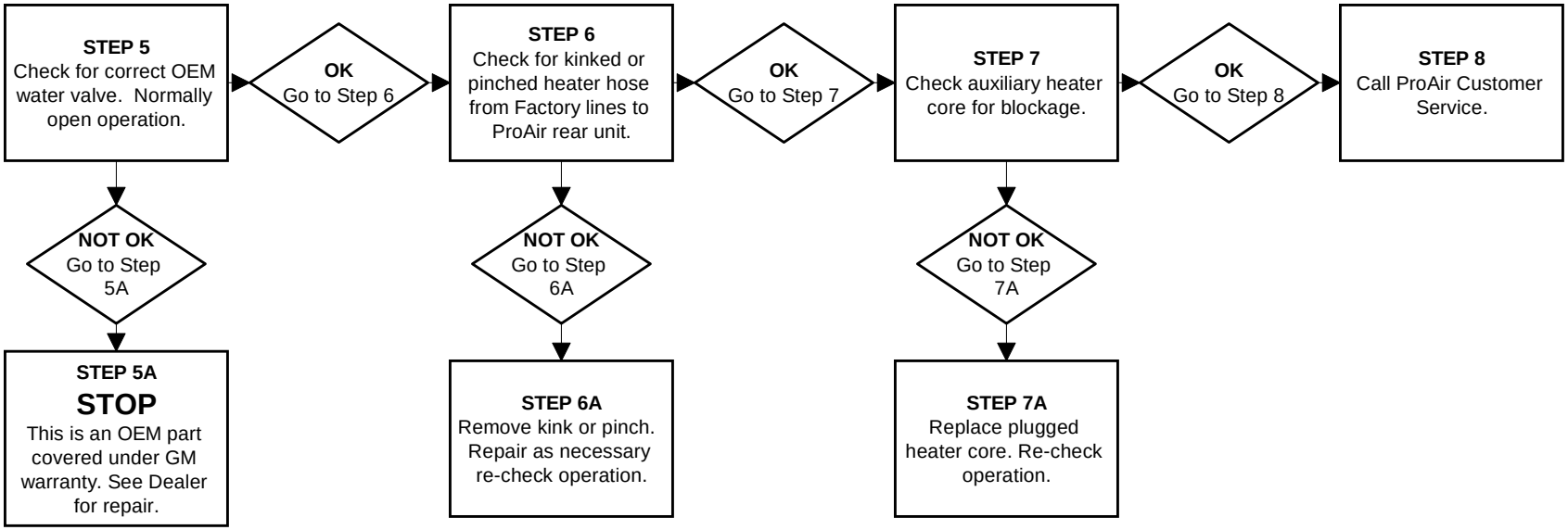
General Motors Astro/Safari Diagnosis Flow Chart
Heat Concerns w/YF7

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



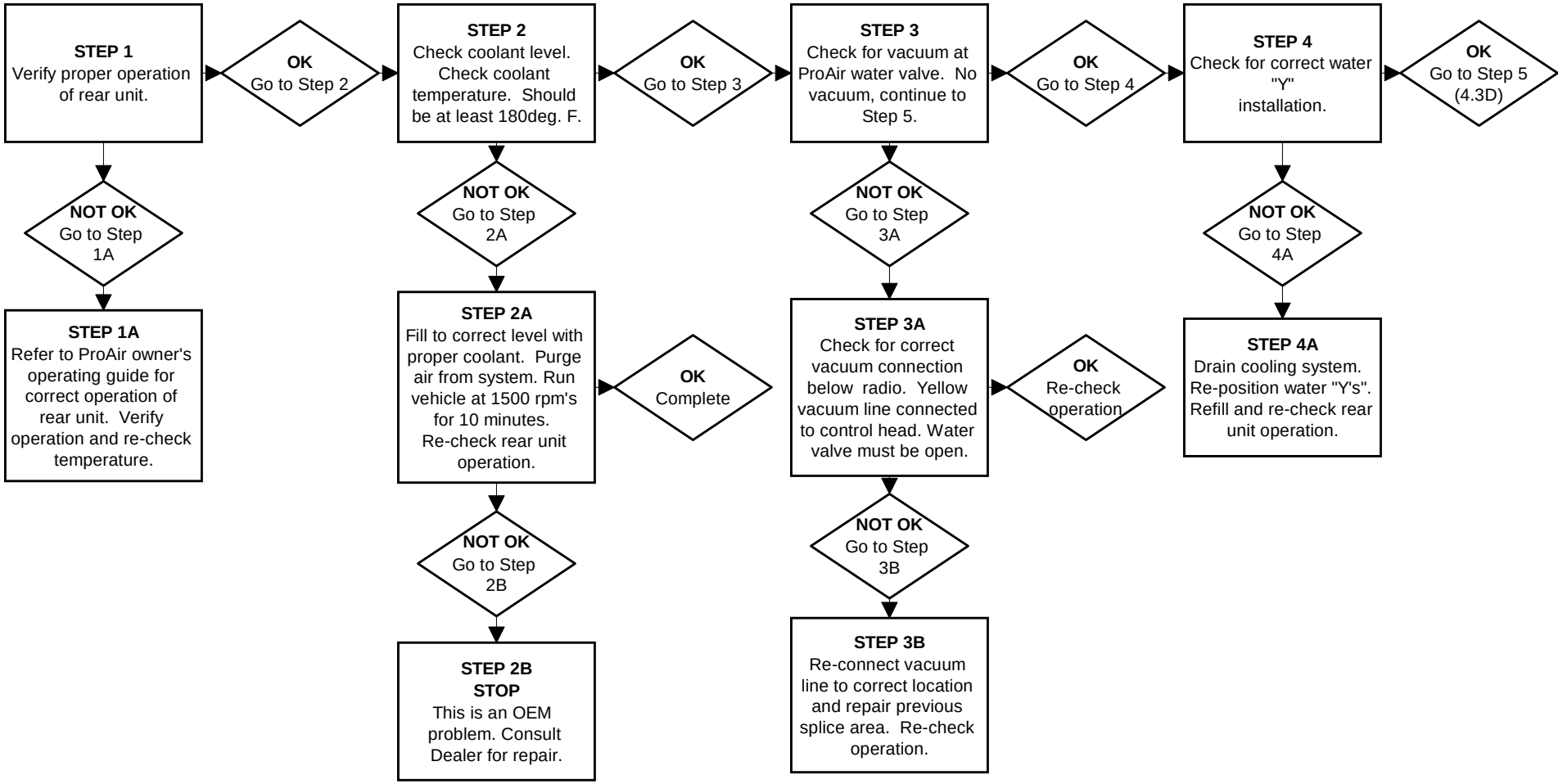
2000 General Motors Astro/Safari Diagnosis Flow Chart
Heat Concerns w/YF7



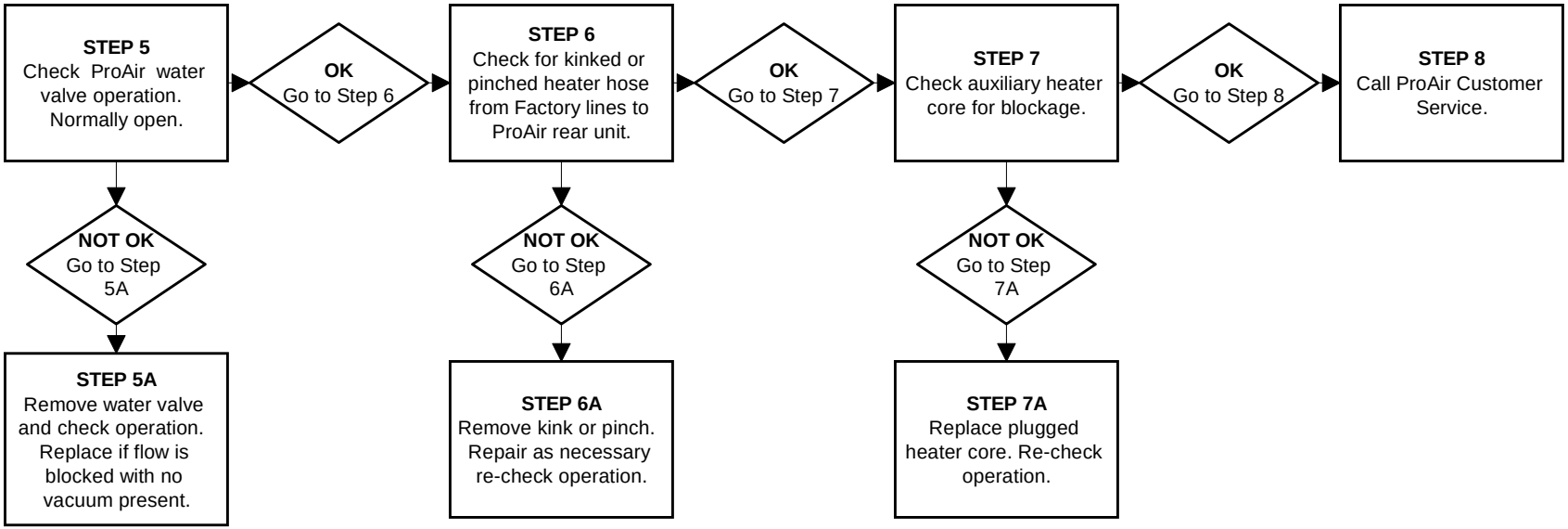
General Motors Astro/Safari Diagnosis Flow Chart
Heat Concerns w/o YF7

NOTES:

1) Rear heat temperatures should be checked at closest louver to ProAir unit.
2) The rear unit fan speed should be set on "HIGH".
3) The vehicle must be at operating temperature.
4) The vehicle should be running above idle when performing heat tests, 1500 rpm's.
5) The vehicle's control head must be set on floor mode for correct water valve operation.



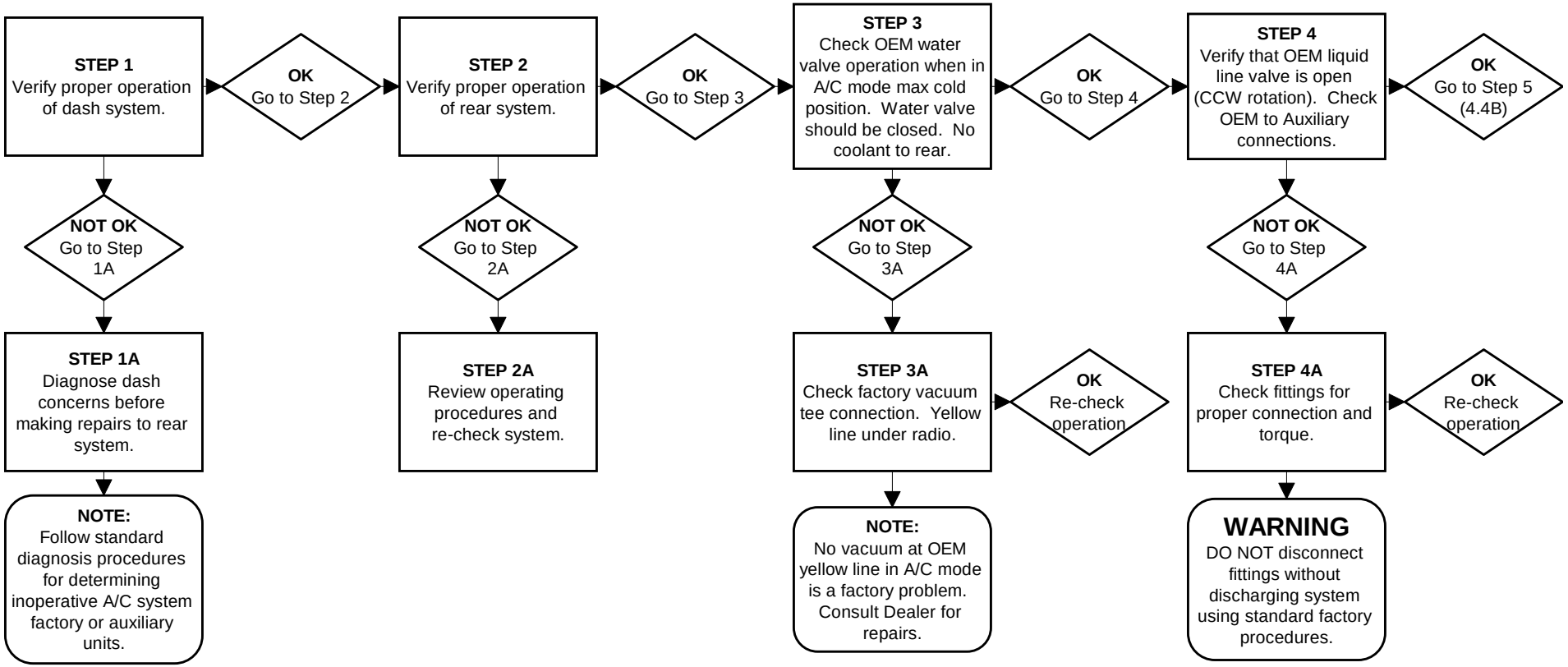
2000 General Motors Astro/Safari Diagnosis Flow Chart
Heat Concerns w/o YF7



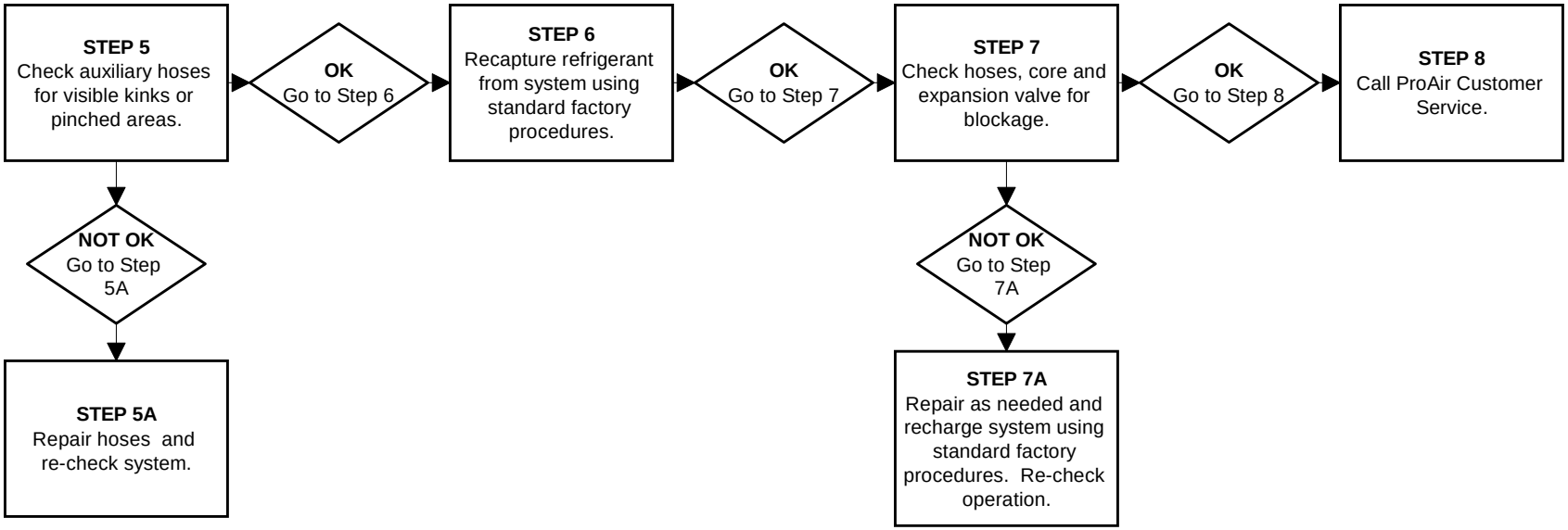
General Motors Astro/Safari Diagnosis Flow Chart
Cooling Concerns w/YF7

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head should be set in the "MAX A/C" mode.
5) The vehicle's temperature control lever should be at the cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



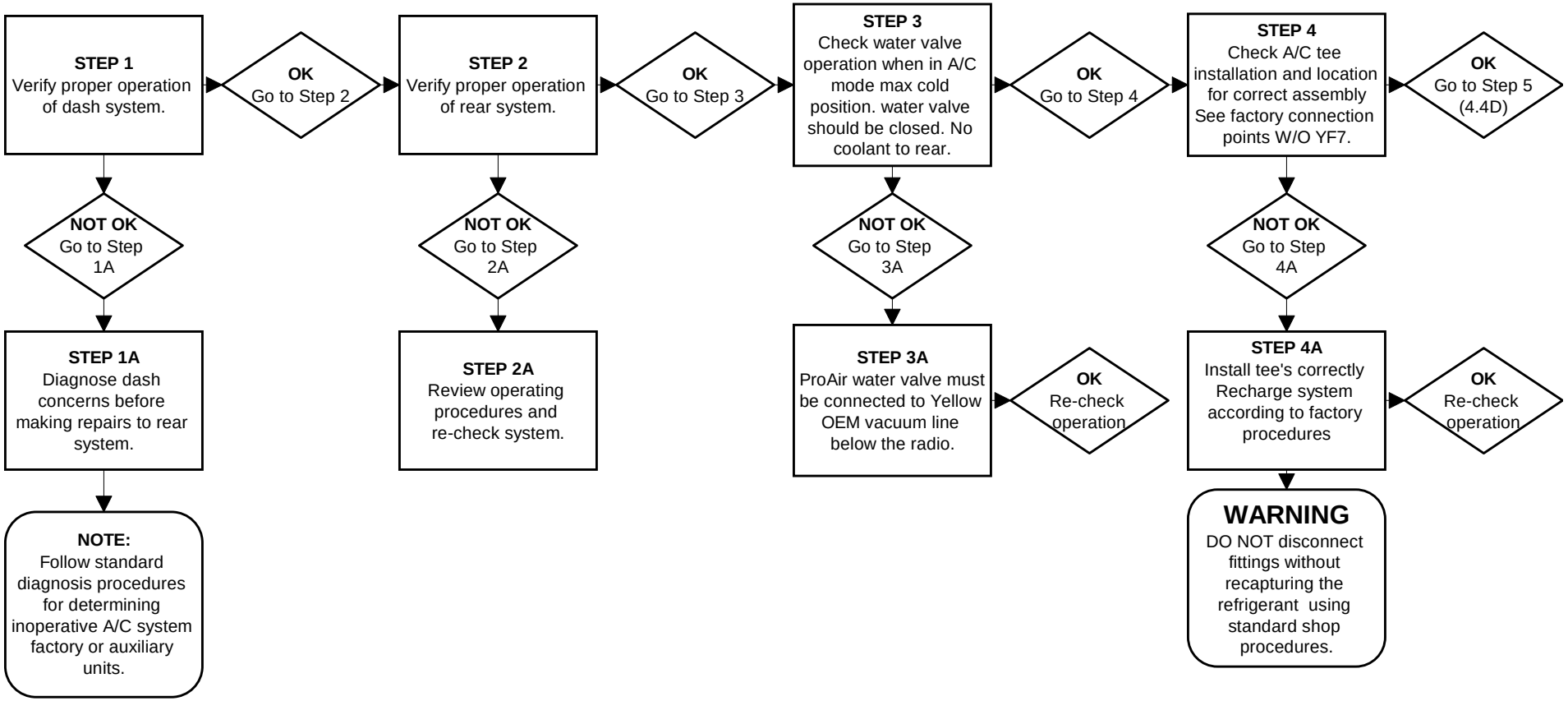
2000 General Motors Astro/Safari Diagnosis Flow Chart
Cooling Concerns w/YF7



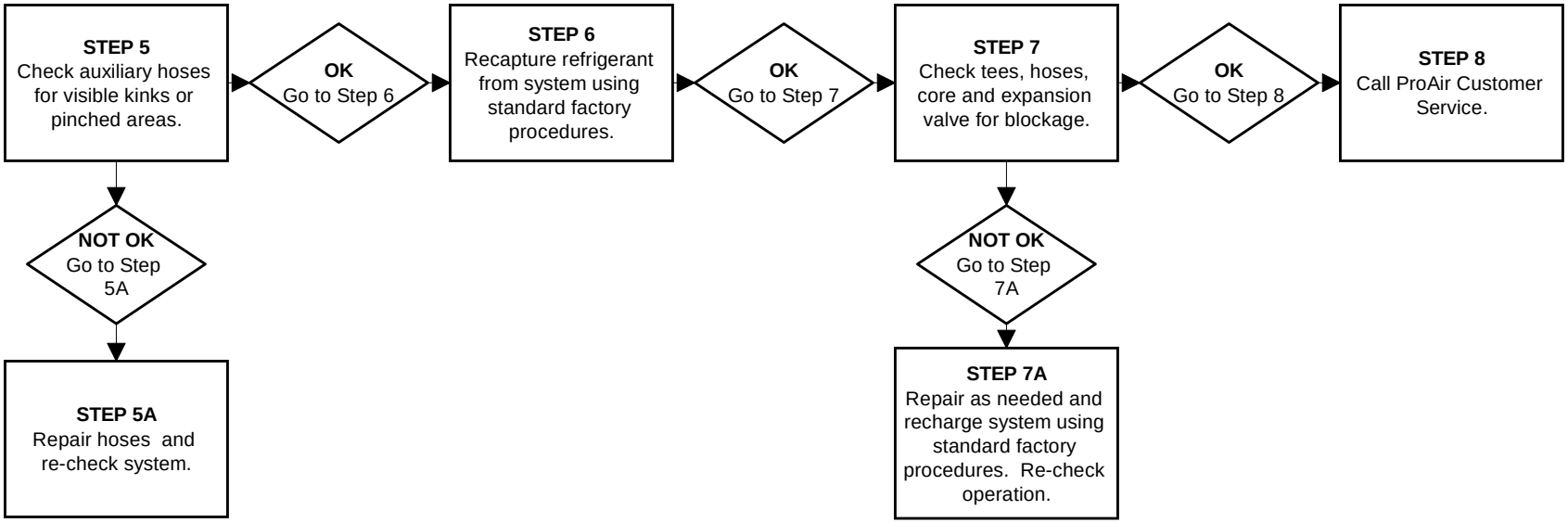
General Motors Astro/Safari Diagnosis Flow Chart
Cooling Concerns w/o YF7

NOTES:

1) Keep in mind the rear unit's performance is dependent on a properly operating dash system.
2) Rear A/C temperatures should be checked at closest louver to ProAir unit.
3) The rear unit fan speed should be set on "MEDIUM".
4) The vehicle's control head must be set to "MAX A/C"
5) The vehicle's temperature control lever should be at the max cold position.
6) The vehicle should be running above idle when performing cooling tests, 1500 rpm's.



2000 General Motors Astro/Safari Diagnosis Flow Chart
Cooling Concerns w/o YF7



General Motors Astro/Safari Electrical Concerns (With or Without YF7)

With YF7, the Astro/Safari vans are equipped with OEM wiring from the dash-mounted switch to the driver's side under-dash area at the convenience center. *Without* YF7, an OEM harness and switch are installed, thus making the wiring setup and its diagnosis identical to vehicles with YF7. Start diagnosis of electrical concerns at the connector located at the convenience center described above.

The electrical system on Astro/Safari vehicles is a standard 12-volt (DC) system. This means that the dash switch sends 12-volt signals to the unit in order to switch blower speeds.

When starting diagnosis of the electrical concern, disconnect the ProAir harness from the OEM connector and check the chassis connectors for the following inputs:

Black Connector

Blue wire	12V (DC) in low speed on auxiliary switch
Red wire	12V (DC) in medium speed on auxiliary switch
White wire	12V (DC) in high speed on auxiliary switch

These conditions must be met in order for the auxiliary unit to operate. To diagnose any problems with the OEM wiring, consult dealer service manuals.

If all inputs are present from the OEM system, reconnect the ProAir harness to the OEM plugs and continue checking at the rear unit. (See next page.)

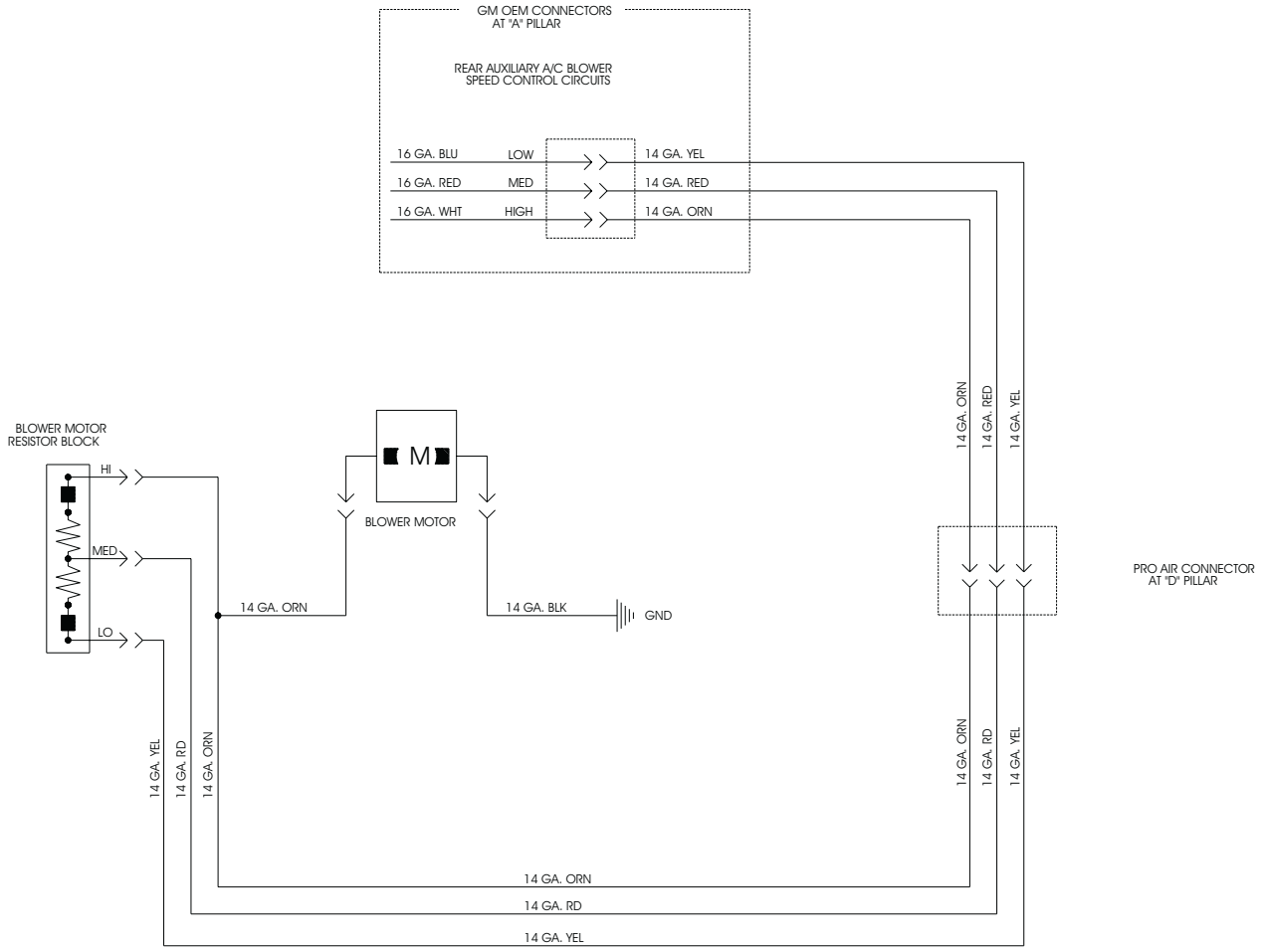
If the following test procedures do not lead you to the correction, please contact ProAir for further assistance.

General Motors Astro/Safari
Electrical Concerns—Test Procedures
(With or Without YF7)

Concern	Possible Cause	Solution
No Blower Speeds	1. ProAir harness disconnected from OEM plug 2. ProAir harness disconnected from rear resistor harness 3. Resistor plug disconnected from motor plug 4. No or inadequate chassis ground 5. Inoperative motor	1. Reconnected and secure to prevent reoccurrence. 2. Reconnected and secure to prevent reoccurrence. 3. Reconnected and secure to prevent reoccurrence. 4. Check wire terminal end and reground to chassis. 5. Replace motor.
No Low Speed	1. Open circuit in yellow wire or connector(s) 2. Inoperative resistor	1. Check circuit. Repair connector or open wire. 2. Replace resistor.
No Medium Speed	1. Open circuit in red wire or connector(s) 2. Inoperative resistor	1. Check circuit. Repair connector or open wire. 2. Replace resistor.
No High Speed	1. Open circuit in orange wire or connector(s)	1. Check circuit. Repair connector or open wire.
Mismatched Blower Speeds	1. Incorrectly wired harness (wires to OEM motor harness or resistor plug)	1. Replace affected harness or repin connectors according to wiring diagram.

PART NO. 40 000 099

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



LET.	NO.	REVISION	BY	DATE
X	X	X	X	X

SIGNATURES		DATE
DRAWN	K.F.S.	10/27/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: ASTRO W/ YF7

REV. X

PART NO. 40 000 099

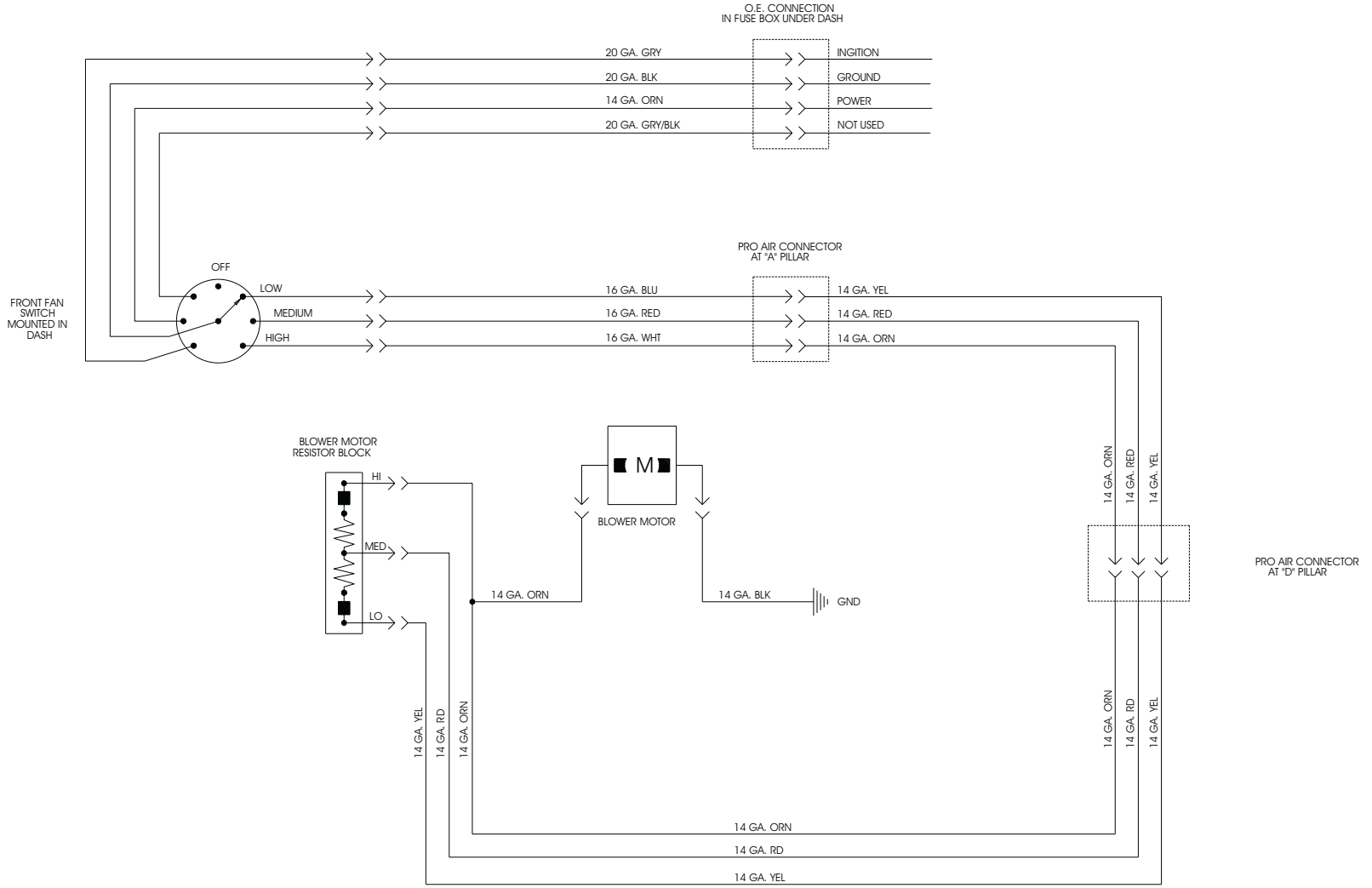
SCALE: 1"=1'-0"

SIZE A

SHEET 1 OF 1

PART NO. 40 000 100

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES



REV. X

LET.	NO.	REVISION	BY	DATE
X	X	X	X	X

SIGNATURES		DATE
DRAWN	K.F.S.	10/27/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC
AIRTECH & 1100 SERIES

USAGE: ASTRO W/O YF7

PART NO. 40 000 100
SCALE: 1"=1'-0" SIZE A
SHEET 1 OF 1

General Motors Astro/Safari
Last Touch Switch Control
(With or Without YF7)

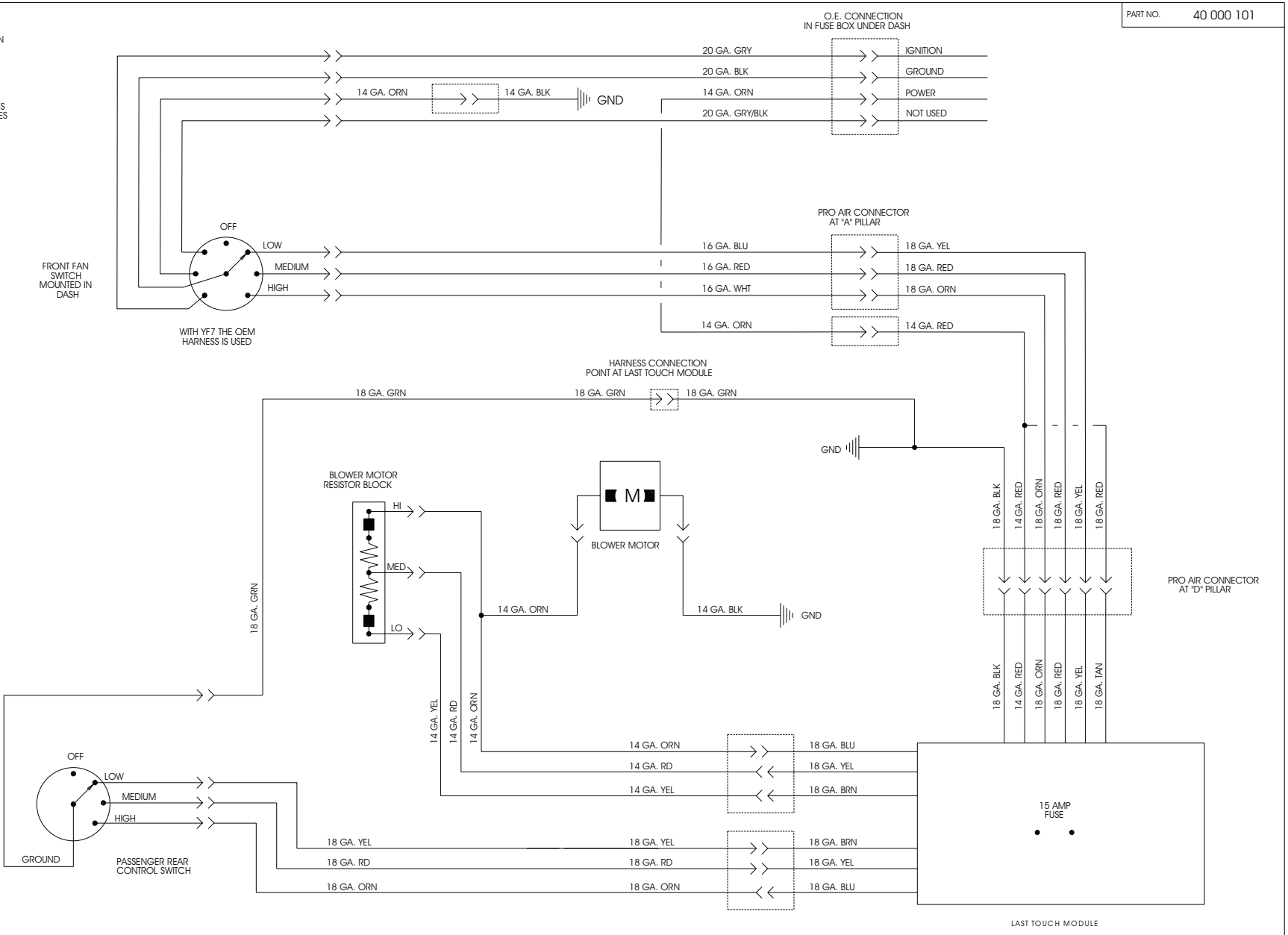
For General Motors vehicles ProAir offers a switching option called Last Touch Switch Control (LTSC). This system gives driver and passenger control of the rear fan through an electronic module.

Blower speeds are changed based on inputs given by either the front or rear switch: whichever switch was last used is the one that changes the blower speed. The driver's control switch has master shutoff of the system; it must be in a position other than off for the rear switch to work.

The module is located near the rear unit. The following pages contain wiring diagrams and installation instructions for the various modules. Please contact ProAir's customer service department for diagnosis or questions regarding this system.

NOTES:
1) HARNESS - 125° INSULATED WIRE EQUIVALENT TO SAE SPECIFICATION J1128 TYPE GXL
2) BLOWER MOTOR MAXIMUM AMP DRAW:
HIGH - 12 AMP
MEDIUM - 8 AMP
LOW - 5 AMP
3) DASHED WIRE DENOTES O.E. WIRES
4) WIRE HARNESS ROUTED WITH HOSES

PART NO. 40 000 101



REV. X

LET.	NO.	REVISION	BY	DATE
X	X	X	X	X

SIGNATURES		DATE
DRAWN	K.F.S.	10/27/98
CHECKED	C.W.M.	11/19/98
APPROVED	M.R.Z.	11/19/98

PRO AIR, LLC
28731 C.R. 6 ELKHART, IN 46514

TITLE: REAR HEAT / COOL WIRE SCHEMATIC AIRTECH & 1100 SERIES

USAGE: ASTRO W/ & W/0 YF7 & LAST TOUCH SW.

PART NO. 40 000 101

SCALE: 1"=1'-0" SIZE A

SHEET 1 OF 1

General Motors Astro/Safari
Airflow Concerns

The first step in diagnosing any concern is to get as specific as possible with it. In order to help prevent misdiagnosis and ineffective, costly repairs, categorize the airflow concern into one of the following general areas:

Inadequate airflow—front or rear louvers

Inadequate airflow—left or right louvers

Inadequate airflow—all louvers

The following prechecks will help in diagnosis of the airflow concern:

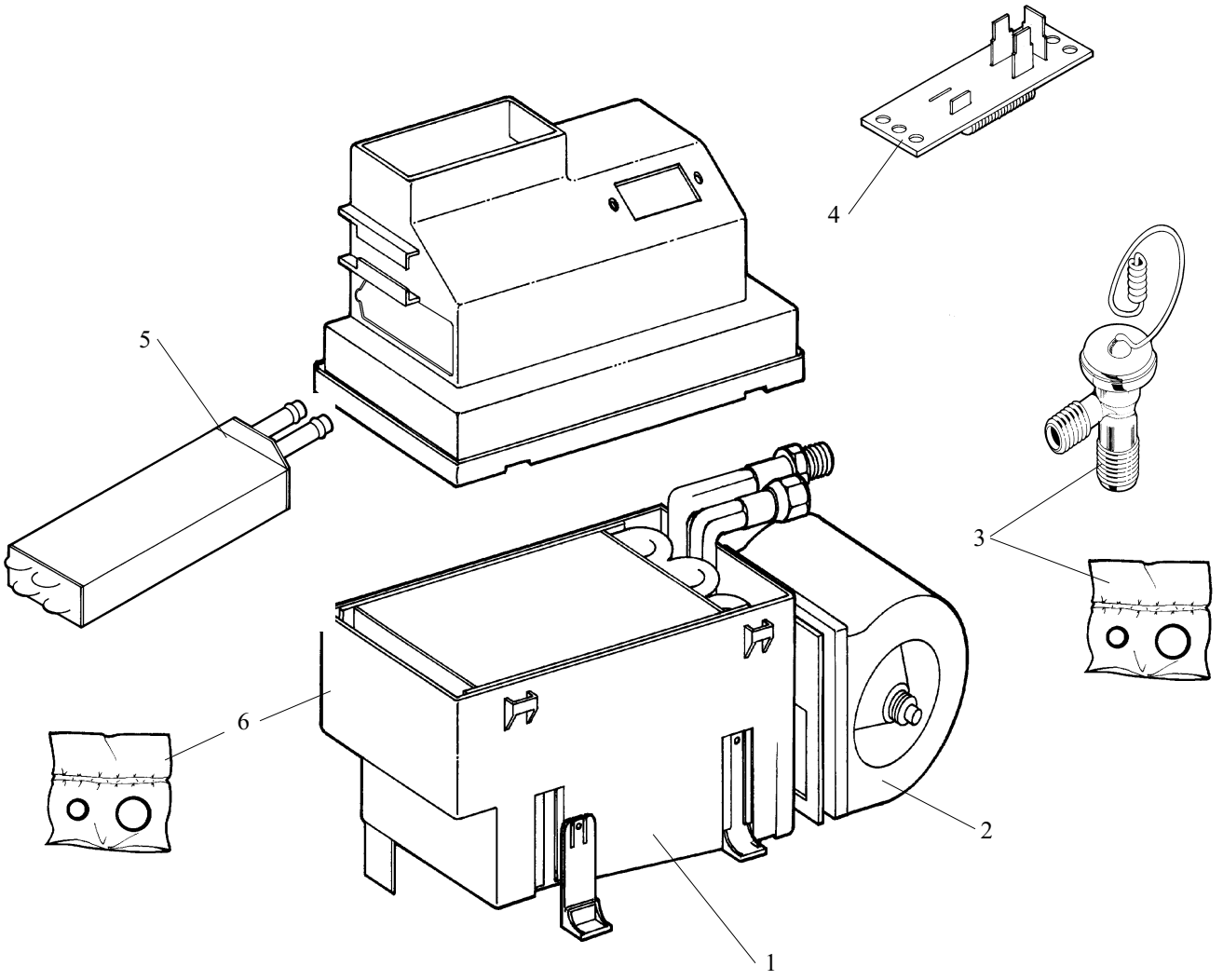
Precheck	**Solution**
Is air inlet blocked?	Remove debris or obstruction.
Is blower inoperative on low, medium, and/or high?	Refer to electrical concerns section for specific chassis.
Is blower wheel not intact?	Refer to blower replacement in repair section.
Is evaporator core iced up?	Refer to cooling concerns section for specific chassis.
Is there debris on blower wheel or coil?	Clean and prevent reoccurrence.
Is there inadequate airflow out of top of unit with duct disconnected?	Check for blocked inlet. Check for debris on core. Check for blower concern.

If any problems exist with these prechecks, they must be rectified before removing interior panels to check the ductwork. Repair procedures for the above concerns can be found in the specific chassis sections of this manual.

If all the above prechecks are all right, then check all louvers for obstructions: fabric, tape, hole cutouts, etc. If louvers are unobstructed, it will be necessary to access duct hose, crossover, and wall extensions to determine the cause of the inadequate airflow.

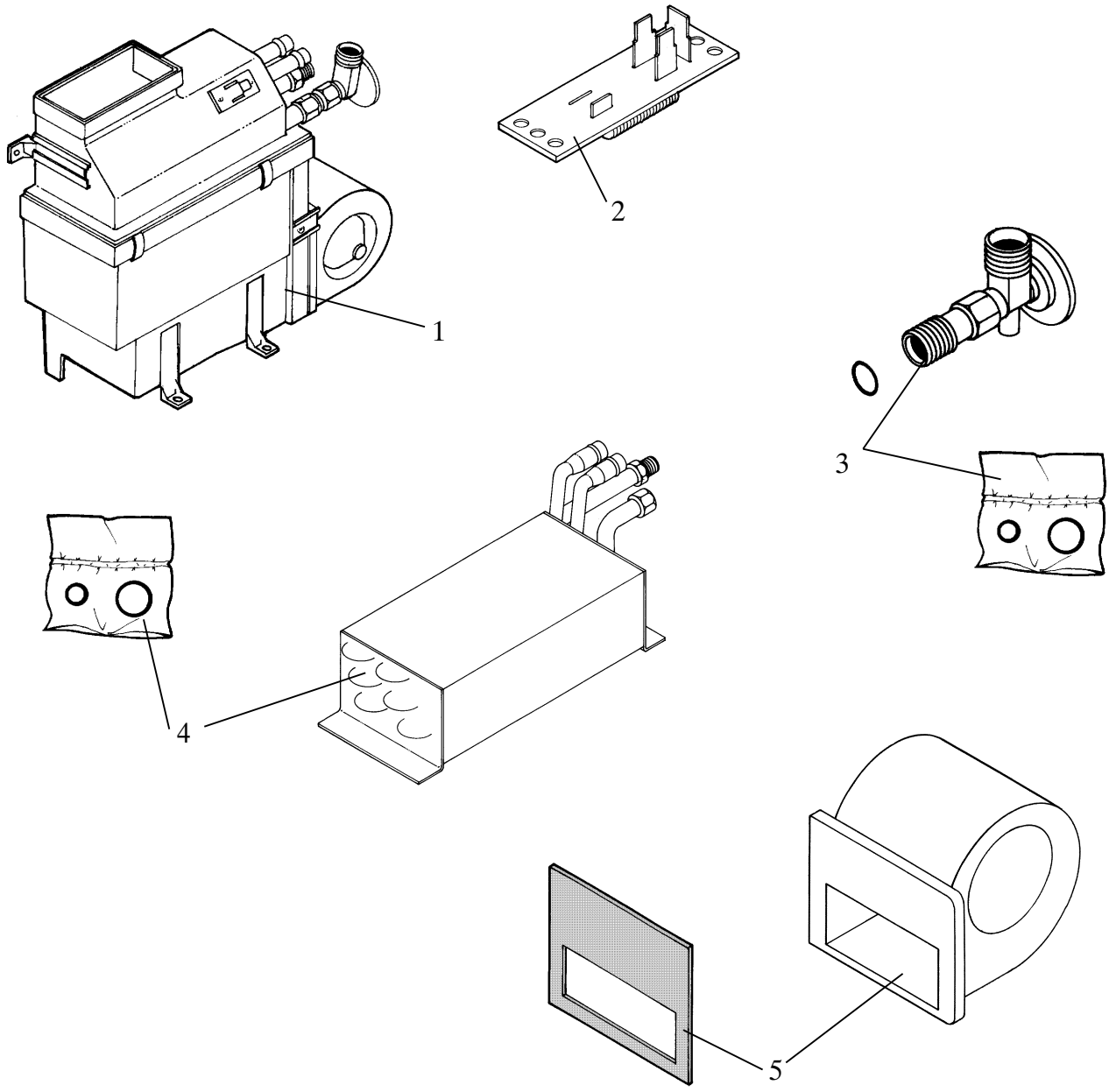
Consult conversion company's customer service department for procedures to access these components.

ASTRO/SAFARI MINIMAX POWER PACK ASSEMBLY, PART NUMBER 66 000 015



1	66 000 015 POWER PACK ASSEMBLY
2	68 000 005 BLOWER MOTOR W/SEAL
3	05 000 141 EXPANSION VALVE, 60 000 287 O-RING KIT
4	01 000 091 RESISTOR
5	03 000 055 HEAT COIL
6	03 000 036 EVAPORATOR COIL, 60 000 287 O-RING KIT

ASTRO/SAFARI POWER PACK 1100 SERIES ASSEMBLY PART NUMBER 66 000 012



1.	66 000 012 Power pack ass'y
2.	01 000 091 Resistor
3.	05 000 141 Expansion valve, 60 000 287 O-ring kit
4.	03 000 037 Coil, heat/cool, 60 000 287 O-ring kit
5.	68 000 005 Blower motor w/seal

Lengths and fittings may vary depending on the chassis.
ProAir unit serial number and model number should provide a reference point to correctly identify hose assemblies.

Section 5.0
Repair Procedures

In our ongoing effort to improve our product, we at ProAir use the valuable data we receive from our inspection of returned warranty parts. As a result, we require the return of the following warranty parts before we issue payment on the claim:

power packs

evaporator coils

heater coils

expansion valves

water valves

blower motors

resistors

relays

wiring harnesses

hose assemblies

fittings

switches

As a rule, we require the return of *all* warranty parts, with the exceptions of fuses, hose clamps, o-rings, and other small, miscellaneous components. If you feel uncertain whether to return a particular part, please contact us for additional information.

REMOVE AND REPLACE INSTRUCTIONS

POWER PACK

REMOVAL

1. Connect a refrigerant recapturing / recycling machine to the service valves and recapture the refrigerant form the system according to factory procedures.

2. Disconnect the wire harness connectors to the blower motor, resistor, and unscrew the relays.

3. Disconnect the suction hose with a 7/8" open end wrenchy on the hose fitting and a 1 1 /16" open end wrench as a backup on the coil fitting.

4. Disconnect the liquid hose with a 5/8" open end wrench on the hose fiting and a 3/4" open end wrench on the thermal expansion valve as a back up.

5. Loosen the radiator cap to relieve pressure on the system.

6. Clamp the hoses off and loosen the worm gear clamps at the heater hoses and remove the hoses.

7. Remove the screws holding the duct adapter to the case lid, and the screws holding the mounting brackets to the floor and the wall.

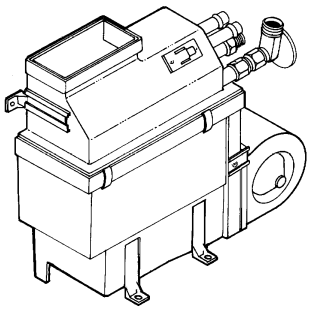
8. Remove the power pack.

REPLACEMENT

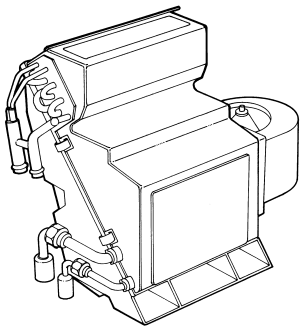
1. Reverse the above procedure.

2. When re-connecting the hoses, torque the suction hose to 20 ft/lbs and the liquid hose to 12 ft/lb and the heater hose clamps to 30 in/lbs.

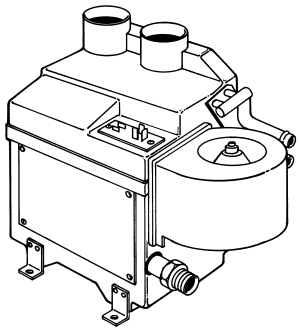
3. Be sure to put the proper amounts of Pag Oil and R134a refrigerant back into the system.



1100 SERIES POWER PACK



AirTech POWER PACK



AirTech II POWER PACK

REMOVE AND REPLACE INSTRUCTIONS

EVAPORATOR COIL

REMOVE

1. Connect a refrigerant recapturing / recycling machine to the service valves and recapture the refrigerant from the system according to factory procedures.

2. Remove the screws attaching the duct adapter to the case lid.

3. Remove the refrigerant tape around the coil fittings at the hoses.

4. Disconnect the liquid hose with 5/8" open end wrench and a 3/4" open end wrench.

5. Disconnect the suction hose with a 7/8" open end wrench on the hoses fitting a a 1 1/16" wrench on the coil fitting.

6. Loosen the worm gear clamps from the heater hoses and remove the heater hoses.

7. Remove the screw that fastens the case lid bracket to the wall.

8. Disconnect the wire harness from the resistor and unscrew the relays at the lid.

9. Remove the four spring clips attaching the lid to the case bottom.

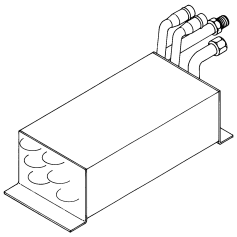
10. Remove the coil from the case bottom.

REPLACE

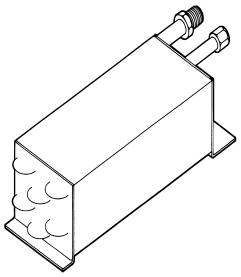
1. Reverse the above procedure.

2. Torque the suction line to 20 ft/lb. and the liquid line to 12 ft/lb.

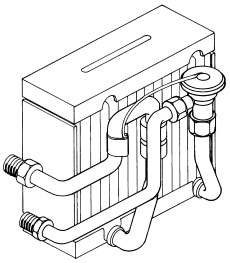
3. Recharge the system according to factory procedures with the correct amounts of Pag Oil and R134a refrigerant.



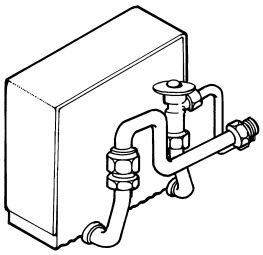
1100 COIL



MINIMAX COIL



AIRTECH COIL



AIRTECH II COIL

REMOVE AND REPLACE INSTRUCTIONS

HEAT COIL, AirTech and MiniMax

REMOVAL

1. Crimp off the heater hoses close to the power pack.

2. Loosen the worm gear clamps and pull the hoses off the coil nipples.

3. remove the two screws holding the coil plate to the case.

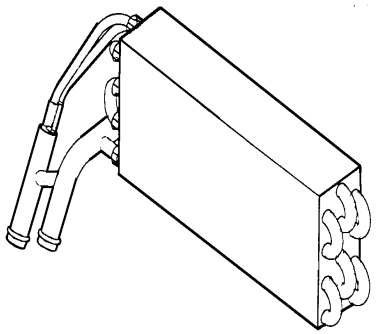
4. Pull the coil out of the case.

REPLACE

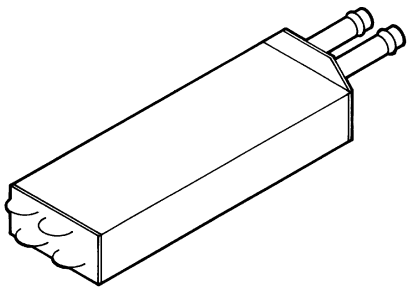
1. Reverse the above procedure.

2. Torque the worm gear clamps to 30 in/lb.

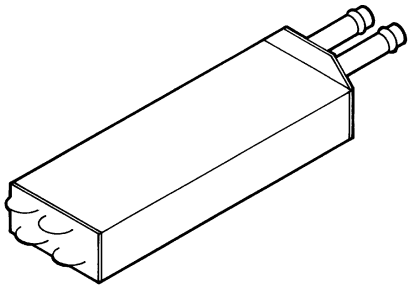
3. Check the coolant level and add if necessary.



AIRTECH HEAT COIL



MINIMAX HEAT COIL



AIRTECH II HEAT COIL

REMOVE AND REPLACE INSTRUCTIONS

BLOWER MOTOR

REMOVE

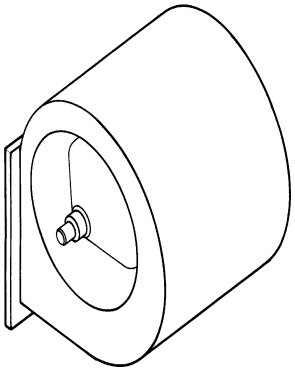
1. Disconnect the wire harness at the motor plug.

2. Remove the screw holding the motor retainer bracket to the front of the case.

3. Slide the motor out from the bottom motor retainer.

REPLACE

1. Reverse the above procedure.



RESISTOR

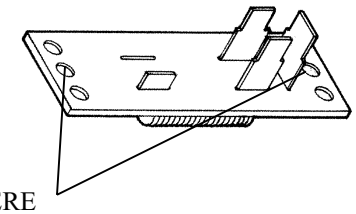
REMOVE

1. Disconnect the wire harness plug from the resistor.

2. Remove the two screws holding the resistor to the case lid.

REPLACE

1. Reverse the above procedure.



REMOVE SCREWS HERE

REMOVE AND REPLACE INSTRUCTIONS

RELAY

REMOVE

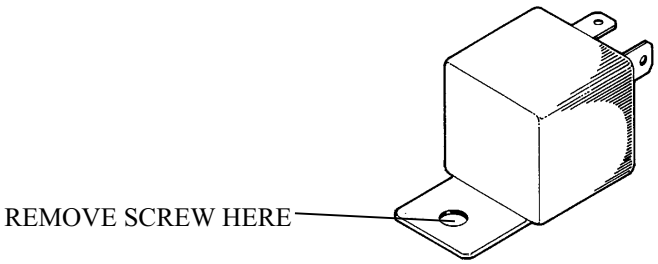
1. Disconnect the wire harness plug from the relay.

2. Remove the phillips drive screw from the relay.

3. Remove the relay.

REPLACE

1. Reverse the above procedure.



THERMAL EXPANSION VALVE

REMOVE

1. Connect a refrigerant recapturing / recycling machine to the service valves and recover the refrigerant from the system according to factory procedures.

2. Remove the refrigerant tape covering the expansion valve and coil fitting.

3. Disconnect the liquid hose from the expansion valve with a 5/8" open end wrench at the valve and a 3/4" open end wrench a the hose fitting.

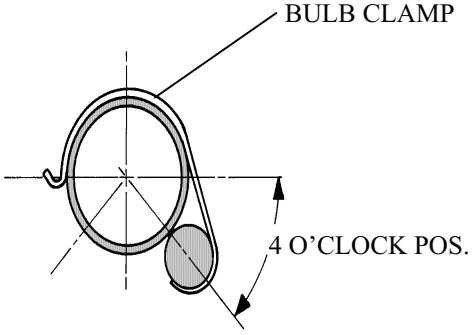
4. Remove the bulb clamp from the coil suction tube.

5. Disconnect the expansion valve from the coil with a 5/8" open end wrench and a 7/8" open end wrench.

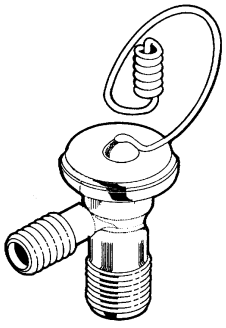
REPLACE

1. Reverse the above procedure, tighten the fittings to 12 ft/lb.

ORIENTATION OF BULB CLAMP ON THE SUCTION TUBE IS CRITICAL. PLACE BULB AT THE FOUR O'CLOCK POSITION AS SHOWN



END VIEW OF TUBE



REMOVE AND REPLACE INSTRUCTIONS

HEATER HOSE

REMOVE

1. Loosen the radiator cap to relieve pressure on the system.

2. Position a catch basin under the OEM heater hose connection point to cotain theanti-freeze.

3. Loosen the worm gear clamp at the OEM connection point and pull the end of th hose off to drain the lines.

4. Loosen or remove any linestakes.

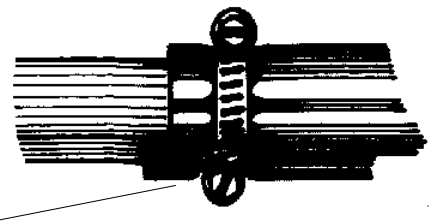
5. Loosen the worm gear clamp on the hoses at the power pack and remove the hose.

REPLACE

1. Reverse the above procedure.

2. Tighten the hose clamps to 30 in/lb.

3. Re-silicone around the heater hose at the floor grommet.



TYPICAL WORM GEAR CLAMP AT THE HEATER HOSES.

REMOVE AND REPLACE INSTRUCTIONS

REFRIGERANT HOSE

REMOVAL

1. Connect a refrigerant recycling machine to the service ports and recapture the refrigerant according to factory procedures.

2. Remove the refrigerant tape from around the hose fitting at the evaporator.

3. Mark the locations of the ty-raps, (for later replacement), and remove.

4. Loosen the screws at the linestakes.

5. Using a primary and a back up wrench, disconnect the hose at the evaporator and at the OEM connection point.

6. Remove the hose.

REPLACEMENT

1. Reverse the above procedure.

2. Suction hose fittings, (1/2"), must be torqued to 20 ft/lbs. and liquid hose fittings, (5/16"), must be torqued to 12 ft/lbs.

3. Be sure and replace all ty-raps and tighten all linestakes to prevent hoses from chafing or sagging.

ProAir
3-Year/36,000-Mile
Limited Warranty

1. ProAir warrants every AirTech®, MiniMax®, and 1100 series unit produced by ProAir and used in a van conversion to be free from defects in material and workmanship under normal use for a period of thirty-six (36) months or thirty-six thousand (36,000) miles, whichever comes first.

2. If a repair or adjustment under the warranty is required, the product should be taken to an authorized ProAir service center or, if possible, taken to the original installer. The owner's registration certificate should be presented.

3. **The repairing service center must contact ProAir by calling 219 264 5494 or 800 338 8544, asking for the customer service department and describing the type of warranty repair needed. If warranty parts are needed, ProAir reserves the right to replace them. No warranty claims will be paid without the return of defective parts to ProAir.**

4. If the ProAir service center is too far away, the customer may find a repairing facility nearby and contact ProAir. We will attempt to allow the repair facility authorization to address the concern.

5. This warranty does not cover any product which has been subject to misuse, neglect, alteration, accident, improper installation, or improper maintenance, or which has been repaired outside of an authorized ProAir service center in any way so as to affect adversely its performance or reliability. This warranty does not cover material or labor used in normal maintenance services or the replacement of service items. Normal wear of service items shall not be considered defects under this warranty. This warranty does not cover customer lost time, vehicle towing, vehicle rental, or lodging.

6. This warranty does not include consequential damages, and ProAir shall not be responsible for any such damages. ProAir does not make and does not authorize any person to make for it any warranty other than the foregoing warranty. Such other warranties, if any as may be imposed or implied by law, are limited in duration to the duration of this written warranty.

7. Some states do not allow limitations on how long an implied warranty lasts, nor do they allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply. This warranty gives specific legal rights, and other rights which vary from state to state.

8. This warranty does not cover loss of refrigerant unless the loss is a direct result of a defect covered by this warranty.

ProAir, LLC
28731 County Road 6
Elkhart, Indiana 46514
Telephone: 219 264 5494
800 338 8544
Fax: 219 264 2194

ProAir
Warranty Procedures

1. The repair facility must contact ProAir by calling **219 264 5494** or **800 338 8544**; ask for the customer service department. The following information is required: ProAir serial number and model number, vehicle serial number, mileage, retail purchase date, and retail customer's name. The installers of ProAir's air conditioning units apply an installation sticker to the passenger-side door jamb. The information on this sticker tells what model unit was installed, the unit's serial number, date of installation, and the installers' assigned numbers. This information is very helpful when requesting warranty parts or technical assistance.
2. Describe the problem or type of warranty repair needed. Our customer service specialists are trained on ProAir's units and can aid you in diagnosing the problem.
3. If parts are needed, ProAir reserves the right to supply any and all warranty parts.
4. All warranty parts are shipped on a memo (no-charge) billing and are sent the same day if possible. An authorization number accompanies the replacement parts. Also noted on the memo billing is our labor allowance for the repair; labor allowances are based on ProAir's flat-rate standards multiplied by the repair facility's standard retail labor rate. All defective parts shall be returned to ProAir; shipping charges—by the most economical method—may be added to the cost of the repair. **No warranty claims will be paid without the return of defective parts.**
5. Warranty claims submitted to ProAir must include the following: ProAir authorization number, ProAir serial number, vehicle serial number, mileage, and authorized labor amount. ProAir does not pay tax or miscellaneous shop supplies. All claims must be submitted within 180 days of the date of repair, and all parts must be returned in order to receive payment on these warranty claims.
6. ProAir reserves the right to deny any claims without the proper documentation or claims that were for improper repairs. Service management is responsible for implementing controls to eliminate improper or unnecessary repairs and providing accurate information on the claims. This includes a complete and clear description of the vehicle's concern and required repairs.

ProAir
28731 County Road 6
Elkhart, Indiana 46514
219 264 5494
800 338 8544

PROAIR LLC

TECHNICAL INFORMATION BULLETIN

NUMBER: 028	DATE: April 4, 1996

LUBRICATING O-RINGS

It is very important that all o-rings be lubricated just prior to installation. It is equally important to use the proper oil for lubricating o-rings. You must use a Mineral Oil to lubricate o-rings.

The purpose of oiling o-rings is to allow the o-ring seat properly without rolling, twisting, or pinching.

CAUTION: Never use PAG oil, (polyalkylene glycol), to lubricate o-rings. PAG oil is soluble in water, retains moisture and will cause joints to corrode and seize.

ProAir, LLC
28731 County Road 6
Elkhart, IN 46514

PROAIR LLC

TECHNICAL INFORMATION BULLETIN

NUMBER: 045

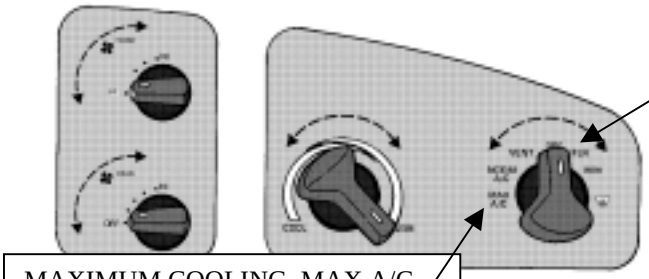
DATE: November 19, 1997

REVIEW OF PROAIR UNIT OPERATING INSTRUCTIONS

1. Rear auxiliary air conditioning will function with the dash mode control positioned in the **"Max A/C" or "NORM"** location.
(These are the settings where maximum cooling will be achieved from the rear unit).

2. Rear auxiliary heating will function to its **maximum potential** with the dash **mode control** positioned in the **"FLOOR" or "HEAT"** location.
(FLOOR or HEAT refers to vehicles OEM mode selector, not the temperature control. This is the setting where maximum heating will be achieved).

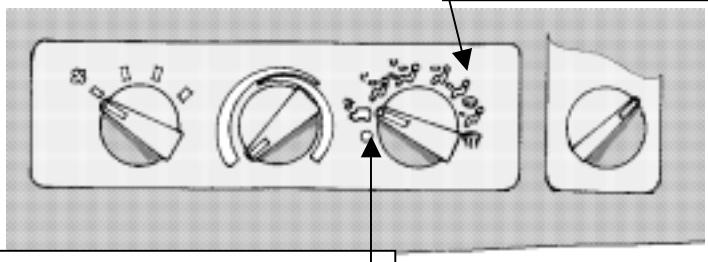
1998 FORD CLIMATE CONTROLS



MAXIMUM HEAT, FLOOR MODE

MAXIMUM COOLING, MAX A/C

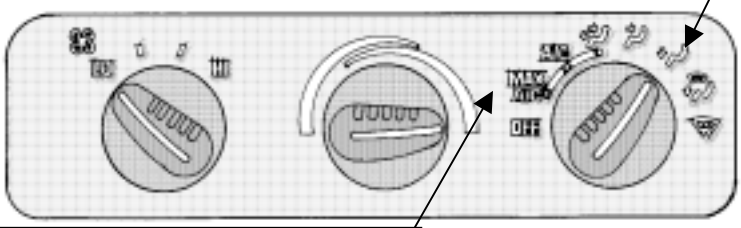
1998 DODGE CLIMATE CONTROLS



HEAT FLOOR MODE

MAXIMUM COOLING, IN RECIRC

MAXIMUM HEAT, FLOOR MODE



1998 GM CLIMATE CONTROLS, GMT, M & L VANS.

MAXIMUM COOLING, MAX A/C

ProAir, LLC
28731 County Road 6
Elkhart, IN 46514

PROAIR LLC

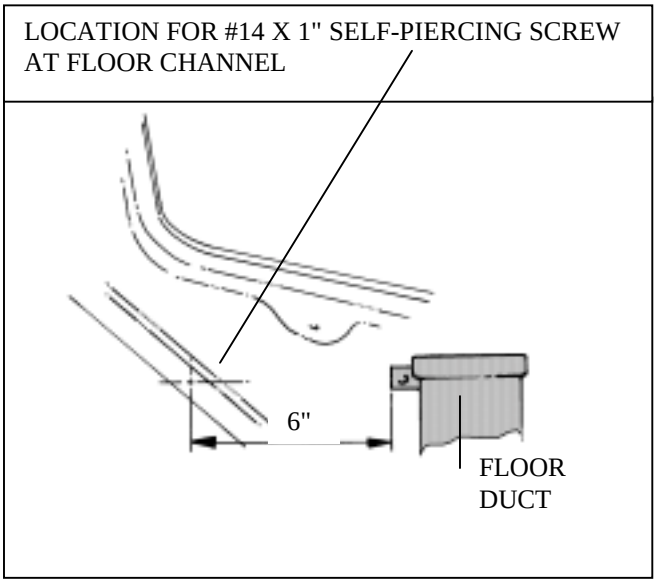
TECHNICAL INFORMATION BULLETIN

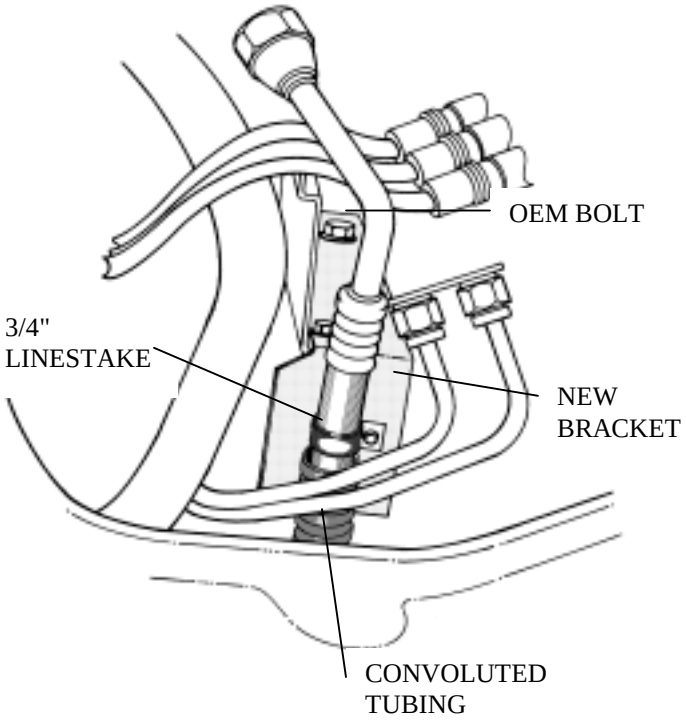
NUMBER: 059

DATE: November 3, 1998

98/99 ASTRO/SAFARI SUCTION HOSE ROUTING

The suction hose assembly for 98/99 Astro/Safari has been re-configured to improve the installation. Included in the new kit are a new bracket, and fasteners for securing the hose. Installation techniques must be altered slightly from prior methods. The first step is to remove the center console/engine cover. Remove and retain the screw covers. Remove the Torx screws and the 13mm nuts at the bottom brackets and the 15mm nuts at the top. Remove the engine cover and set it aside. Push the transfer case vent hose towards the center of the van as far as possible (all wheel drive vans only). Remove the bolt at the rear corner, drivers side of the intake manifold which holds the bracket for plug wires. Position the bracket as shown and re-insert the bolt. Screw the rear corner of the new bracket down to the existing OEM bracket with a self tapping screw at the pilot hole. Route the hose up from below, in front of the paired fuel lines by the new bracket. Remove the protective caps and lubricate the fitting and start threading it on the OEM fitting. Put a 3/4" linestake on the hose and screw it to the new bracket as shown with a #10 x 3/8" hex screw. Install a 10" piece of 3/4" convoluted tubing on the hose just below the linestake as shown. Pull back the floor insulation, locate and mark a spot on the floor, 6" from the floor duct directly towards the driver side. Run a #14 x 1" self-piercing screw down through the floor here. Below the floor, put a 3/4" linestake on the hose and secure it to this screw with the nut provided. When securing the hose it must be pulled reasonable tight when being clamped in place. Do not allow the hose to sag or droop or come in contact with any sharp, hot or moving components. The third linestake secures the hose to the cross member at the rear of the transmission. Finish assembly by torquing the Aeroquip fitting to 40 ft/lb while using a backup wrench.





ProAir, LLC
28731 County Road 6
Elkhart, IN 46514

PROAIR LLC

TECHNICAL INFORMATION BULLETIN

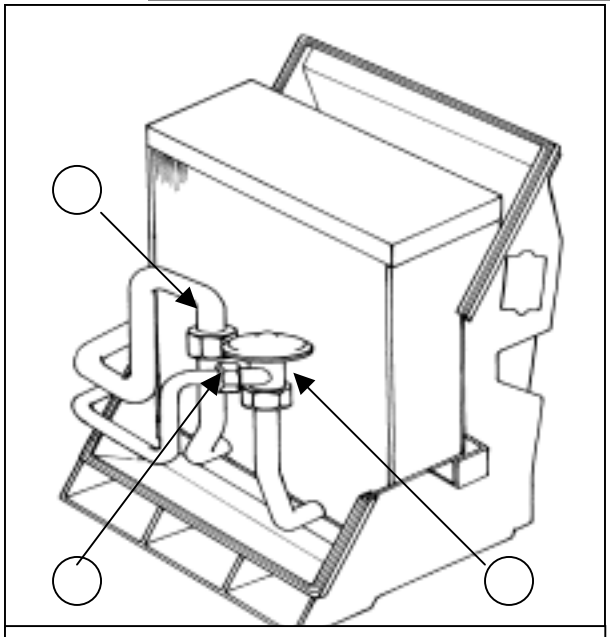
NUMBER: 063

DATE: February 11, 2000

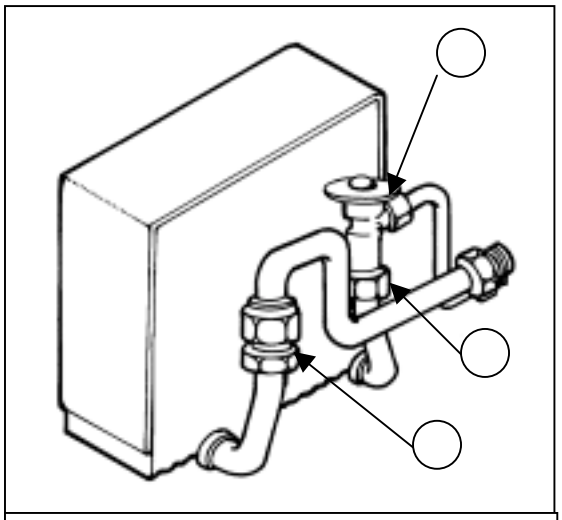
AirTech , Evaporator Coil

ProAir has received back many AirTech cores that had no refrigerant leaks, even though each had been diagnosed by the repair facility as leaking. Therefore, if you encounter this same concern, or one similar to it, you may find it helpful to look first at the following areas: Check all fittings for leaks. Look for loose connections, leaking o-rings, leaking expansion valve, and poor crimps from the hose fittings. Also check hoses for leaks, cuts, damage, etc.

Illustrated below is an evaporator coil for an AirTech power pack. The arrows indicate the three joints which should be carefully checked for leaks before ordering a new coil from ProAir.



AirTech sub-assembly



AirTech II sub-assembly

ProAir, LLC
28731 County Road 6
Elkhart, IN 46514

PROAIR LLC

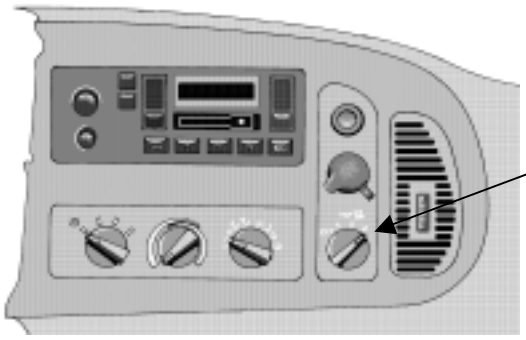
TECHNICAL INFORMATION BULLETIN

NUMBER: 066

DATE: April 20, 2000

REVIEW OF VACUUM LINE AND WATER VALVE HOOK-UP ON DODGE CHASSIS

Rear auxiliary heating will function to its maximum potential with the dash mode control positioned in the "FLOOR" or HEAT" location. (FLOOR or HEAT refers to OEM mode selector, not the temperature control. This is the setting where maximum heating will be achieved).

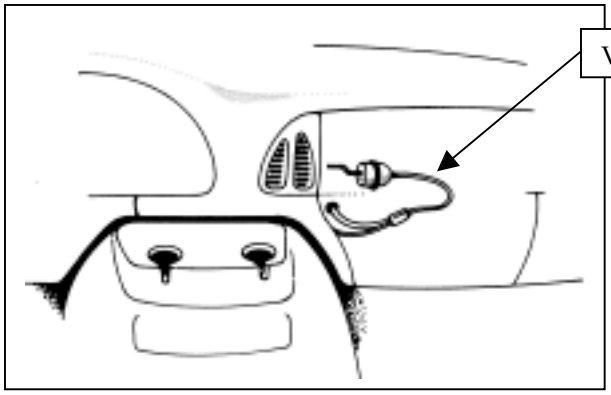


OEM SWITCH LOCATION AT THE DASH.

ProAir installs a second water valve to control the flow of coolant to the rear unit independently of the front. This is a normally open water valve, opposite of the factory water valve.

OEM WATER LINE CONNECTIONS LOCATED BEHIND THE SUCTION CONNECTION.

ProAir routes the vacuum line from the ProAir water valve through the firewall, just to the right of the OEM dash unit to a brown line. If the vacuum source were run in conjunction with the OEM valve, the rear air conditioning would be compromised. Specifically, if the customer changed the temperature control-in the slightest-off cold, then the ProAir water valve would open and hot water would start flowing to the rear unit.



VACUUM LINE CONNECTION

ProAir, LLC
28731 County Road 6
Elkhart, IN 46514

PROAIR LLC

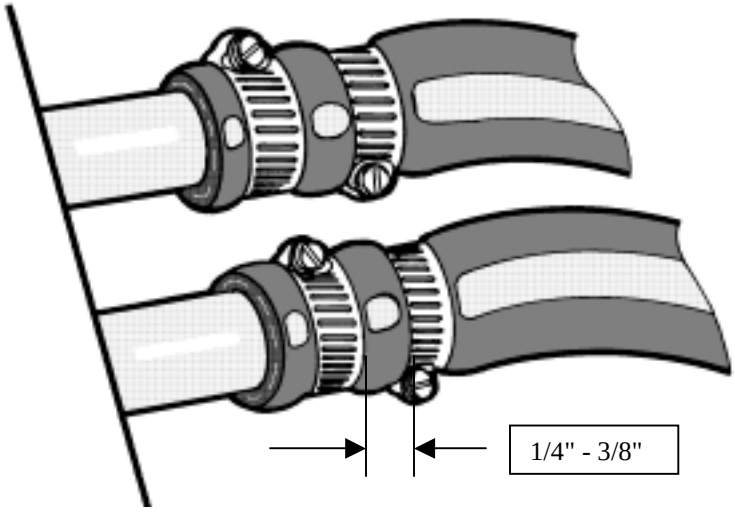
TECHNICAL INFORMATION BULLETIN

NUMBER: 067

DATE: April 26, 2000

HOSE CLAMPS - GM VANS W/YF7 - WATER LINE CONNECTIONS

There is a slight tendency for coolant leakage at the joint where the auxiliary hoses attach to the OEM aluminum lines. To ensure a completely sealed connection, two worm gear clamps on each hose will be used. The positioning of the clamps and the tightening screw are critical. The tightening screws must be positioned 180° from each other and facing in the same direction, as shown in the illustration below. Tighten the worm gear screws to 30 in/lb of torque. The hoses from the rear auxiliary unit should be pushed onto the OEM aluminum lines a minimum of 2 1/2". To achieve maximum sealing, place the clamps 1/4" to 3/8" apart.



ProAir, LLC
28731 County Road 6
Elkhart, IN 46514