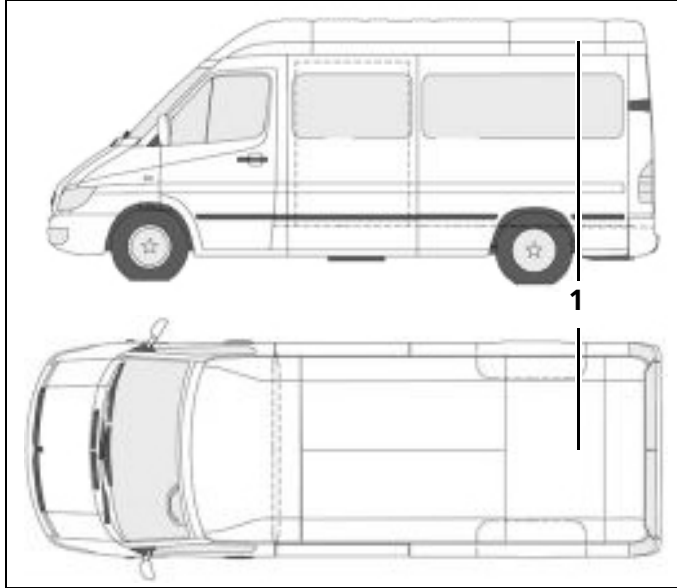


Sprinter *Moscow*

Extreme Climate - Roof-Top Condenser



Feel the Drive



Sprinter

2013 - 2018 3.0 Liter

170" wheelbase - High Roof - Extended Chassis
For kit number 5012275

Special instructions for these models

Part locations may differ slightly dependent on the vehicle-specific configuration.

Legend

1 Moscow VAC unit Assembly

Special Tools

- Hose-clamping pliers
- Hole saw kit
- Refrigerant recovery and recharging machine



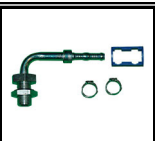
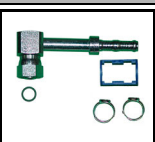
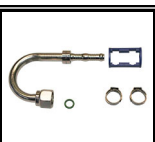
- Installation and repair of Webasto heating and cooling systems requires special Webasto training, technical information, special tools and special equipment.
- NEVER attempt to install or repair Webasto heating or cooling system unless you have the proper certifications, technical skills, tools, and equipment required to properly complete the necessary procedures.
- ALWAYS carefully follow Webasto installation and repair instructions and heed all WARNINGS.
- Webasto rejects any liability for problems and damage caused by the system being installed by untrained personnel.

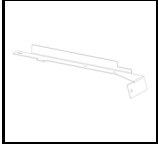


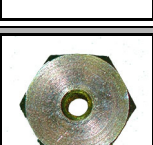
WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

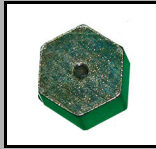
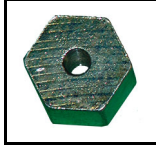
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Item Number	Description	Quantity	
1	AC Int Moscow 12V Black 13.4 kW	1	
2	FITTING REFRIGERANT 90 -6CONN -6HOSE	1	
3	BC-AC-90FIT-10TUBE-O-12HOSE	1	
4	SPLICER IN LINE -12HOSE WITH PORT	1	
5	FITTING REFRIGERANT 90 -06THD -06HOSE	1	
6	FITTING REFRIGERANT 90 -08THD -08HOSE	1	
7	FITTING REFRIGERANT -06MTHD -06H ORING	1	
8	FITTING REFRIGERANT -08MTHD -08H ORING	1	
9	FITTING REFRIGERANT LP 90 -08THD -08H	1	
10	FITTING REFRIGERANT 180 -06THD -06HOSE	1	

11	BRACKET HVAC SPRINTER EXT LH	1	
12	BRACKET HVAC SPRINTER EXT RH	1	
13	MANUAL INSTALL MOSCOW SPRINTER 3.0L RMC	1	
14	Cable tie 11 inch black	25	
15	WARRANTY STATEMENT AC	1	
16	HOSE DRAIN ID 0.4375 INCH	25 feet	
17	REFRIGERANT HOSE BURGAFLEX H-12-3090-R	34 feet	
18	REFRIGERANT HOSE BURGAFLEX H-06-3090-R	8 feet	
19	REFRIGERANT HOSE BURGAFLEX H-08-3090-R	36 feet	
20	INSULATION HOSE ID 0.875IN X 6FT LONG	1	
21	CONTROL HEAD ASSY AC ONLY SPRINTER	1	

22	Elec.vent Rooftop Condenser HTC Valencia	1	
23	BC-AC-90FIT-10THD-12HOSE-WPORT	1	
24	HARNESS MOSCOW SPRINTER FC RM NPV EXU	1	
25	BC-AC-90FIT-08THD-08HOSE-WPORT	1	
26	SLEEVING HEAT PROT w RTV COATING 1IN ID	2 feet	
27	Pressure Switch 3 Level Siceb Conn Intgr	1	
28	LOW PRESSURE SWITCH	1	
29	RACCORDO SCARICO COND.D.12 A T OE	1	
30	ANTI COND TAPE M9ROL OE	1 meter	
31	LABEL REFRIGERANT CHARGE R134a 3.2LBS	1	
32	SPACER HEX-CONDENSER	4	

33	SCREW PAN T20 M4.2-1.4 STx19 TYPE-AB SS	4	
34	SCREW SELF DIRLLING 0.25 X 1 INCH	11	
35	NUT HEX M6-1.0 6H SS A2-70	4	
36	WASHER FENDER M6 X 22 X 2 ZP	4	
37	NUT KEP M5-0.8 6H ZP	8	
38	SPACER HEX CONDENSER H20-M5	2	
39	SPACER HEX CONDENSER H20-M8	2	
40	SCREW HEX HEAD M5X45 ISO 4017 ZN 8.8	2	
41	SCREW HEX HEAD M8X45 ISO 4017 ZN 8.8	2	
42	SCHEIBE DIN125-B5,3-ST-A3G	6	
43	WASHER FLAT 0.3125 x 0.75 x 0.062 ZP	7	

44	NUT KEP M8-1.25 6H ZP	3	
45	RIVET NUT HEAVY DUTY ALUM M8 X 1.25	4	
46	BOLT HEX M8-1.25 6G x 25 8.8 ZP DIN933	4	
47	BAG COMPRESSOR CLUTCH CONNECTOR	1	
48	P-CLIP W_RUBBER 45_12.7 GAL	7	
49	GROMMET RUBBER 1.5ID 0.125GW 1.75GD	1	
50	TUBE CLAMP D_b_d	4	
51	Screw Washer Assy M5	4	
52	PRESSURE SWITCHC - 3 LEVEL	1	

Introduction

1.0 General Service and Safety Precautions

WARNING

Never service, repair, or troubleshoot this system unless you are a professional air conditioning/refrigeration service person. Improper servicing can lead to serious injury or death from fire, electric shock, or explosion.

Refrigeration and air conditioning devices are extremely complicated by nature. Servicing, repairing, and troubleshooting these products should be done only by those with the necessary knowledge, training, and equipment.

1.1 Refrigerants and Other Chemicals

Contact with refrigerant, mixtures of refrigerant and oil, or other chemicals can cause a variety of injuries including burns and frostbite. For example, if refrigerant contacts skin or eyes it can cause severe frostbite. Also, in the event of a compressor motor failure, some refrigerant and oil mixtures can be acidic and cause chemical burns.

To avoid injury, wear appropriate protective eye wear, gloves, and clothing when servicing an air conditioning or refrigeration system. Refer to your refrigerant supplier for more information.

If refrigerant or mixtures of refrigerant and oil come in contact with skin or eyes, flush the exposed area with water and get medical attention immediately.

1.2 System Flushing, Purging, and Pressure Testing for Leaks

Failure to properly flush, purge, or pressure test a system for leaks can result in serious injury or death from explosion, fire or contact with acid-saturated refrigerant or oil mists.

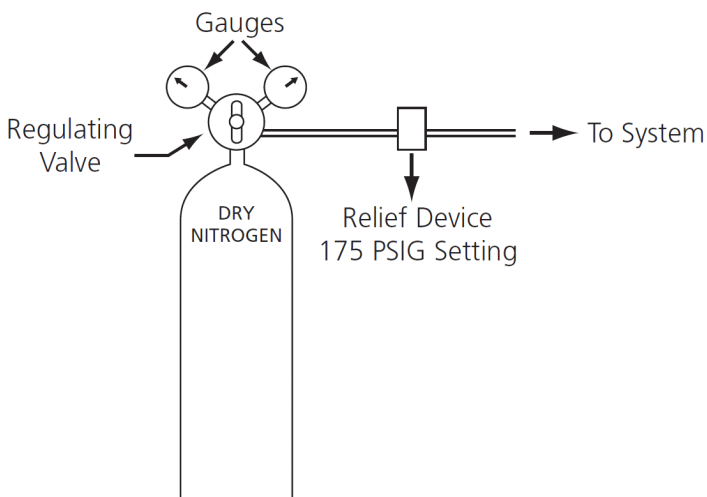
Webasto recommends that the system be serviced using a flush and purge station such as a Robinair® unit or similar equipment designed for R134a refrigerant systems.

Follow these precautions when flushing/purging a system or pressure testing a system for leaks:

- Use flushing products according to the manufacturer's instructions.
- To purge a system, use only dry nitrogen.
- When pressure testing for leaks, use only
 - regulated dry nitrogen or dry nitrogen plus trace amounts of the serial label refrigerant, in this case, R134a.
- When purging or pressure testing any refrigeration or air conditioning system for leaks, never use air, oxygen or acetylene.
- Oxygen can explode on contact with oil.
- Acetylene can decompose and explode when exposed to pressures greater than approximately 15 PSIG.
- Combining an oxidizing gas, such as oxygen or air, with an HCFC or HFC refrigerant under pressure can result in a fire or explosion.
- Use a pressure regulating valve and pressure gauges.

Commercial cylinders of nitrogen contain pressures in excess of 2000 PSIG at 70°F. At pressures much lower than 2000 PSIG, compressors can explode and cause serious injury or death. To avoid over pressurizing the system, always use a pressure regulating valve on the nitrogen cylinder discharge. The pressure regulator must be able to reduce the pressure down to 1 or 2 PSIG and maintain this pressure. The regulating valve must be equipped with two pressure gauges:

- one gauge to measure cylinder pressure, and
- one gauge to measure discharge or down-stream pressure.



In addition to a pressure regulating valve and gauges, always install a pressure relief valve. This can also be a frangible disc type pressure relief device. This device should have a discharge port of at least 1/2" MPT size. The valve or frangible disc device must be set to release at 175 PSIG.

- Do not pressurize the system beyond 150 PSIG field leak test pressure. When field testing a system for leaks, 150 PSIG is adequate test pressure.
- Disconnect nitrogen cylinder and evacuate the system before connecting the refrigerant container. Disconnect the nitrogen cylinder and release the pressure in the system before connecting a refrigerant container to the system. The higher pressure gas in the system can explode the refrigerant container.

1.3 Scope

These non-binding installation instructions are intended to support trained or certified dealers, and personnel in the installation of the Webasto London-series HVAC unit. Provided these instructions are followed properly and all options listed in the parts breakdown are installed, this system will provide supplemental heating and cooling.

1.4 Applicability of Manual

These non-binding installation instructions apply to the make/model listed on the front cover of this installation manual. Due to optional equipment, there may be build variations between this installation manual and the vehicle you are working on. Technical modifications that differ from the instructions set forth exclude all liability claims. Acknowledged engineering conventions must be observed for the installation work. Carefully read all documentation prior to installation.

CAUTION

Location of the Webasto provided components, wiring and control devices are important for proper operation. Failure to comply with the installation instructions provided may result in poor operation or damage to the Webasto unit, the vehicle, or vehicle components.

Non-compliance with the installation instructions and information contained therein will void the warranty. The same applies for repairs performed by untrained personnel and repairs not using original equipment spare parts.

1.5 Meaning of Warnings, Cautions and Notes

WARNING:

This heading is used to highlight that non-compliance with instructions or procedures may cause injuries or lethal accidents to personnel.

CAUTION:

This heading is used to highlight that non-compliance with instructions or procedures may cause damage to equipment.

NOTE:

This heading is used to highlight and draw specific attention to information.

1.6 Safety

All relevant state and provincial regulations, if any, governing the installation of this device must be observed! The general safety regulations for the prevention of accidents and the relevant operating safety instructions must be observed at all times.

1.7 Legal Provisions for Installation

EPA regulations stipulate that all vehicles requiring the removal of refrigerants be serviced by a certified technician under section 609 of the Clean Air Act and that all refrigerant be reclaimed and recycled.

Vehicle operation must not be impaired due to any Webasto installed components. All power circuits must be fused with an appropriate fuse or circuit breaker.

1.8 Prohibition on Venting

Section 609 of the Clean Air Act prohibits individuals from intentionally venting ozone-depleting substances used as refrigerants (generally CFCs and HCFCs), and their substitutes (such as HFCs) into the atmosphere while maintaining, servicing, repairing, or disposing of air-conditioning or refrigeration equipment.

General References

- Bare body parts, around drilled holes for example, must be treated with an anti-corrosive coating.
- Secure hoses, cables and wiring harnesses with cable ties and fit protective hoses around them at chafing points.
- Fit edge protectors (grommet, split-loom, etc.) to sharp edges.

Vehicle Prep

1. Disconnect the negative battery cable.

WARNING: Review and adhere to all manufacturer's recommendations and specifications when mounting this unit or any components to the vehicle structure.

2. Remove the following components, refer to manufacturer's instructions as needed:
 - Driver's side step-well trim panel
 - Driver's side b-pillar trim panel
 - Headliner
 - Driver's seat
 - Unbolt driver's seat base
3. Install the auxiliary A/C compressor. Refer to the manufacturer's information.
4. If necessary, cut the connector end off of the A/C compressor. Attach the connector that is packaged with the wiring harness (47).

Moscow Kit Prep

Parts required for the Moscow kit prep:

Item Number	Description	Quantity
22	Condenser	1
32	Spacer hex-condenser	4
35	M6 hex nut	4
36	M6 washer	4
10	Fitting refrigerant 180°	1
18	Refrigerant hose #6	As needed
9	Fitting refrigerant LP 90°	1
19	Refrigerant hose #8	As needed
11	Bracket HVAC Sprinter LH	1
12	Bracket HVAC Sprinter RH	1
1	Moscow Assembly	1
38	Spacer hex condenser M5	2
40	Screw hex head M5	2
37	Nut M5	2
39	Spacer hex condenser m8	2
41	Screw hex head M8	2
44	nut M8	2

If you are unfamiliar with crimping A/C fittings, refer to the steps on the next 2 pages.

A/C Hose Crimping

NOTE: The proper method for crimping A/C hoses is outlined below. Refer to these steps if you are unfamiliar with making A/C hoses.



A. Using blade-type hose cutters, cut the hose in one cut. The cut edge must be clean and flush.

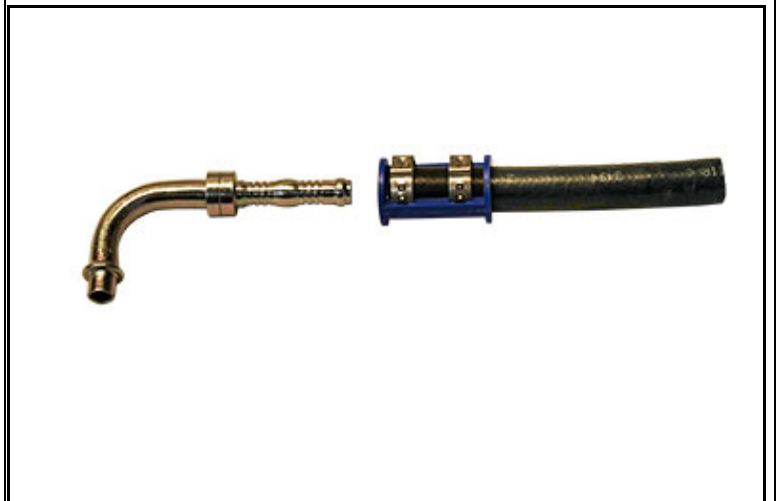


B. Place two properly-sized clips in the clip holder. The clips should both be facing the same direction for ease of assembly.



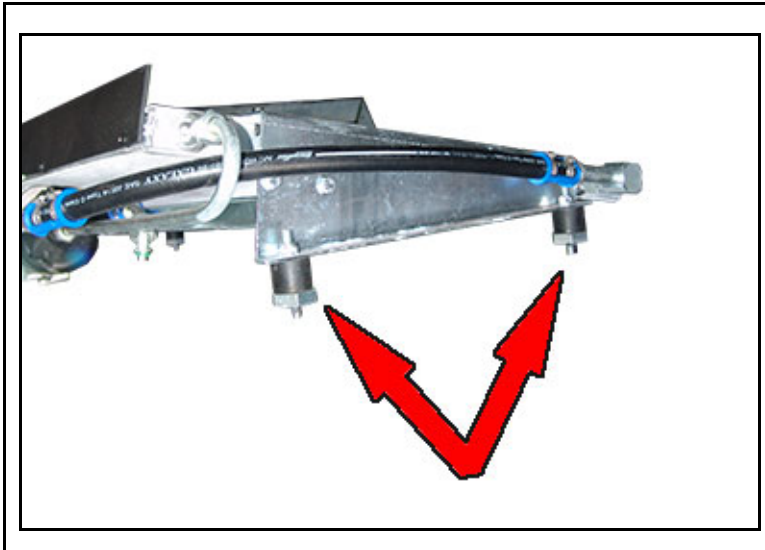
C. Slide the hose in the clip holder until the cut edge of the hose is against the small opening in the clip holder.

D. Lubricate the fitting with PAG oil and insert the fitting until the shoulder of the fitting is touching the clip holder.

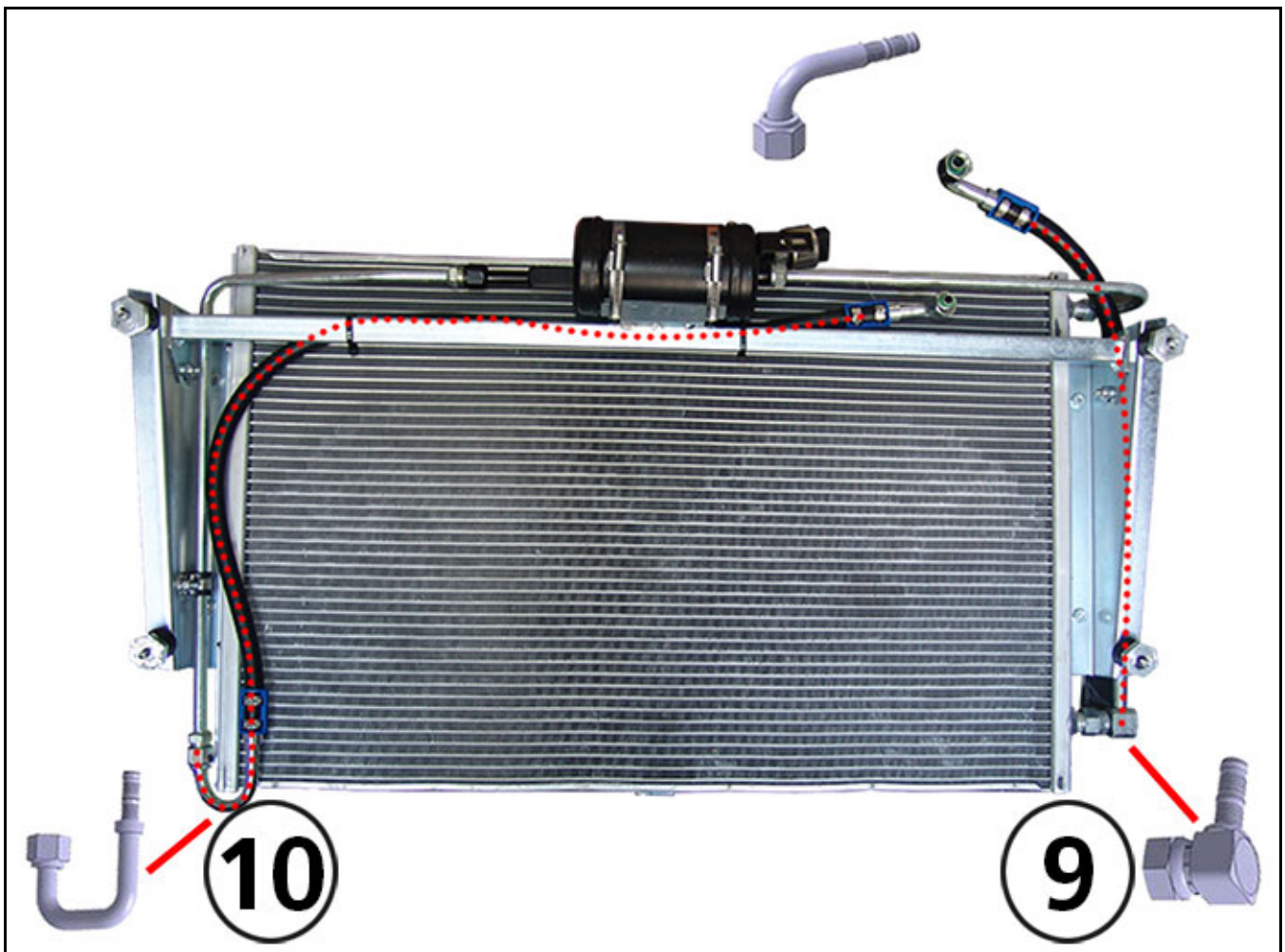


E. Using Oetiker pliers, crimp the clips closed.



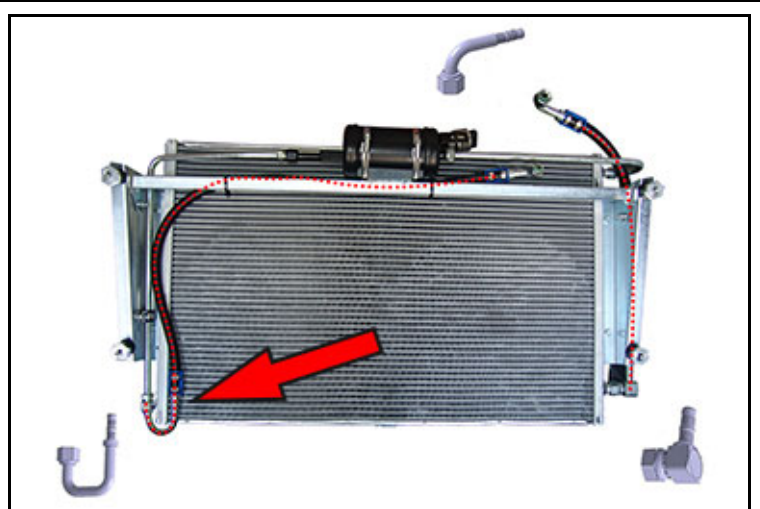


5. Install the four spacers (32) on the condenser (22) assembly using 4 M6 nuts (35) and washers (36).

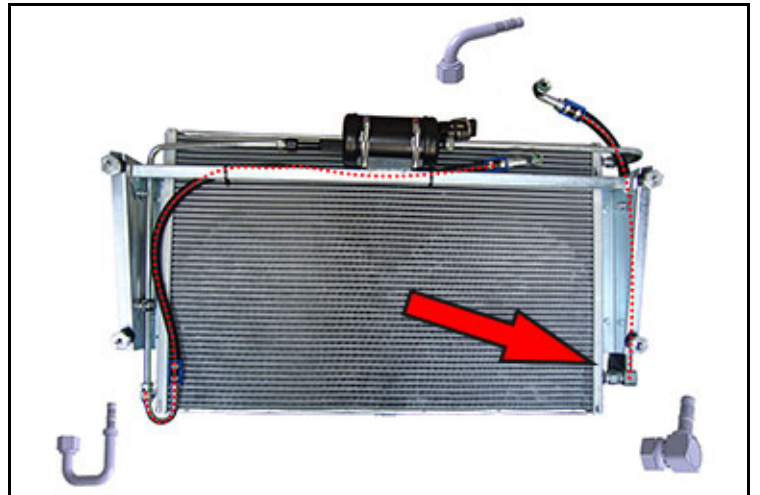


NOTE: Refer to the image on the previous page for more details for the next two steps.

6. Using the #6 180 degree fitting (10), crimp a short length of #6 hose (18) to the condenser. The hose should be long enough to reach the front-middle of the condenser.



7. Using the #8 90 degree fitting (9), crimp a short length of #8 hose (19) to the condenser. The hose should be long enough to reach the front-middle of the condenser.



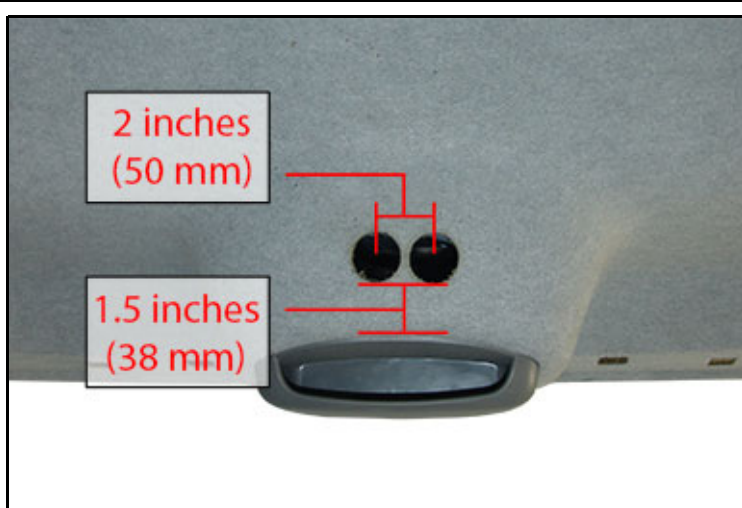
8. Install the spacers and brackets (11, 12) on the Moscow unit (1); M5 spacers (38), bolts (40), nuts (37) (front), and M8 spacers (39), bolts (41), and nuts (44) (rear).
9. Install the pressure switch (52) in the receiver/dryer.



Kit Installation

Parts required for kit installation:

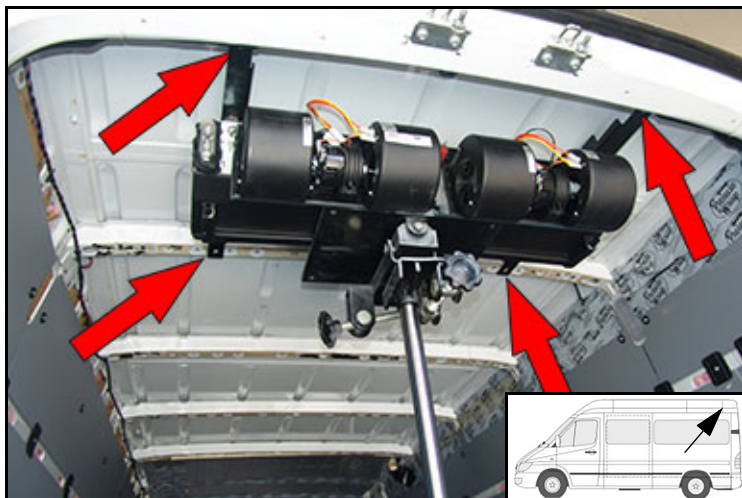
Item Number	Description	Quantity
45	Rivet nut M8 X 1.25	4
46	Bolt Hex M8	4



NOTE: For this installation the control head was mounted in the headliner. The control head can be mounted in any accessible location.

NOTE: When cutting the hole for the control head, be sure the area behind the location is clear of obstructions before cutting the hole.

10. Drill two 1.75 inch (45 mm) holes in the headliner as indicated.



11. Using an assistant or a transmission jack, hold the Moscow assembly in place. Mark the four mounting locations.

12. Drill a 1/2 in. (13mm) hole in each location.
Install the four M8 threaded inserts (45).



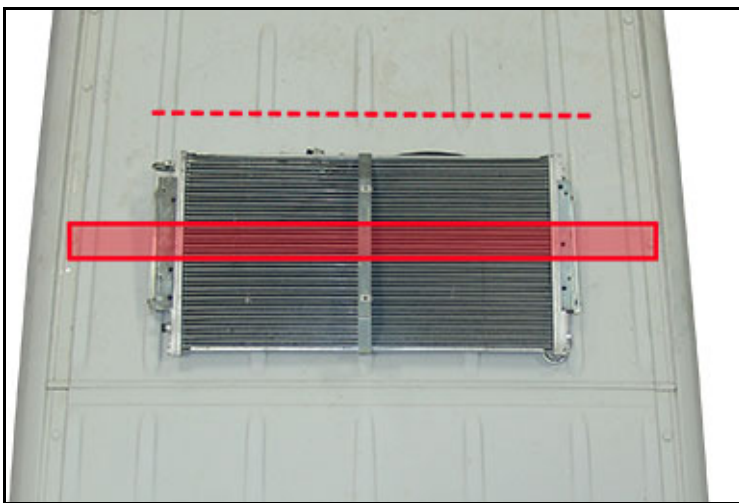
13. Bolt the evaporator in place using four M8 bolts (46) and washers (43).



NOTE: The condenser location shown is an example only.

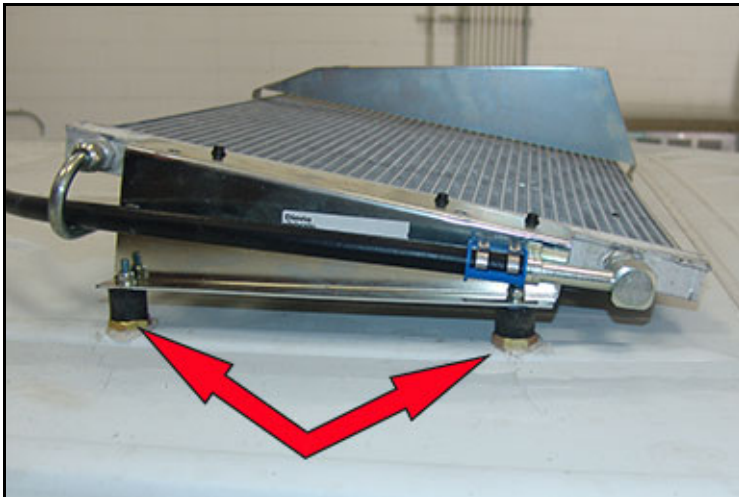
14. Find and mark the centerline of the roof and the condenser assembly.





NOTE: Be sure that the condenser mounting points are on top of the ribs, evenly spaced.
NOTE: Be sure to avoid and of the roof stiffeners [red bar] while determining the mounting points.

15. Place the condenser assembly on the roof.
The front of the condenser cover should land in the flat area between sets of ribs (red dotted line). Drill a 7 mm hole at each mounting stud location.



16. Apply sealant at each of the mounting locations and attach the condenser using the four provided nuts.

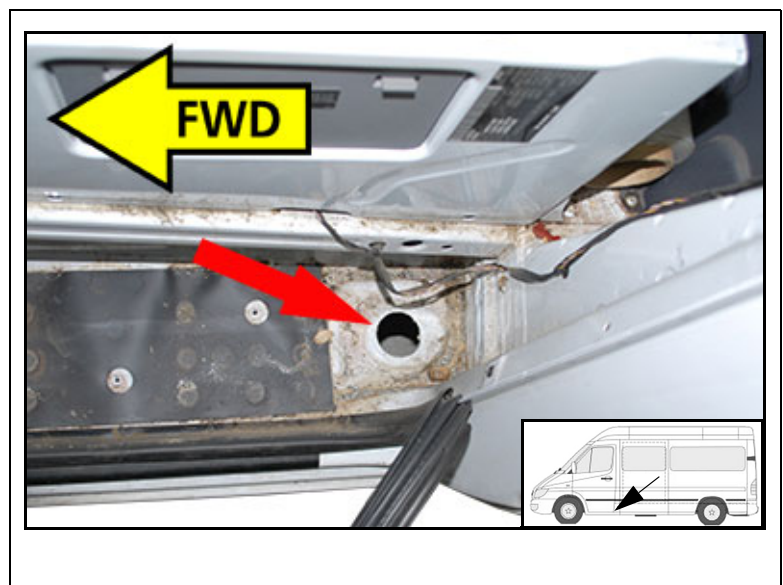
Hose Installation

Parts required for kit installation:

Item Number	Description	Quantity
7	Fitting refrigerant -06MTHD ORING	1
8	Fitting refrigerant -08MTHD ORING	1
2	Fitting refrigerant #6 90°	1
18	Refrigerant hose #6	As needed
19	Refrigerant hose #8	As needed
3	Fitting refrigerant #12 90°	1
4	Splicer in line -12 hose with port	1
28	Low pressure switch	1
17	Refrigerant hose #12	As needed
49	Grommet rubber	1
26	Sleeving heat protect	As needed
23	BC-AC-90FIT	1
25	BC-AC-90FIT	1
5	Fitting refrigerant #6 90°	1
6	Fitting refrigerant #8 90°	1

NOTE: Exercise caution when working around impact sensors.

17. Remove the foam block behind the b-pillar trim panel (if equipped) and drill a 1.75 in (45 mm) hole in the rear of the step-well area. Protect the bare metal edge and install the rubber grommet (49).



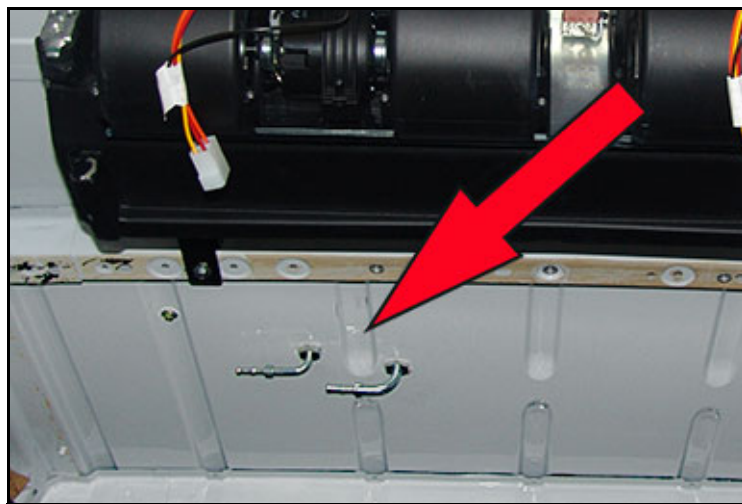


NOTE: Use the outline of the condenser cover as a template to ensure that the A/C fittings and the harness pass-through will be under the condenser cover.

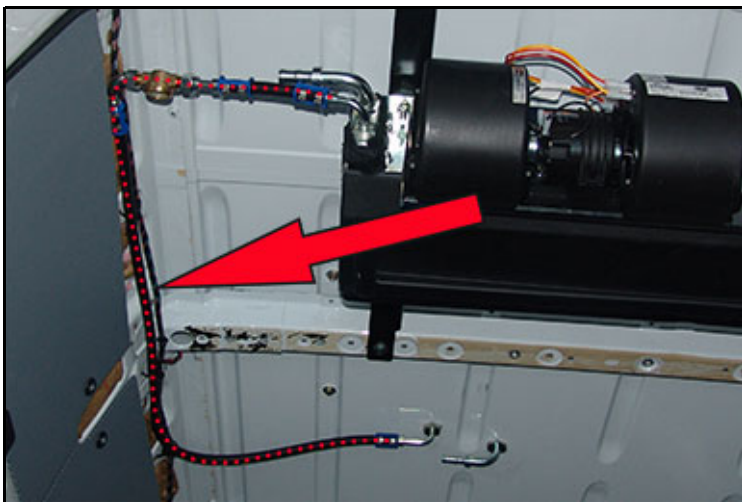
18. Determine the location of the two bulkhead fittings and the wiring harness pass-through.

Drill the holes:

- #8 fitting - 3/4 in (19 mm)
- #6 fitting - 5/8 in (16mm)
- Wiring grommet - 3/4 in (19mm)



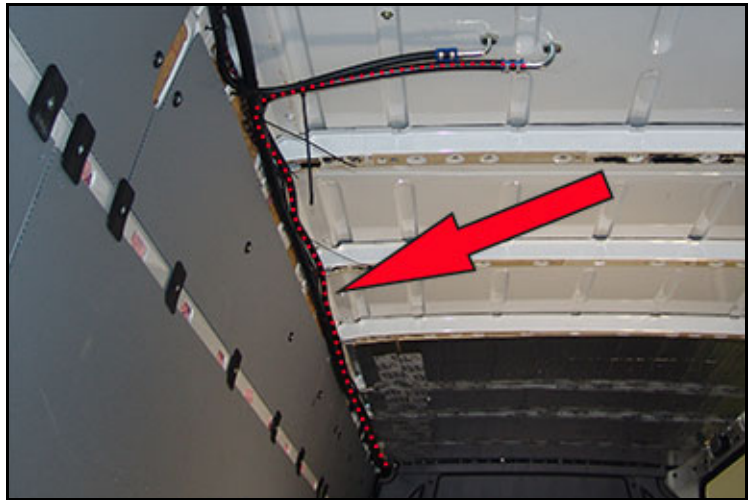
19. Install the bulkhead fittings (7, 8) from the inside of the vehicle. Use sealant to seal the top and bottom of the bulkhead fittings.



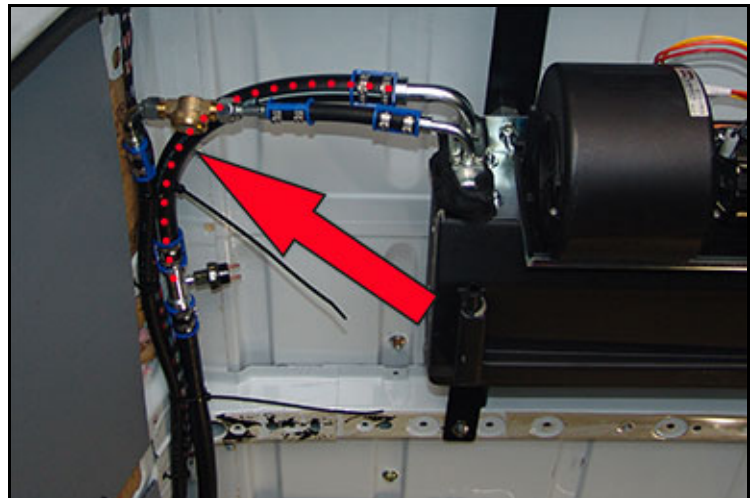
NOTE: Some equipment/parts shown in this manual are non-production components.

20. Using a #6 90° fitting (2) and #6 hose (18), connect the bulkhead fitting to the Moscow assembly. Install the TXV plate loosely at this time.

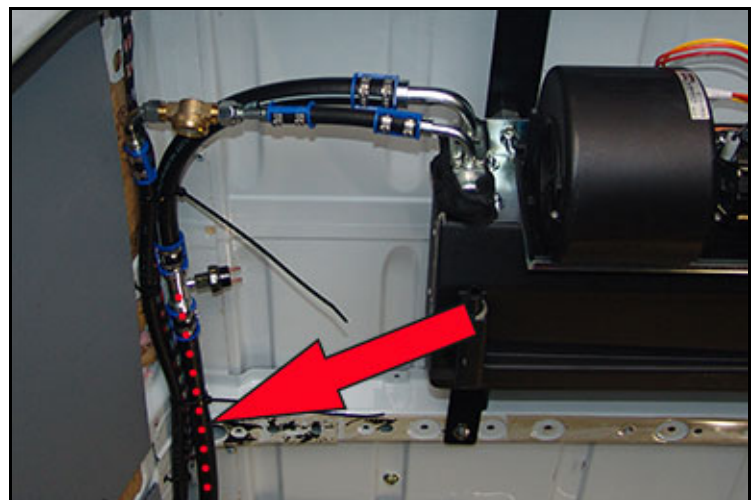
21. Connect #8 hose (19), connect the hose to the bulkhead fitting. Route the hose along the roof line and down the b-pillar.



22. Using a #12 90° fitting (3), the splicer (4), the low-pressure switch (28), and a short length of #12 hose (17), make a low-pressure switch hose. Connect this hose to the Moscow unit. Tighten the TXV plate at this time.



23. Crimp the rest of the #12 hose to the low-pressure fitting. Route the hose along the roof-line and down the b-pillar.





24. Rout the hoses through the hole in the floor and to the A/C compressor, protect the hoses from heat as necessary.

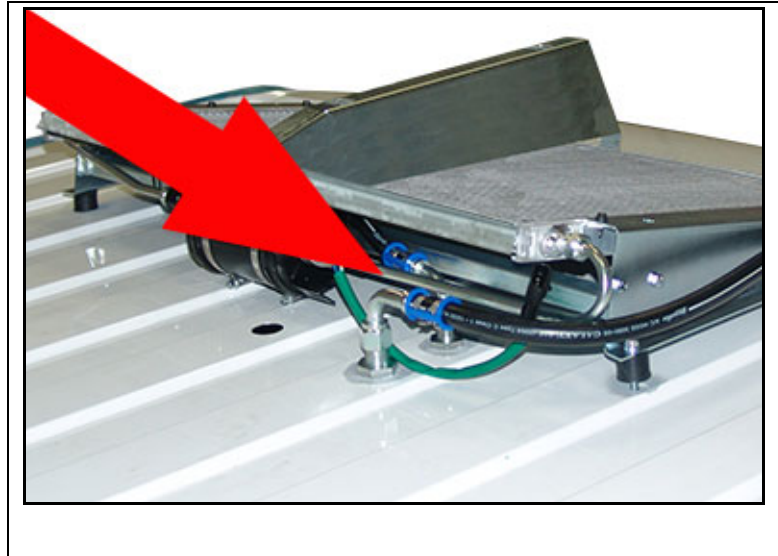


25. Install the heat-shield sleeve (26) to protect the A/C hoses from engine heat.



26. Using the service fittings (23, 25) connect the A/C hoses to the compressor manifold.

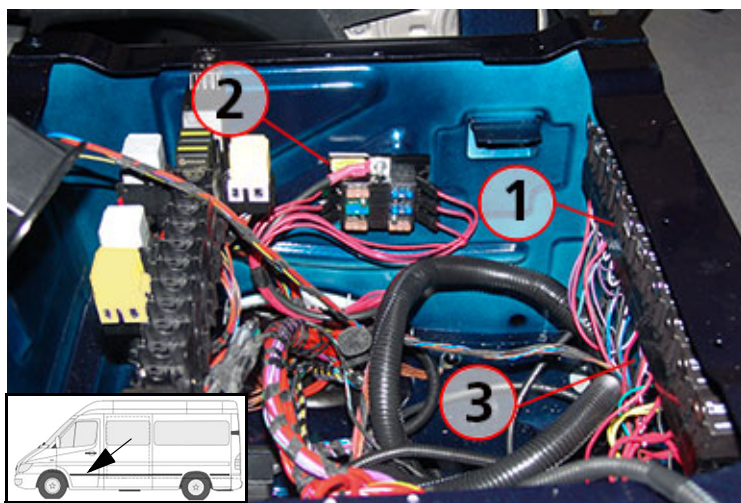
27. Using the #6 and #8 90° fittings (5,6), connect the condenser hoses to the bulkhead fittings.



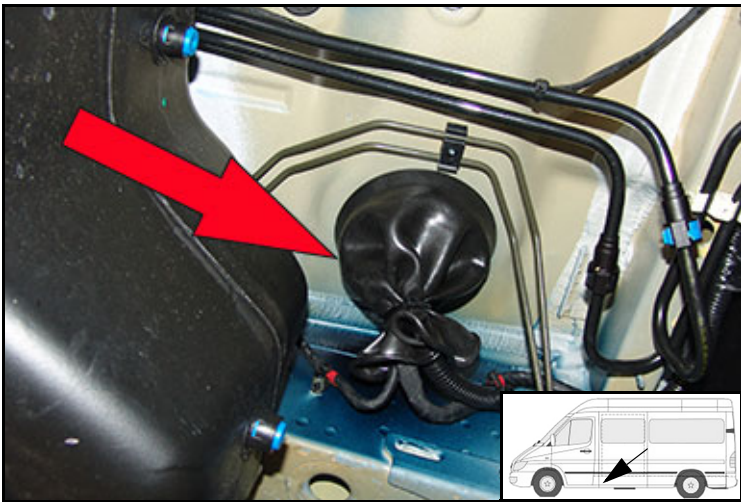
Electrical Connections

Required parts for electrical connections:

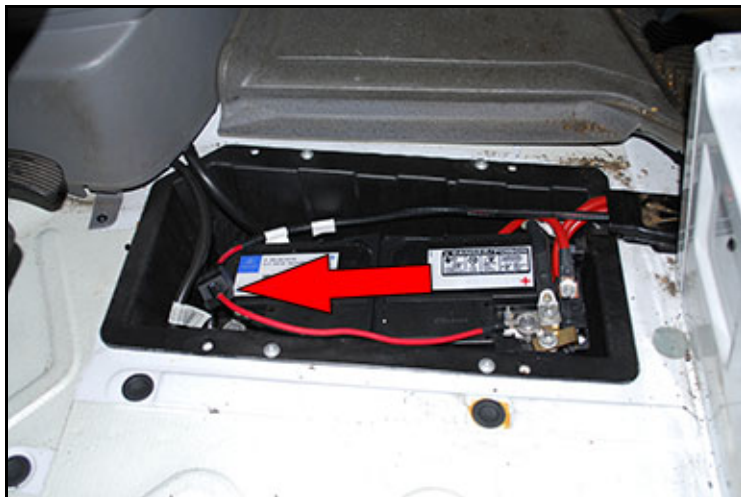
Item Number	Description	Quantity
24	Wiring harness Moscow Sprinter	1
21	Control head assembly Sprinter	1
33	Screw pan head	4
27	Pressure switch 3 level	1
51	Screw washer assembly	4
37	Nut M5	6
42	Scheibe DIN125	6
43	Washer flat	1



28. Install the relay bar [1], fuse block [2], and main ground [3] under the driver's seat using M5 screws and nuts (51, 37), and washers (42). Use a flat washer (43) and M8 nut (44) for the ground cable.



29. Pass the A/C compressor leg of the wiring harness through the pass-through in the floor.



30. Route the positive battery cable through the passage into the battery box. Using the supplied fuse and fuse holder, attach the power wire to the battery positive post.

NOTE: It may be necessary to remove the wiring loom from the portion of the wiring harness that passes behind the b-pillar trim.

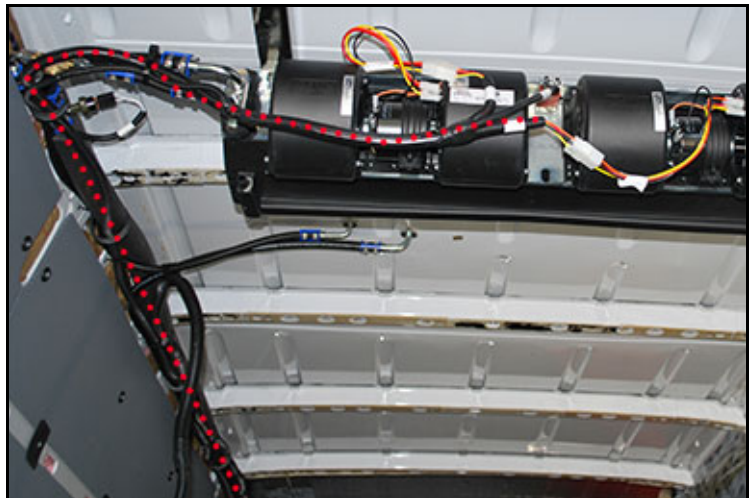
31. Route the wiring harness up the b-pillar.

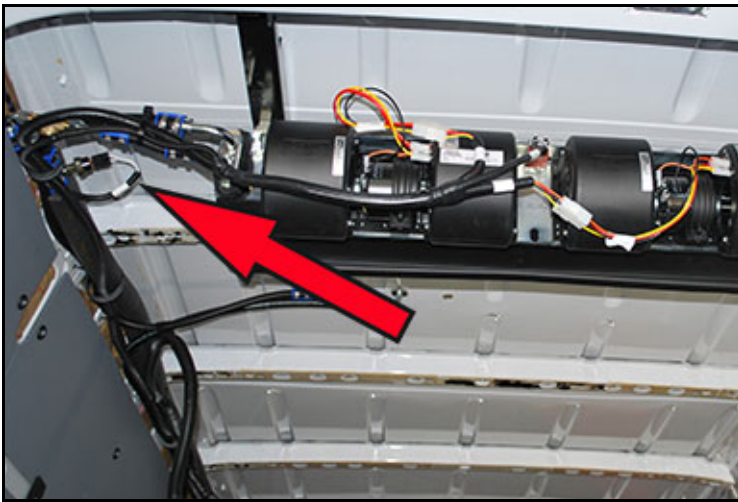


32. Route the control portion of the harness to your chosen mounting location. After connecting the controller (21), mount the controller using four self-tapping screws (33).

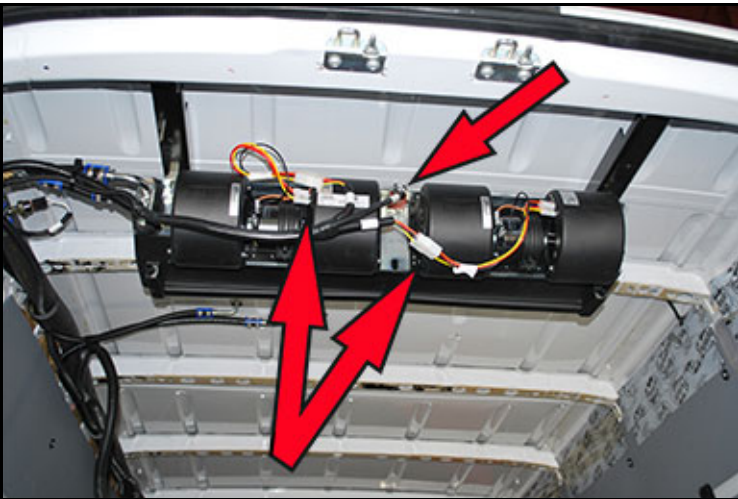


33. Route the rest of the harness along the roof-line to the Moscow unit.

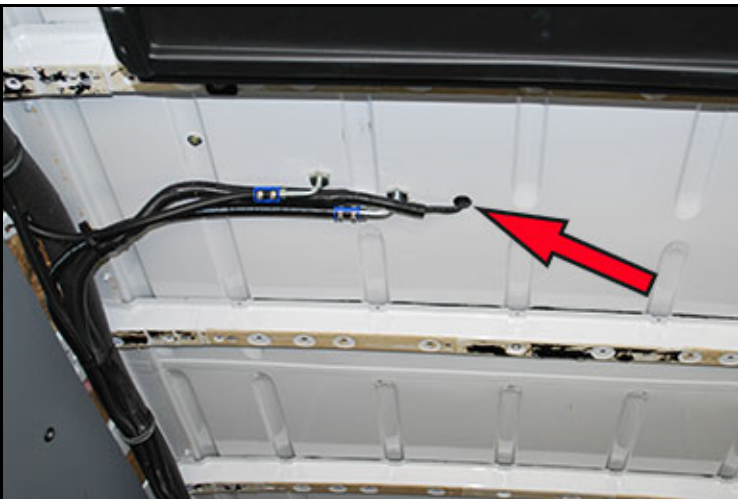




34. Connect the low-pressure switch.

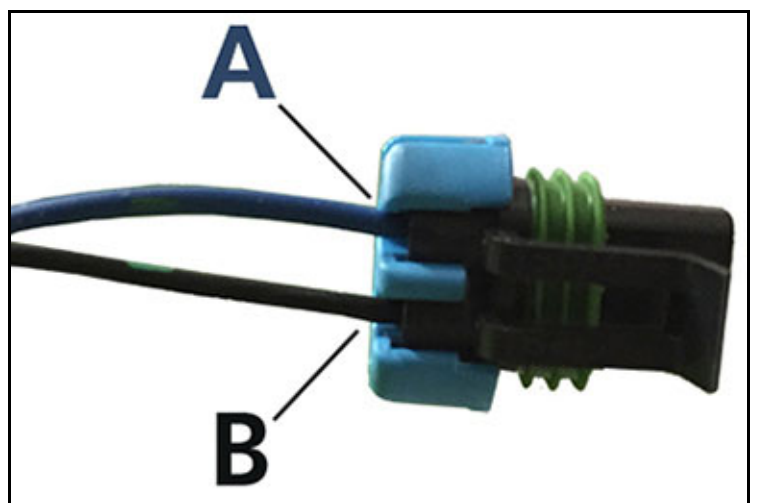


35. Connect the blower motor connectors and thermostat.

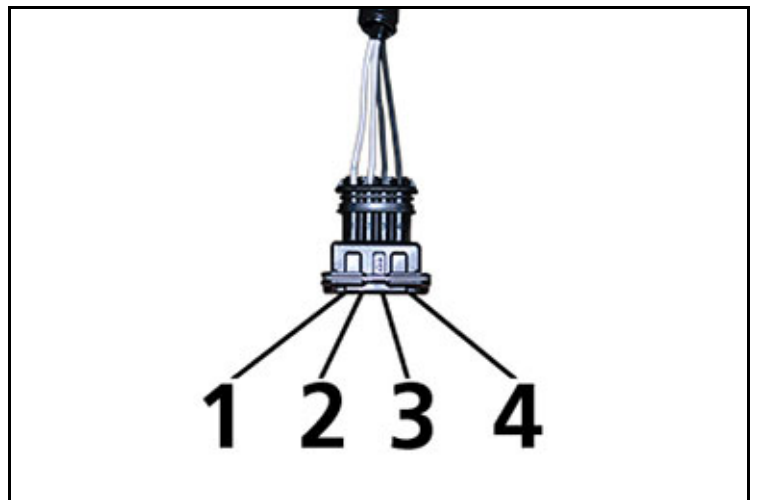


36. Pass the condenser leg of the wiring harness through the hole drilled in the roof. Seat the grommet and seal both sides of the roof skin with sealant.

37. Insert the pins in the connectors for the condenser fans. Refer to the wiring diagram in this manual for more information.

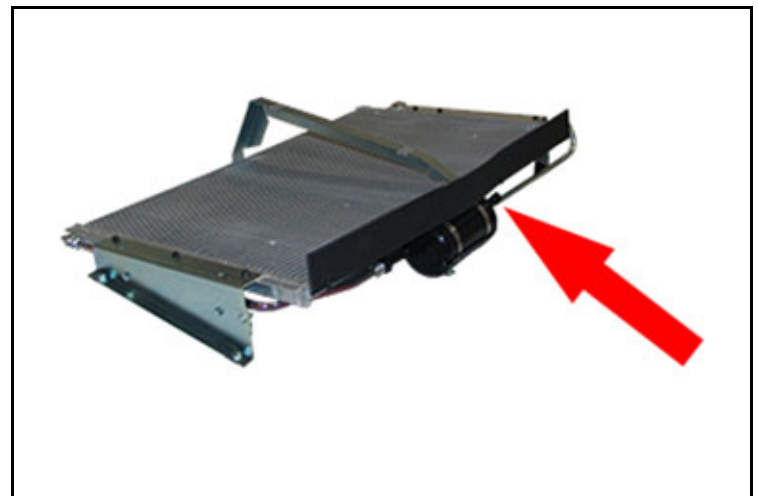


38. Insert the pins in the trinary switch housing. Refer to the wiring diagram in this manual for more information.



NOTE: Lubricate the o-ring with PAG oil.

39. Install the trinary pressure switch (27) on the condenser assembly. Connect the trinary pressure switch and condenser fans. Install the condenser cover with the included hardware.



Drain Tube Installation

Required parts for drain tube installation:

Item Number	Description	Quantity
29	T fitting	1
16	Drain Hose	As needed



40. Using the "T" fitting (29), connect both drain hoses (16) at the left side of the Moscow unit.



NOTE: The drain hose should always run down-hill from the Moscow unit.

41. Route the drain hose down the D-pillar.

42. Drill a 3/4 in (19 mm) hole in the lower body panel and route the drain hose from the Moscow unit to the exterior of the vehicle. Cut the drain hose about 1 in (24 mm) past the hole.



Initial Start

Required parts for the initial start:

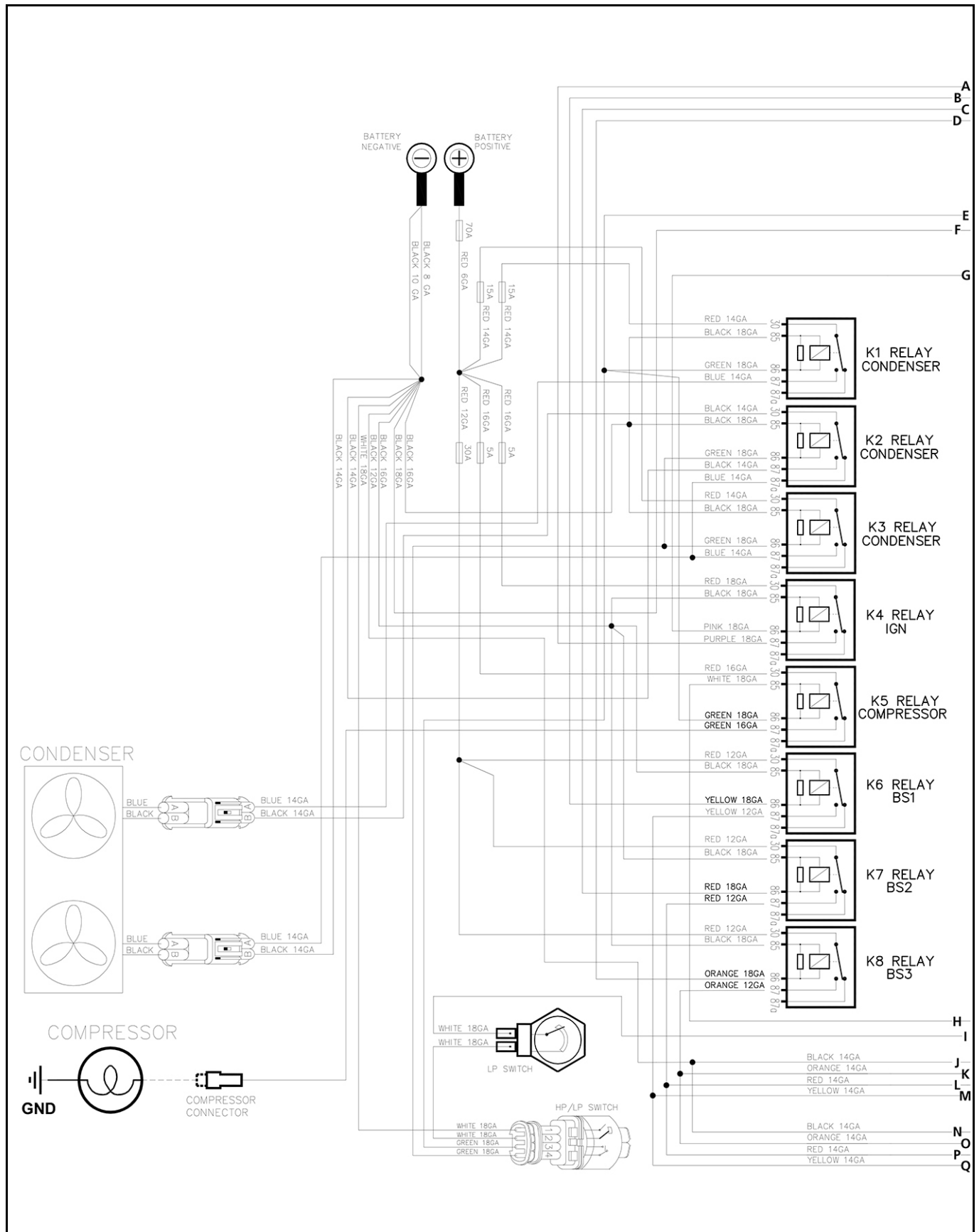
Item Number	Description	Quantity
20	Insulation hose	1
30	Anti-cond tape	As needed
31	Label refrigerant	1
48	P-clip w/rubber	As needed
50	Tube clamp	As needed
34	Screw self-tapping	As needed
14	Cable tie black 11 inch	As needed

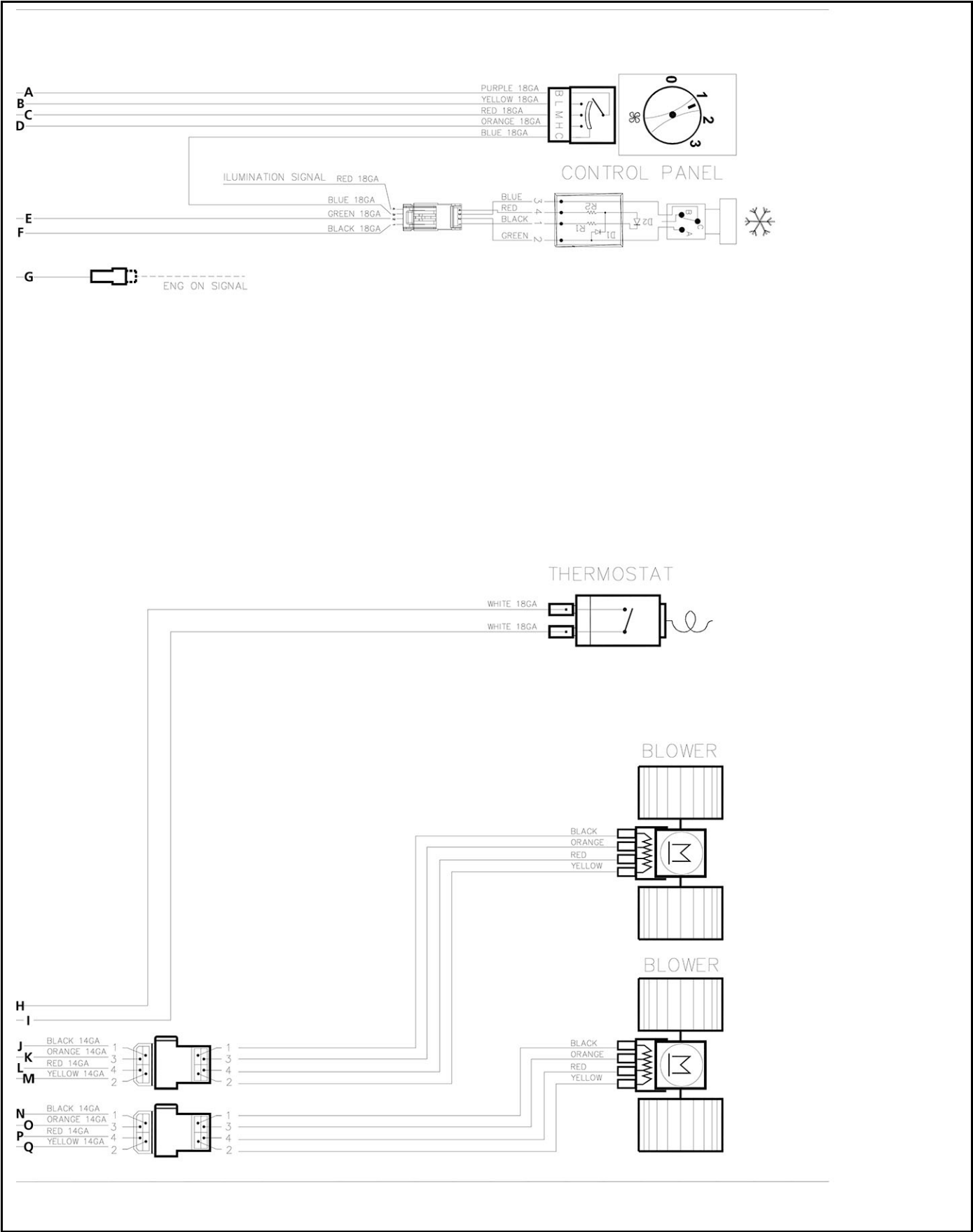
43. If a headliner is being used, remove the Moscow unit. Cut a hole in the headliner to pass the hoses and wiring through. Reinstall and connect the Moscow unit.
44. Recharge the vehicle using the chart below.

Item	Type	Quantity
Lubricant	PAG oil	4 additional ounces
Refrigerant	R134a	3.2 lbs.

45. Apply foam pipe insulation (20) to the low-pressure hose nearest the Moscow unit.
46. Apply anti-condensation tape (30) to exposed metal fittings inside the vehicle.
47. Secure the hoses and wiring as needed (48, 50, 34, 14).
48. Reinstall all interior panels and components that were removed unless otherwise instructed in this manual.
49. Place the new refrigerant label (31) on the radiator core support.

Wiring Diagram







Feel the Drive

Webasto Thermo & Comfort N.A., Inc.

Technical Assistance Hotline

USA: (800) 555-4518

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