PROAIR®

INSTALLATION INSTRUCTIONS

FOR

Plumbing/Electrical

For Sprinter EZ5 / Digital Control

(EZ5 is Model 200-333B-H)

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TABLE OF CONTENTS

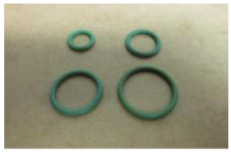
PREPARATION NOTES

THE FOLLOWING ARE SUPPLIED IN YOUR KIT FOR GENERAL USE THROUGHOUT THE INSTALLATION:

- ☐ Vinyl Clad **linestakes**. These are used to attach hoses and wiring harnesses to the vehicle or other structure. There are various types and sizes including 1", 2", 3", 2" double and 2" twisted. These are secured with self-tapping screws to the vehicle or other structure. These screws will require a screwgun/power screwdriver for installation.
- ☐ **Tie Wraps** (also called cable ties, cable wraps, wire ties, zip ties). These are used to secure bundles of hoses or wiring harnesses together. They are **NOT** used to secure hoses and wiring to the vehicle. These are 14" plastic. There are also 3 stainless steel 14" tie wraps supplied for securing the fire protective sleeve to the refrigerant hoses between the compressor and the service ports.
- ☐ **Hose Clamps** (wormgear clamps) used on hoses, #10 and 7/8"
- ☐ **Wire Loom** (Convoluted Tube). This comes in 1/4", 1/2", 3/4", and 1" sizes and is used to protect wiring and hoses at various points in the vehicle. It is easily cut to length.
- ☐ **Trim Lock**. Used to trim metal openings and edges.
- ☐ Various **specialty hardware** including grommets, plates, spacers and shims.
- ☐ Various **general hardware** including screws, bolts, washers, lock washers and nuts. Self-Tapping 14 x 1 screws (02 000 074) are used frequently.
- ☐ **Plumbing fittings** including nipples, wyes, ells, splices, manifolds and O rings.
- ☐ **Electrical wiring** of various sizes and lengths including wiring harnesses.
- ☐ **Hoses** – 5/8" heater, 7/8" drain and #6, #8 and #10 refrigerant.

IN ADDITION TO AN ASSORTMENT OF GENERAL TOOLS AND SUPPLIES, THE CUSTOMER WILL NEED THE FOLLOWING:

- ☐ **Silicone Seal** (as applied by a caulk gun) for sealing access holes and providing some protection for hoses in various places.
- ☐ **Mineral Oil** for use on the O rings associated with each refrigerant hose fitting and the drier connections.



- ☐ **Refrigerant Fittings Crimp Tool**. If you do not have this tool, take a fitting from your kit with you to your local auto supply store for help in obtaining a tool.

- ☐ An assortment of different size **eyelet lugs** (terminal rings) for wiring use. These are attached to bare wire and crimped. The lugs are then attached to screw terminals on devices and boards or attached to the vehicle chassis with self-tapping screws.

- ☐ An assortment of **butt splices**. These are used to join bare wires to make connections. They are crimped. Once crimped they should be weather proofed. If you use Perma-Seal Butt Connectors you can simply use a heat gun or torch to shrink the cover around the connection to seal it. If you use standard butt connectors, you will need to slip a piece of shrink tubing (customer supplied) over one wire, do your crimp, slide the shrink tubing over the connection and heat/seal with a torch or heat gun.

Please read the following notes before beginning installation:

- Parts Numbers for parts will be noted the first time the parts are referred to in the instructions only.
- Plumbing and electrical wiring often run in parallel so installation involves some switching back and forth between plumbing and electrical.
- Diagrams are provided at the end of these instructions, illustrating the air conditioning path, the heating path and the wiring runs for the installation. You may follow them as you read these instructions.
- Pictures of all the parts noted on the Parts List are included at the end of the instructions.
- Using the zoom tool (+ symbol) allows you to magnify pictures (assuming you are viewing this document on a computer and not as a printout). This may provide some additional clarification on some pictures. Also, if you print these instructions, note that several items are in color so a color copy is best.
- When installing refrigerant lines, if you install one end but do not immediately install the other end, cover that end with a cap or tape (electrical) to keep out contaminates.
- As you unpack your kit, locate the install label (09 000 046) and record your kit number on it. Also as you unpack your Condenser and Evaporator you need to note the serial numbers for these units on the label as well. (*Note: You will need these numbers if you ever have to call ProAir for service*).
- Cut a 40" length of #8 hose (04 000 054) and #10 hose (04 000 055) from the bulk hose and set aside for later use.
- Heater Hose 04 000 025 (Assembly 62 000 476) is shipped as one piece and should be cut in half before installation begins. Don't confuse this with the same hose under Assembly 62 000 274 which is used in another part of the installation.
- Remove the air cleaner before beginning installation. Reinstall after system installation.

- ***GENERAL RULE: AVOID CONTACT AS MUCH AS POSSIBLE WITH OEM EQUIPMENT AS YOU PROCEED WITH THE INSTALL (KEEP ITEMS YOU INSTALL AWAY FROM ORIGINAL EQUIPMENT COMPONENTS).***

PARTS LIST

✓	Item #	Part #	Qty	Description
☐	1	01 000 012	1	Harness, 15 Amp Power Relay
☐	2	01 000 239	2	Harness, 20 Amp Power Relay
☐	3	01 000 318	1	Wire, 12 Gauge Blue, w/White Stripe, 20’
☐	4	01 000 319	1	Wire, 12 Gauge Red, w/White Stripe, 25’
☐	5	01 000 320	1	Breaker, 40 Amp Circuit
☐	6	01 000 334	1	Harness, 7.5 Amp Power Relay
☐	7	01 000 335	1	Wire, 12 Gauge Red, 41’
☐	8	01 000 352	1	Harness, Wire Condenser
☐	9	01 000 400	1	Harness, Sprinter Evaporator
☐	10	01 000 412	1	Wire, 6 Gauge Red, 28’ (Maximum Length @ 60)
☐	11	01 000 538	1	Harness, 25’ Mini Thermostat
☐	12	01 000 539	2	Module, Controller 7 Speed
☐	13	01 000 540	1	Thermostat, Digital Mini
☐	14	01 000 615	1	Breaker, 80 Amp Circuit Waterproof
☐	15	02 000 015	-	Linestake, 2”
☐	16	02 000 021	-	Clamp, Drain Hose 7/8”
☐	17	02 000 023	1	Trim Lock, 5’
☐	18	02 000 037	4	Screw, 6 x 1/2 Ph Phillips Black
☐	19	02 000 052	-	Tie Wrap (Wire Tie, Cable Tie), 14” x 3/16”
☐	20	02 000 074	-	Screw, 14 x 1 Hex Washer Tek Zinc
☐	21	02 000 132	-	Linestake, 2” Twisted Ends
☐	22	02 000 138	-	Linestake, 3” Vinyl Clad
☐	23	02 000 235	-	Cable Tie, 14” Stainless
☐	24	02 000 390		Clamp, #10 Heater Hose (Wormgear)
☐	25	04 000 009	1	Tube, 3/4" Convoluted (Wire Loom)
☐	26	04 000 010	-	Tube, 1” Convoluted, 20’ (Wire Loom)
☐	27	04 000 025	1	Hose, 5/8”, 80’, Assembly 62 000 476 (divided in half by customer)
☐	28	04 000 025	1	Hose, 5/8”, 25’, Assembly 62 000 274
☐	29	04 000 044	1	Hose, Drain, 5/8” Clear
☐	30	04 000 053	1	Hose, 5/16” Refrigerant #4890 Redu B (#6)
☐	31	04 000 054	1	Hose, 13/32” Refrigerant #4890 Redu, 25’ (#8)
☐	32	04 000 055	1	Hose, 1/2” Refrigerant #4890 Rebu Ba, 50’ (#10)
☐	33	04 000 077	1	Tube, 1/4 “ Convoluted (Wire Loom)
☐	34	04 000 078	1	Tube, 1/2” Convoluted, 25’ (Wire Loom)
☐	35	05 000 020	-	Wye, 5/8” OD cl’r
☐	36	05 000 029	2	Ell, 90 5/8” Drain
☐	37	05 000 050	2	Splice, 5/8” Heater Hose
☐	38	05 000 481	1	Straight Splice, #8 FOR x 8 CF
☐	39	05 000 484	1	Straight Splice, #10 FOR x 10 CF

☐	40	05 000 502	2	Ell, 90 #6 FOR x 6 CF
☐	41	05 000 504	1	Ell, 90 #8 FOR x 8 CF
☐	42	05 000 527	1	Ell, 90 #6 MOR x 6 CF
☐	43	05 000 529	1	Ell, 90 #10 MOR x 10 CF
☐	44	05 000 547	1	Splice (Service Port), #8 CF x 8 CF w/16mm SV
☐	45	05 000 551	1	Splice (Service Port), #10 CF x 10 CF w/13mm SV
☐	46	05 000 631	1	Ell, 90 #8 FOR x 6 CF
☐	47	05 000 971	2	Valve, Kazoo, 3/4" ID x 3”
☐	48	06 000 533	1	Bracket, Cap Mounting 110/12v
☐	49	06 001 153	1	Hose, 5/8” Heater
☐	50	08 000 017	1	Tape, Prestite, Refrigerant, 1.333’
☐	51	08 000 124	1	Sleeve, Fire Protective, 2” I.D.
☐	52	09 000 035	1	Label, Refrigerant Capacity, Blank
☐	53	09 000 037	1	Label, Anti-Freeze Mix
☐	54	09 000 046	1	Label, Door Jamb
☐	55	09 000 145	1	Card, Information, Warranty Registration
☐	56	09 000 186	1	Label, Circuit Legend
☐	57	09 000 189	1	Label, Warning Temperature Probe
☐	58	09 000 190	1	Label, Warning Thermostat Load

INSTRUCTIONS

1. Prepare a Wire Harness to run to the control panel (to be created later) by stretching out the following wires:
   Large Red (6 gauge) (01 000 412)(Goes to 80 Amp Breaker/Battery)
   Small Red (12 gauge) (01 000 335)(Goes to Compressor)
   Red/White Stripe (12 gauge) (01 000 319)(Goes to Ignition)
   Blue/White Stripe (12 gauge) (01 000 318)(Goes to Booster Pump/Water Valve)

2. Tape the ends together as in Figure 1 and go in about two feet and start inserting the wire bundle in 1/2" wire loom (convoluted tube)(04 000 078). Wrap the point where the wires enter the wire loom with electrical tape to secure the wires (Figure 2). Install the entire wire loom. The small red wire will have an excess length that will be used later (Figure 3). This harness will be referred to in these instructions as the Customer Created Harness.

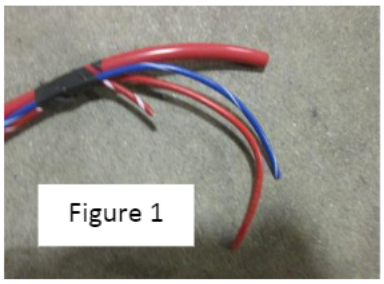


Figure 1

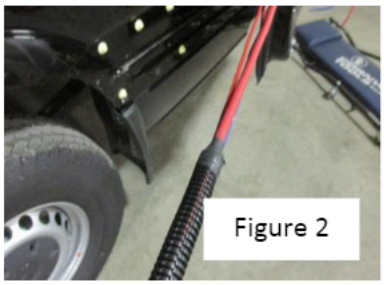


Figure 2

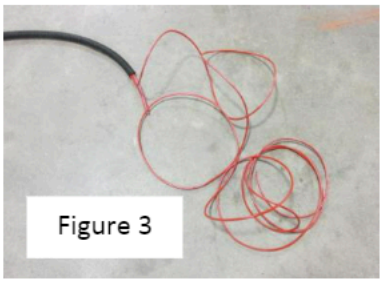


Figure 3

3. Stretch out the two 5/8" heater hoses (04 000 025)(created by the customer as noted in the Preparation Notes), the #6 (04 000 053) and #10 (04 000 055) refrigerant hoses, the Customer Created Harness and the Condenser Harness (01 000 352)(Figure 4). Mark one of the heater hoses with red electrical tape (or in some other way) at intervals to designate it as the Evaporator In hose (Figure 4 Inset).

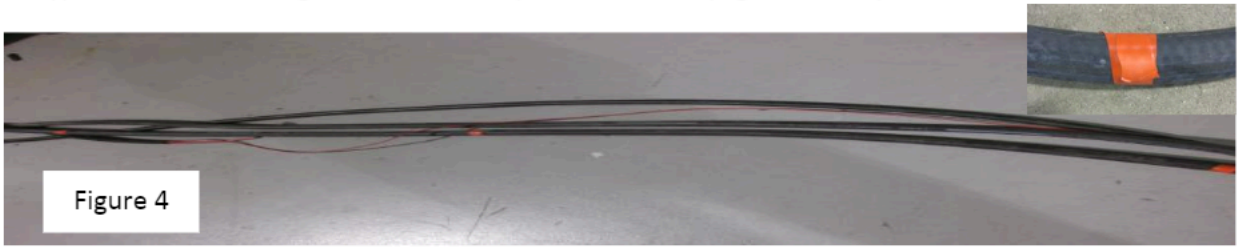


Figure 4

4. Route the bundle under the vehicle through the 3" access hole in the inner wall of the vehicle body on the driver rear side (Figure 5). Then bring the bundle up the 5" x 1 1/4" hole you created during the Evaporator install into the vehicle (Figure 6).

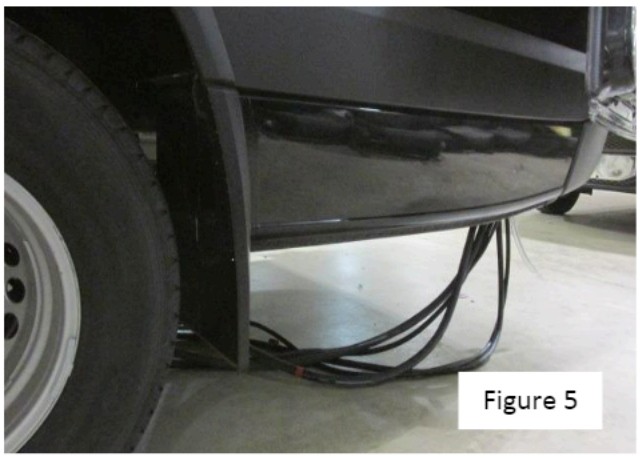


Figure 5


Figure 6

5. Pull enough length of the refrigerant hoses to reach the Evaporator Refrigerant ports (on right side). Install Fitting 05 000 529 on the #10 hose and attach on the bottom (suction) port of the Evaporator (Figure 7). Install Fitting 05 000 527 on the #6 hose and attach on the top (liquid) port. After securing the fittings, wrap them with Prestite tape (08 000 017)(Figure 8).

Note: Apply mineral oil to the green O ring on each refrigerant fitting throughout the installation.

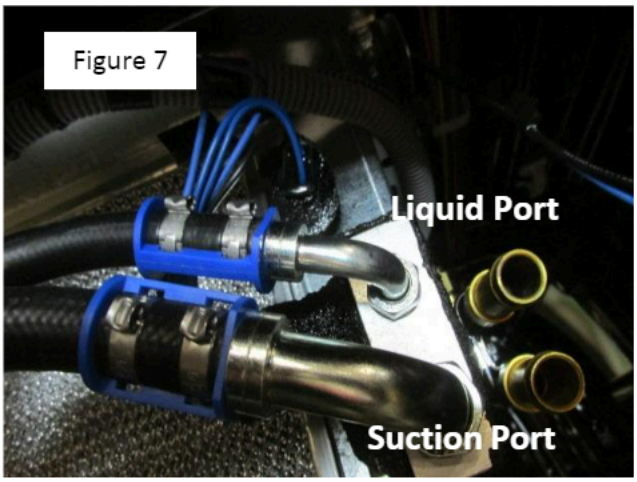


Figure 7

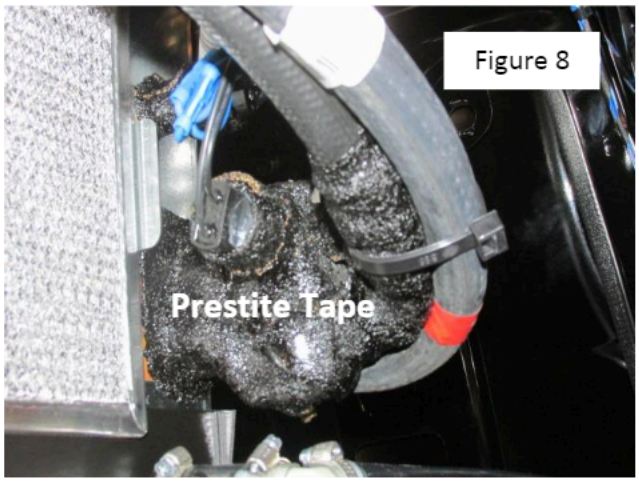


Figure 8

6. As with the refrigerant hoses, pull enough of the heater hose lines to reach the Evaporator Heating ports (on the right side) and attach the hose with red tape to the bottom port, Evaporator In (coolant from engine) and the other hose to the top port, Evaporator Out (coolant to engine). Secure these lines to the Evaporator with clamps (02 000 390)(Figures 9 & 10).

Note: The Evaporator is shipped with nitrogen in the heater lines that will escape when the shipping plugs are removed.

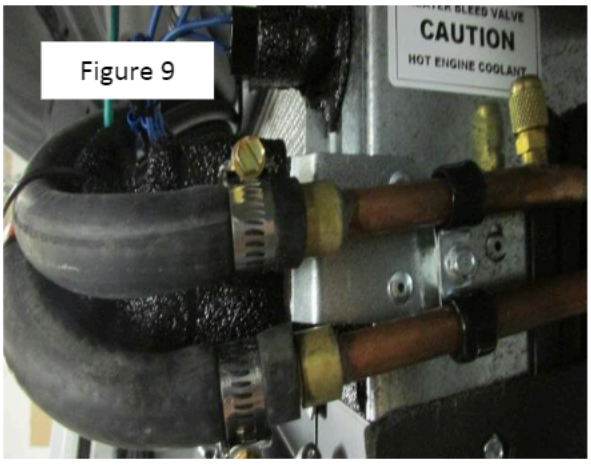


Figure 9

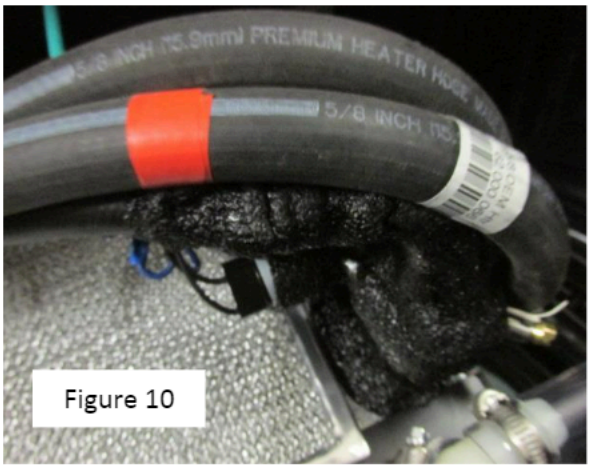


Figure 10

7. Prepare the Evaporator Harness (01 000 400) connection to the Evaporator Pigtail as follows:

Evaporator Harness	Evaporator Pigtail
	Green wire is grounded to the chassis
Red wire is cut off and not used	
Blue wire	Blue wire
Blue wire	Blue wire
Orange wire	Orange wire
Yellow wire	Orange wire

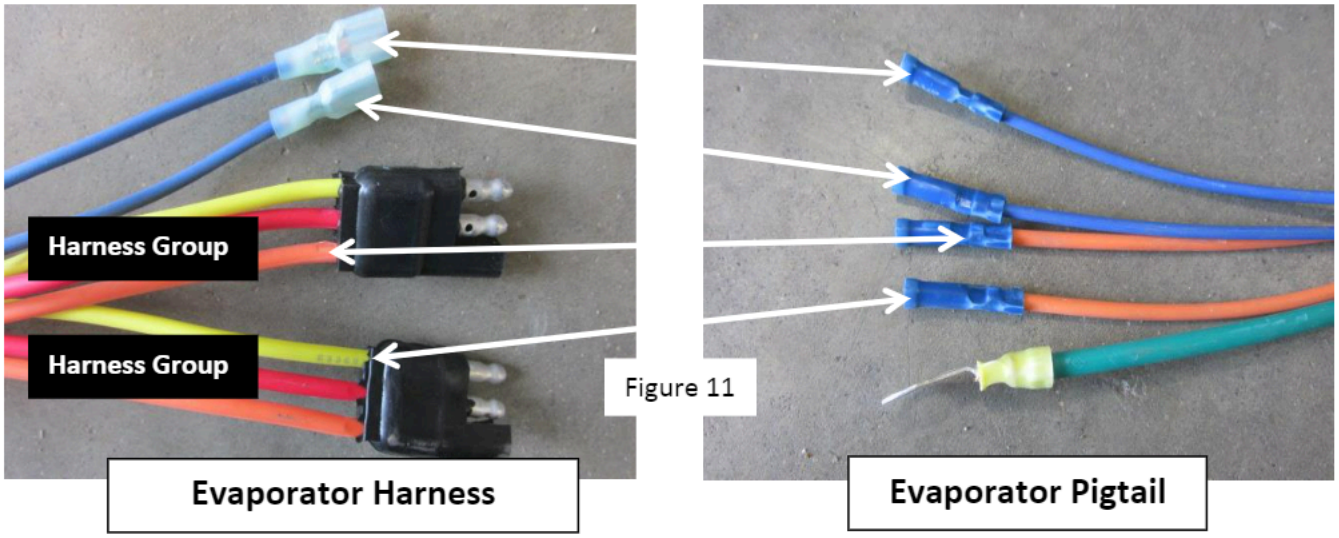


Figure 11

Cut off the connectors on the harness and strip to bare wire. Blue goes to Blue (doesn't matter which one to which one). The orange of one harness group and the yellow of the other group go to the orange pair on the pigtail in either order (Don't use the yellow and orange from the same harness group)(Figure 11) . The Evaporator Pigtail has butt connectors already attached. Crimp connections and wrap the bundle with electrical tape.

8. Take the Evaporator Harness and four hose lines and attach them to the lip of the Evaporator (where the Evaporator Pigtail is already attached) with 2" linestakes (02 000 015) evenly spaced (Figure 12) using self-tapping screws (02 000 074). Then run the bundle down the wall and attach using 2" linestakes (Figure 13). Go back and tie wrap (02 000 052) the bundle between the linestakes.

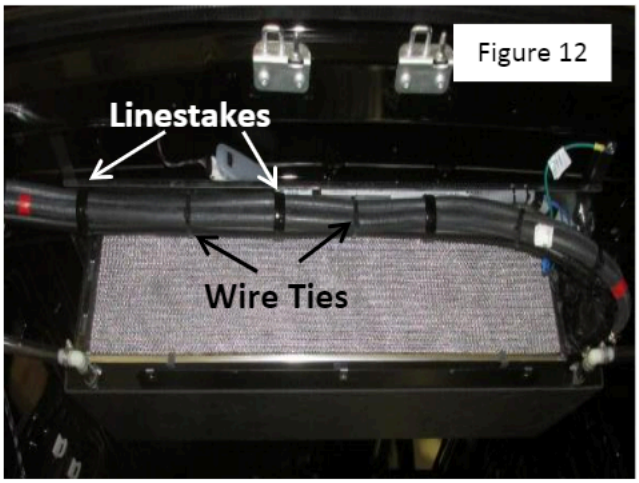


Figure 12

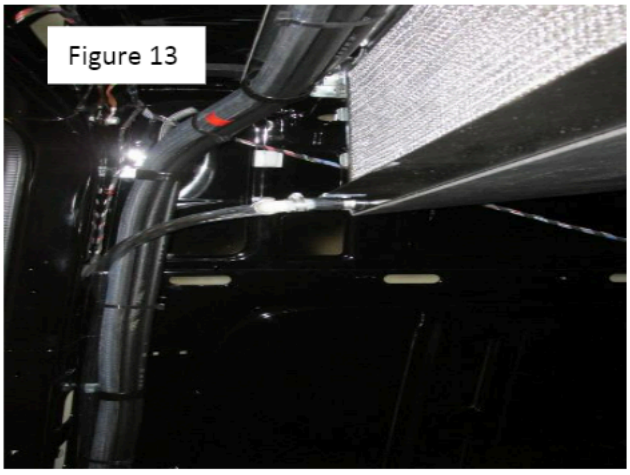


Figure 13

9. Prepare the drain hoses by taking the bulk drain hose (04 000 044) and cutting off two 2 1/2" pieces and then cutting the remainder in half. Insert each 2 1/2" piece into one of the ells (05 000 029) and secure with a clamp (02 000 021)(Figure 14). Take the two longer length hoses and attach them to the ells with clamps. Take the remaining end of the 2 1/2" pieces and insert them into the drain ports on each side of the Evaporator and secure with clamps (Figure 15).

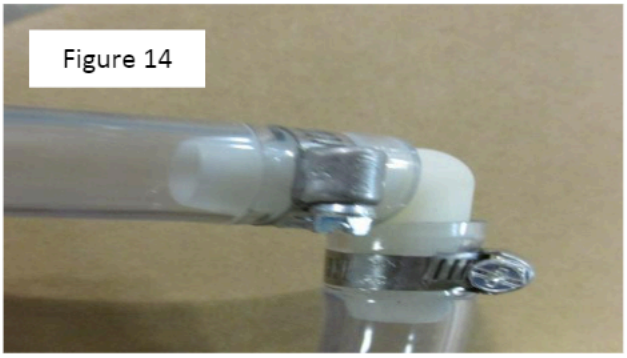


Figure 14

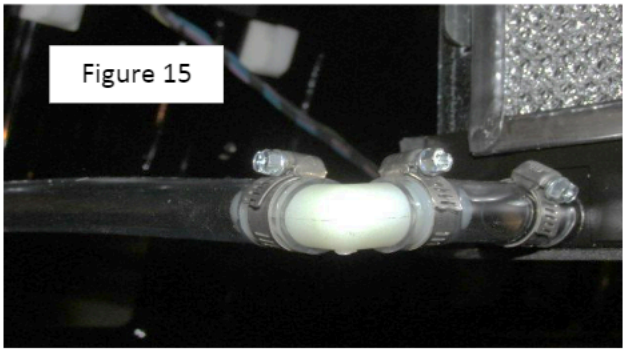


Figure 15

10. Route the passenger side drain hose to the side and down into the exit hole you created during the Evaporator mounting. The hose will go between the inner and outer side walls and will exit the 3" access hole on the inner side wall under the vehicle. Leave about 6" exposed under the vehicle (cut off any excess) and attach a kazoo valve (05 000 971) and secure with a tie wrap. On the driver side route the hose to the side and parallel with the wiring/heater hose/refrigerant hose run (Figure 16) and out the hole you previously created. Secure the hose to the other hoses with tie wraps. As on the passenger side, this hose will go between the inner and outer side walls and will exit the 3" access hole on the inner side wall under the vehicle. Leave about 6" exposed under the vehicle (cut off any excess) and attach a kazoo valve and secure with a tie wrap (Figure 17).

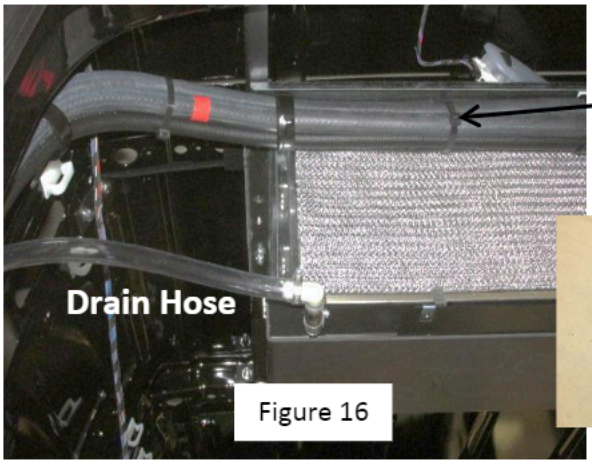


Figure 16

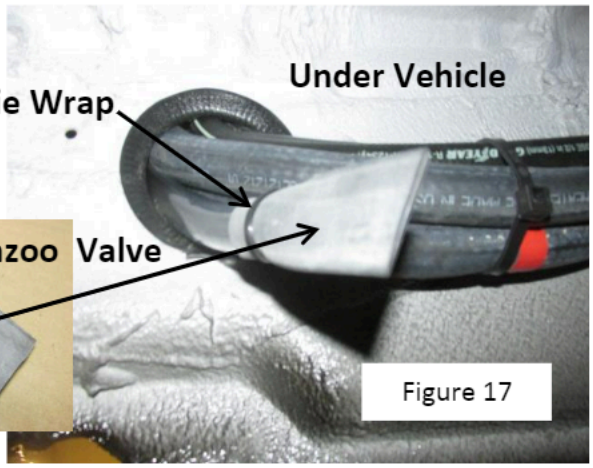


Figure 17

11. Leave the Evaporator Harness inside the vehicle at the entrance to the hole. Leave about three feet of the Condenser Harness and the Customer Created Harness inside the vehicle and pull the slack underneath. Route the bundle (four hoses, Compressor Harness, and the Customer Created Harness) around the wheel well area (Figures 18 and 19) and then back to the driver side to the area where you mounted the Booster Pump, Condenser Relay, Drier and Water Valve. Secure with 2" linestakes to the vehicle and tie wrap the bundle between linestakes.


Figure 18

Figure 19

12. The heater hose marked with red tape is cut, attached and clamped to the output of the Water Valve. The other end is attached to the input of the Booster Pump and routed to the engine compartment (Figure 20). The second heater hose runs from the Evaporator Out to the engine compartment . A third heater hose (62 000 274) should be marked with orange tape (or in some other way) and is clamped to the Wye between the Booster Pump and the Water Valve and runs to the engine compartment (Figure 21).

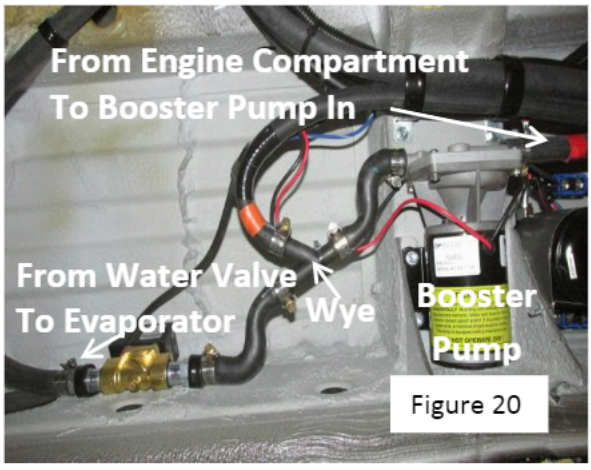


Figure 20

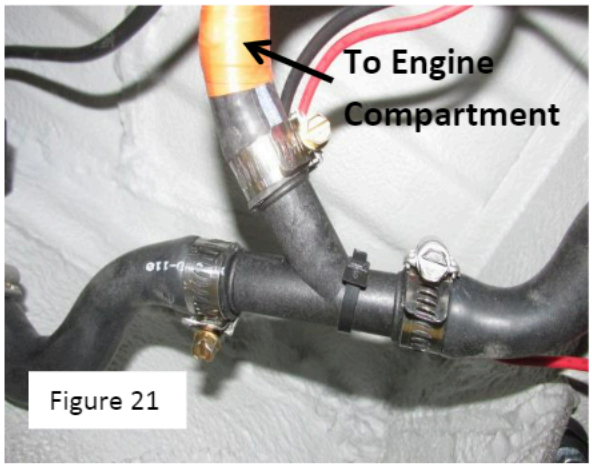


Figure 21

13. COOLING

- The #6 hose (Evaporator In) is cut and Fitting 05 000 502 is installed and the hose is connected to the Drier Output (Figure 22).
- A short piece of #6 hose is cut (length based on your space requirements). It connects the Drier Input with Fitting 05 000 502 to the Condenser Output (bottom port) with Fitting 05 000 631 (Figure 23).
- The #8 hose (04 000 054) with Fitting 05 000 504 is attached to the Condenser In (top port) and runs to the engine compartment (Figure 24).
- The Condenser Harness breaks away from the bundle here and will be connected later (Figure 25).
- The Blue/White Stripe wire breaks away from the Customer Created Harness here and will be connected later (Figure 25).

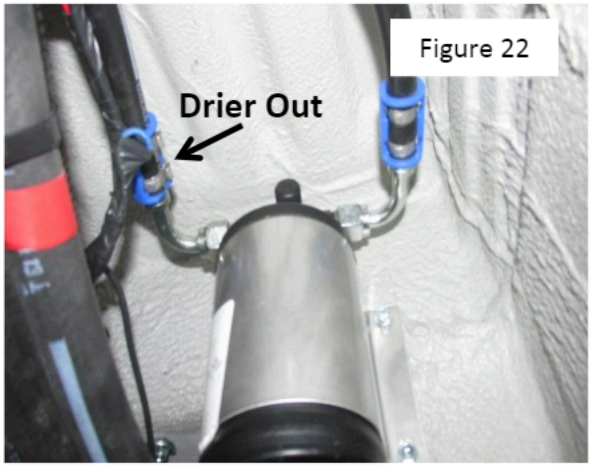


Figure 22

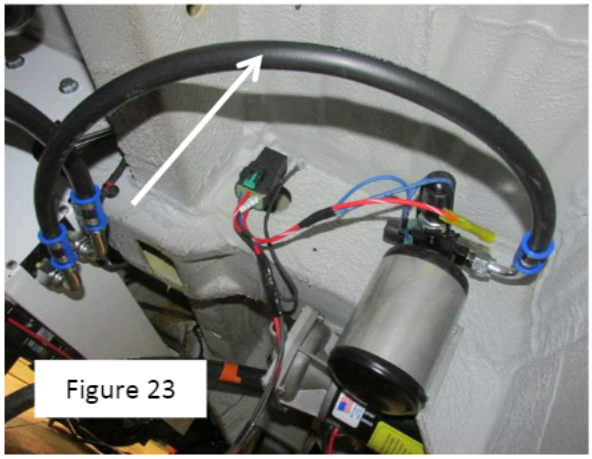


Figure 23

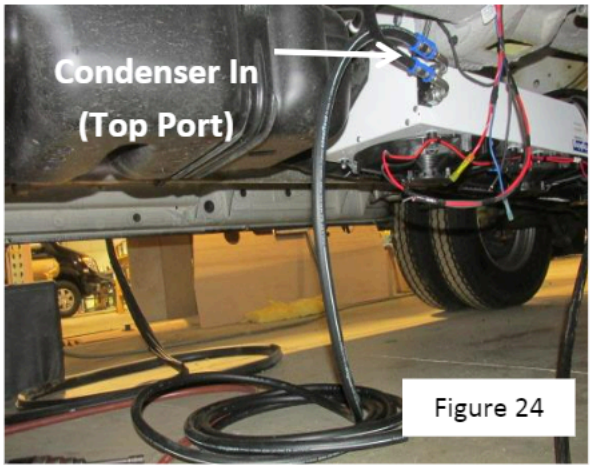


Figure 24

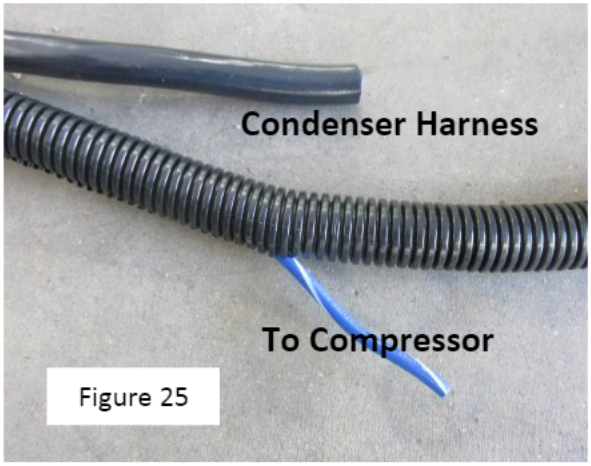


Figure 25

14. The five hoses and the Customer Created Harness now run to the area under the driver's seat (pedestal) where the Small Red wire exits the Customer Created Harness (Figure 26) and is inserted in a 1/4" piece of wire loom (04 000 077) and is routed under the vehicle to the Compressor. The Customer Created Harness with the Large Red wire (80 Amp Relay) and Red/White Stripe wire (Ignition) enters a hole in the floor of the vehicle (Figure 27) which terminates in the Wire Compartment (OEM) under the seat.

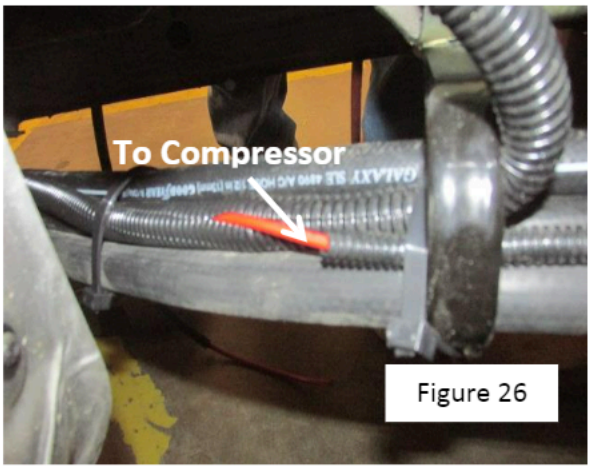


Figure 26

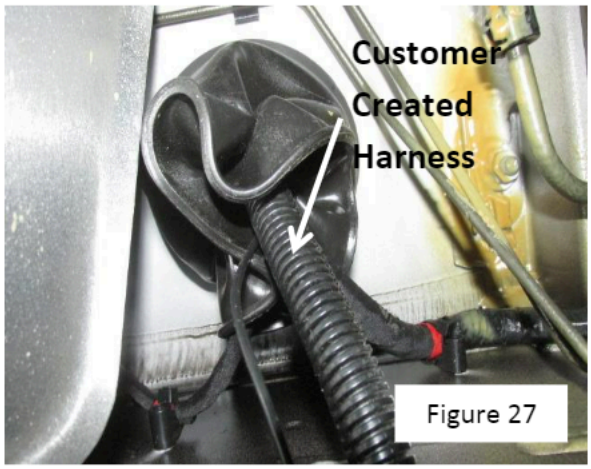


Figure 27

15. The five hoses are routed to the front of the vehicle and secured in place with 2" linestakes attached to the vehicle and tie wraps (keeping them in a bundle) (Figures 28 & 29).

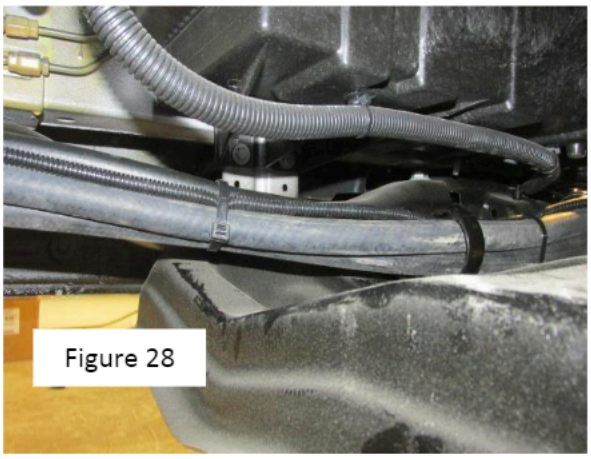
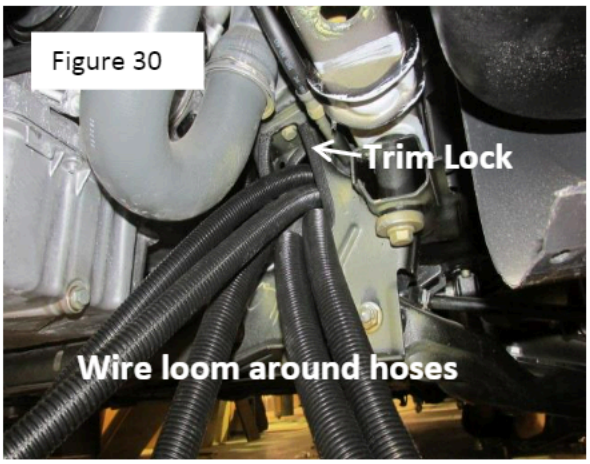


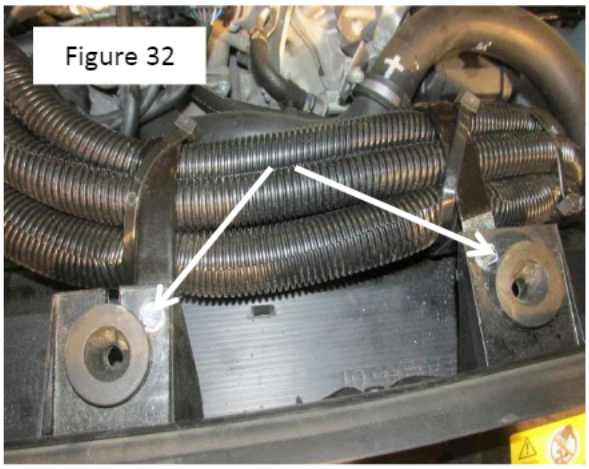
Figure 28

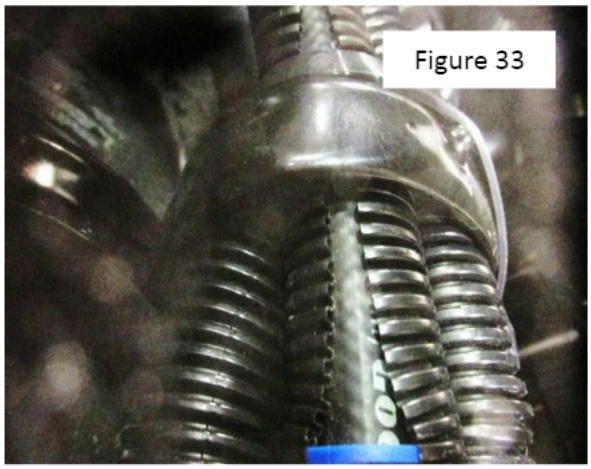
Figure 29

16. The five hoses route through a hole in a cross member of the frame which should be trimmed with Trim Lock (02 000 023)(Figure 30). Wire loom should be used, 1" (04 000 010) on the heater hoses and 3/4" (04 000 009) on the refrigerant hoses, as they enter this hole and should continue all the way to their destinations in the engine compartment (Figures 30 & 31). *(Note: As it is difficult to route all five hoses through the hole with wire loom on them, the heater hoses will have a one foot piece inserted before the hole and then a longer piece after they exit the hole.)* These five hoses with wire loom will need to be individually cut to the proper length as you route them to their destinations.



17. The hoses are secured to the vehicle with 2" linestakes in the engine compartment (Figures 32 & 33).





ENGINE COMPARTMENT

COOLING

18. Take the 40" pieces of #8 and #10 hose you cut earlier and connect Fitting 05 000 481 to the #8 hose and Fitting 05 000 484 to the #10 hose. These hoses are wrapped in a fire protective sleeve (08 000 124) beginning about 6" above the ends that connect to the Compressor (Figure 34). The sleeve is secured to the hoses with three aluminum tie wraps (02 000 235). The bundle is now fed from above the engine to just above the compressor (Figure 35).

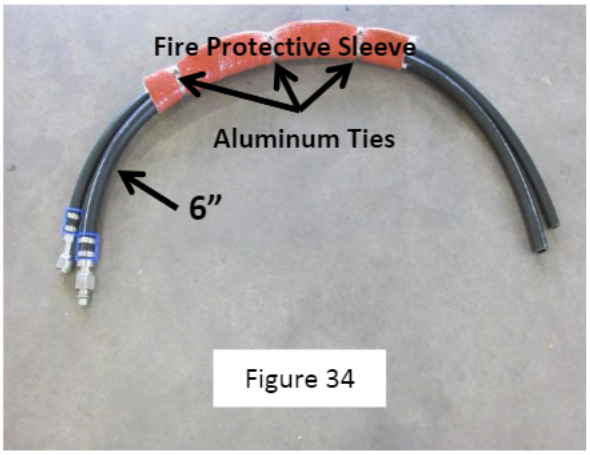


Figure 34

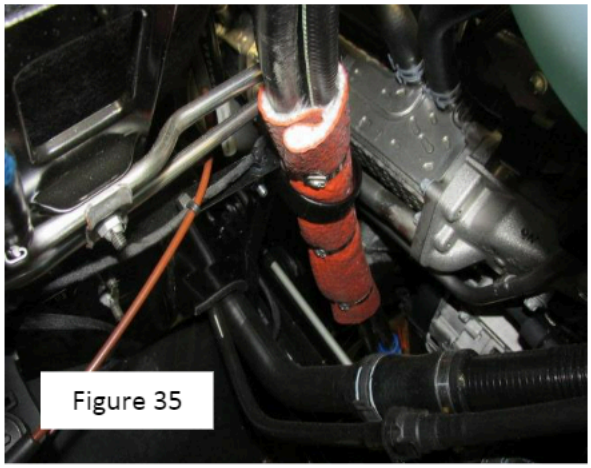


Figure 35

19. The #10 hose is connected to the Suction side (driver side) of the compressor and the #8 hose to the Discharge side (passenger side)(Figure 36). The hoses are secured to the vehicle frame with a 2" linestake at an appropriate point (Figure 37).

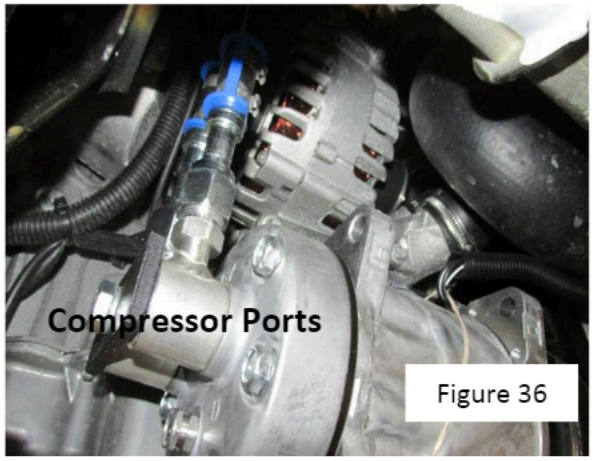


Figure 36

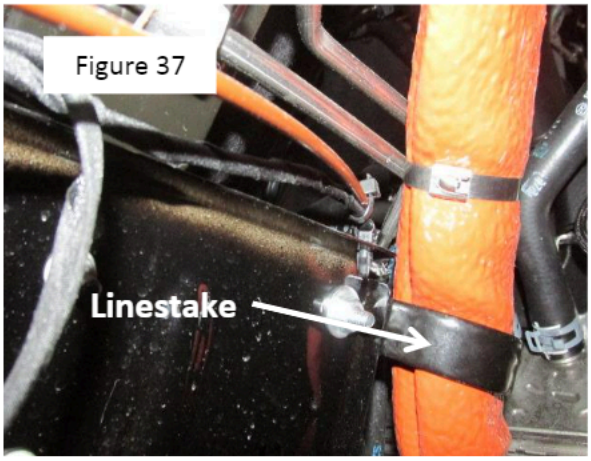


Figure 37

20. Bend a 3" linestake (02 000 138) into a U and install it near the oil filler on the engine (Figure 38). After all the hoses have been connected the bundle will be secured to this linestake by using a second linestake.

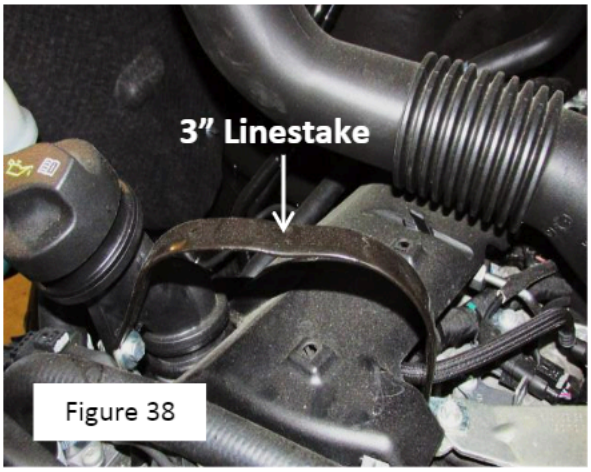


Figure 38

21. In the engine compartment, connect the #10 hose to the 05 000 551 service (charge) port splice and the #8 hose to the 05 000 547 service port splice. Crimp these hoses. Connect the #8 hose (from the Condenser) and the #10 hose (from the Evaporator) to their respective service port splice, crimp the connectors, and cover with wire loom (Figures 39 & 40).

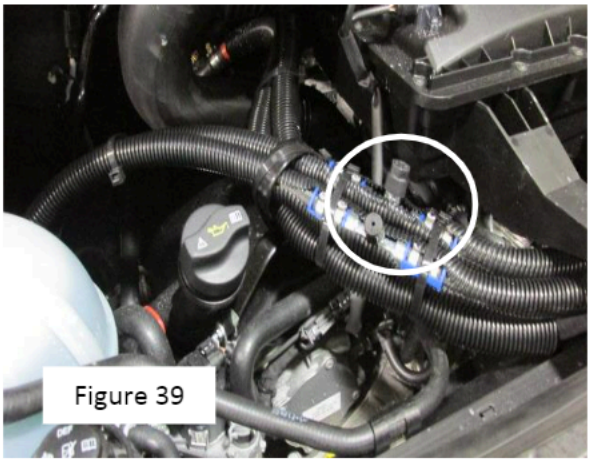


Figure 39

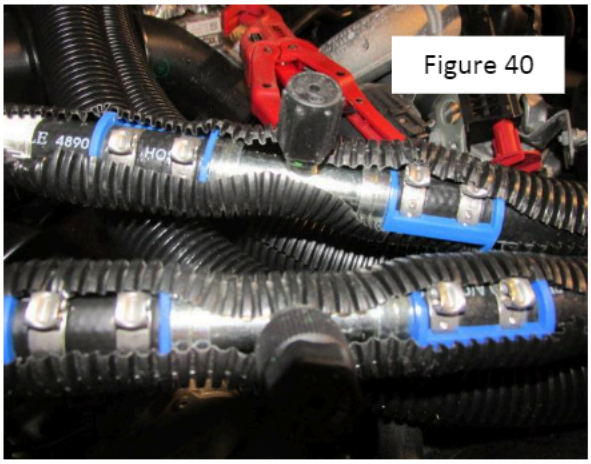
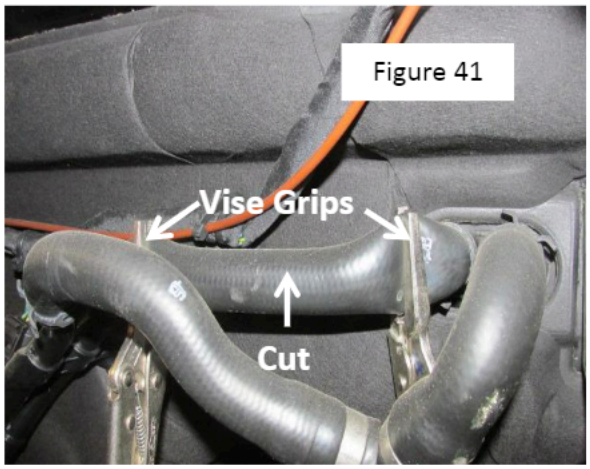
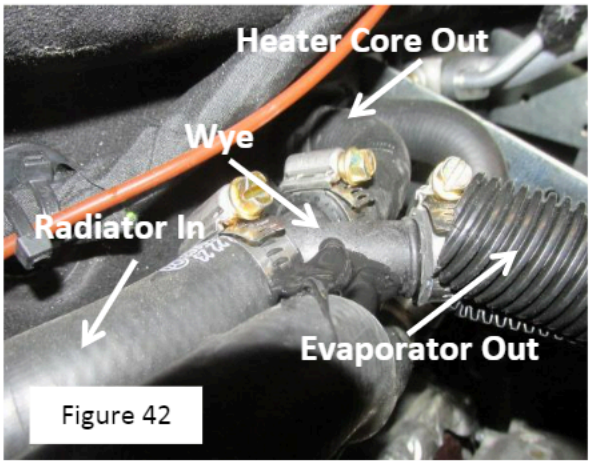


Figure 40

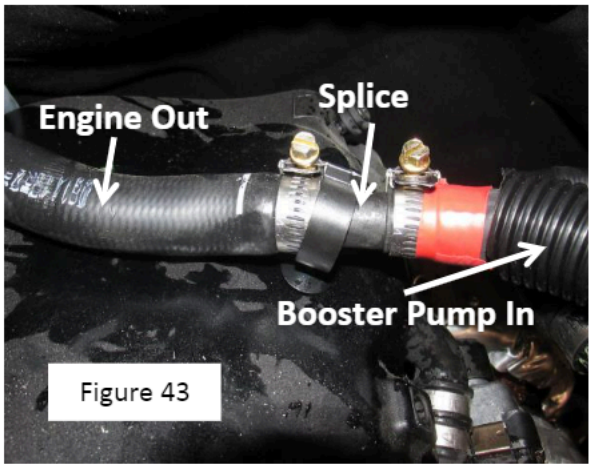
HEATING

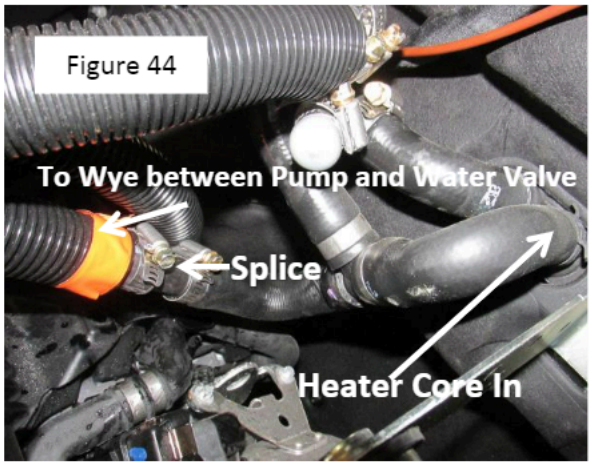
22. Clamp the heater hose on the Heater Core Out (hose on left) with two long nose vise grips (or other tools) about 6" apart to stop fluid flow (Figure 41). You will cut the hose midway between the vise grips so make sure this is where you want to make your spice. Insert a Wye (05 000 020), securing the hoses to the Wye with clamps. The remaining port on the Wye is connected to the hose coming from the Evaporator (unmarked hose) (Figure 42). Remove the vise grips.





23. Clamp the hose on the Heater Core In with two vise grips (as done on the Heater Core Out) to stop fluid flow and cut the hose. Using a splice (05 000 089) and clamps, connect the engine side of the hose to the heater hose running to the Booster Pump In (marked with Red tape)(Figure 43). The hose connected to the Heater Core In is spliced to the hose (marked with Orange tape)(Figure 44) which runs to the Wye between the Booster Pump and Water Valve. Remove the vise grips.





24. The hose bundle (5 hoses) is run through a linestake that is screwed to the linestake installed previously (Figures 45 & 46).

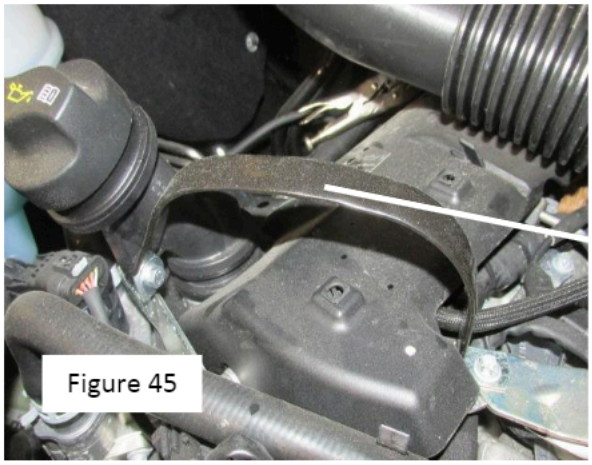


Figure 45

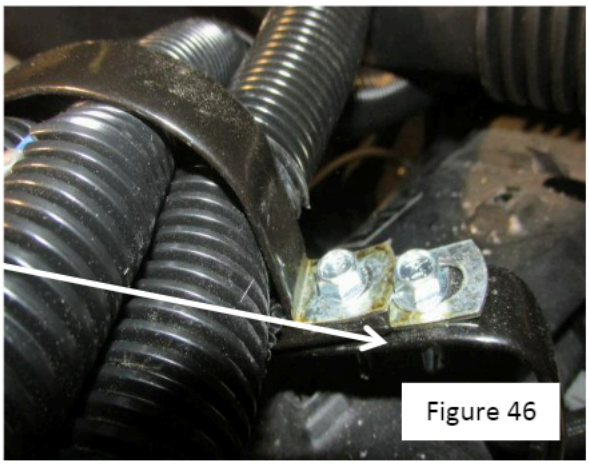


Figure 46

ELECTRICAL WIRING

25. Starting at the front of the vehicle you will install all wiring. First connect the Compressor. You previously routed a Small Red wire inside a 1/4" wire loom. Cut this wire/loom to the appropriate length. Cut the connector off the Compressor (Figure 47). Butt splice these wires together (Figure 48).

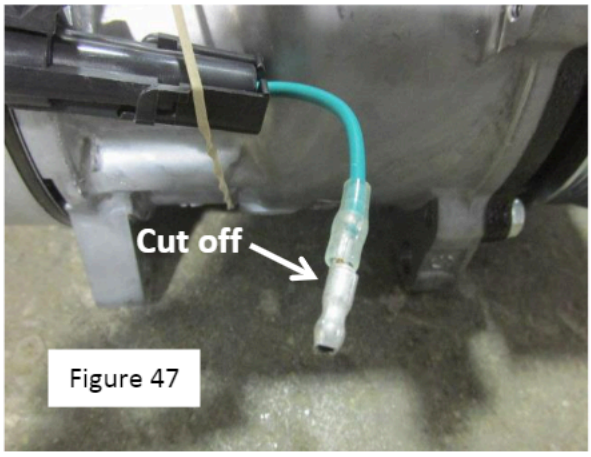


Figure 47

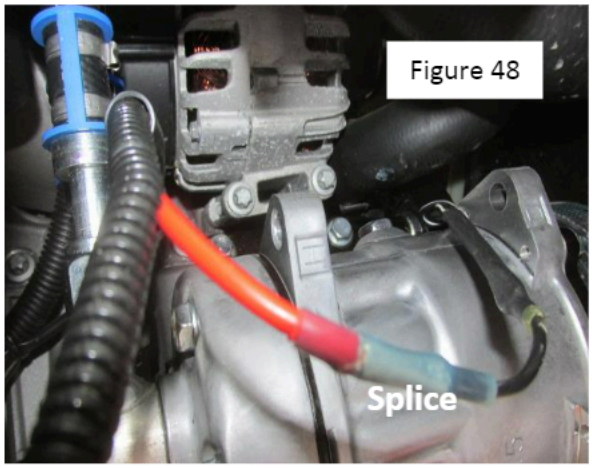


Figure 48

26. Install the 80 Amp Breaker (01 000 615) in the Wire Compartment (OEM) in the pedestal on the driver side (seat and cover over the compartment are removed). The breaker mounts to the metal bracket (06 000 533) with self-tapping screws (02 000 074) as shown in Figure 50. The bracket then mounts to the right side (toward rear of vehicle) of the compartment with the same screws (Figure 49 & Inset). The 6 gauge wire (red but inside a wire loom) from under the vehicle enters this compartment and mounts to the top (AUX) terminal of the Breaker (trim wire to proper length and attach an eyelet lug)(Figures 49 & 50). The remaining length of wire has an eyelet lug attached and is secured to the bottom (BAT) terminal of the breaker and routes out of the compartment (Figure 51) to the battery (located under a cover in the floor of the vehicle to the engine side of the Wire Compartment) where the wire is cut to length, an eyelet lug installed and then connected to the positive terminal (Figure 52).

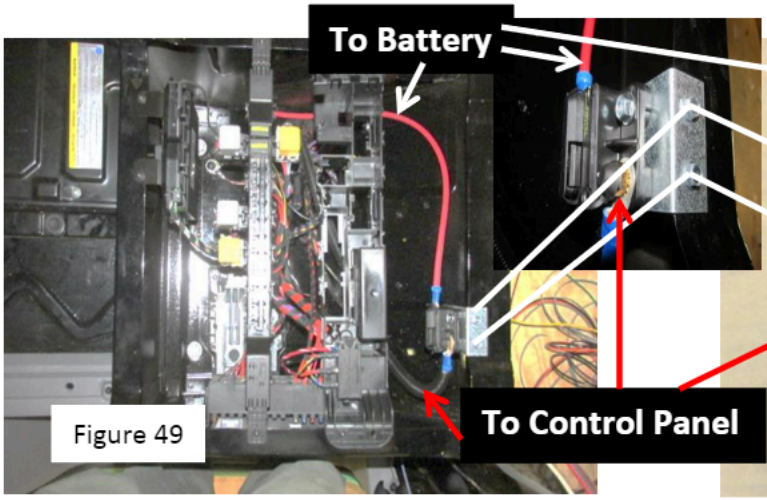


Figure 49

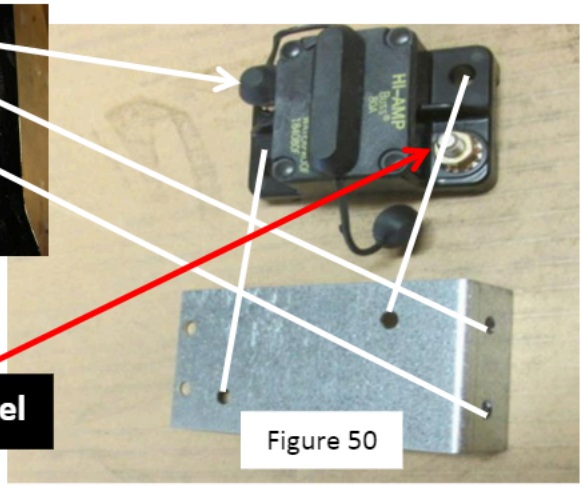


Figure 50

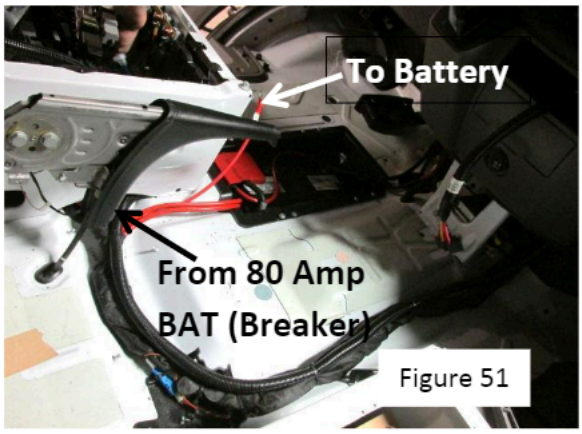


Figure 51

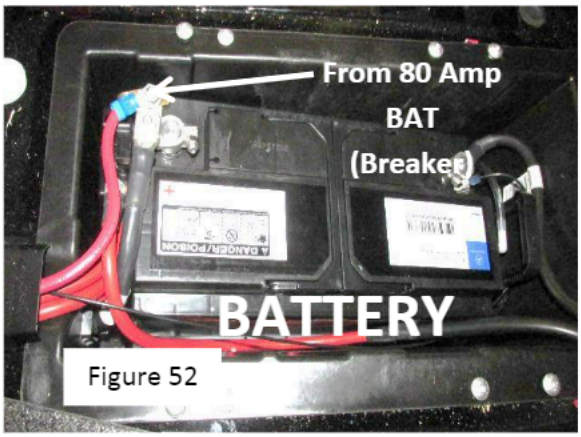


Figure 52

27. The Red/White Stripe wire (Ignition) coming up from the underside of the vehicle has an eyelet lug attached and is connected to the terminal shown in Figure 53.

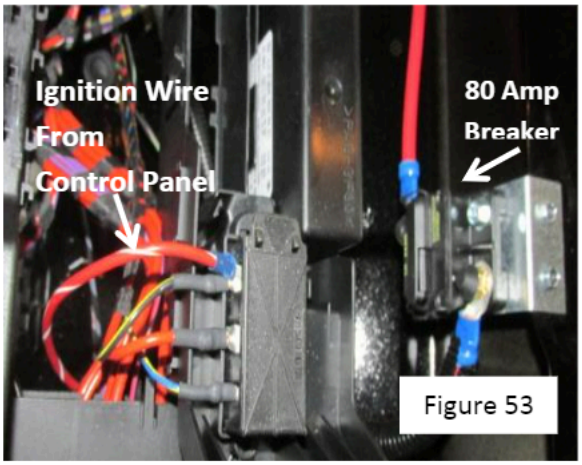


Figure 53

28. Connect the devices under the vehicle (Condenser, Condenser Relay, Booster Pump and Water Valve).

For the Condenser Relay, Condenser Harness and Condenser Pigtail, *remove all connectors and splices from the the wires except the eyelet lug on one of the Black wires on the Relay to be connected later (Figure 54).*

The wires are butt spliced as follows:

- Condenser Relay Blue wire to Condenser Harness Blue wire
- Condenser Relay Red/White Stripe wire to Condenser Harness Black wire
- Condenser Relay Red wire to Condenser Pigtail Red wire
- Condenser Relay Black wire to Condenser Pigtail Black wire *(Note: An additional Black wire included in a pre-made splice with eyelet lug installed, as noted above, is grounded to the vehicle chassis with a self-tapping screw.)(Figure 55)*

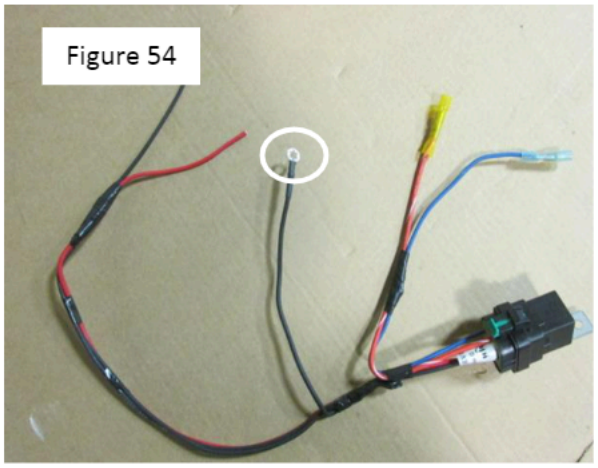


Figure 54

Figure 55

29. The Booster Pump and Water Valve are now connected to the system using the wires in Figure 56. The Blue/White wire previously broken away from the wire loom is butt spliced to the Blue wire from the Water Valve and the Red wire from the Booster Pump. The Brown wire from the Water Valve and the Black wire from the Booster pump are joined to an eyelet lug and grounded to the chassis with a self-tapping screw. *Note: If either device ground is not long enough to reach the chassis, supply your own wire and butt splice the two device wires (Black and Brown) and attach an eyelet lug to the other end, then ground with a screw.* Figure 57 shows a finished installation.

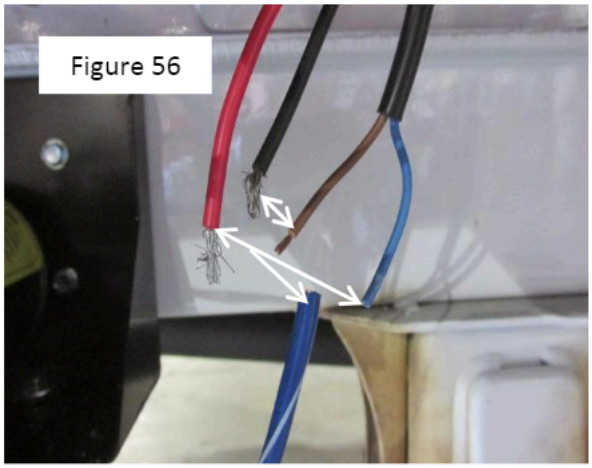


Figure 56

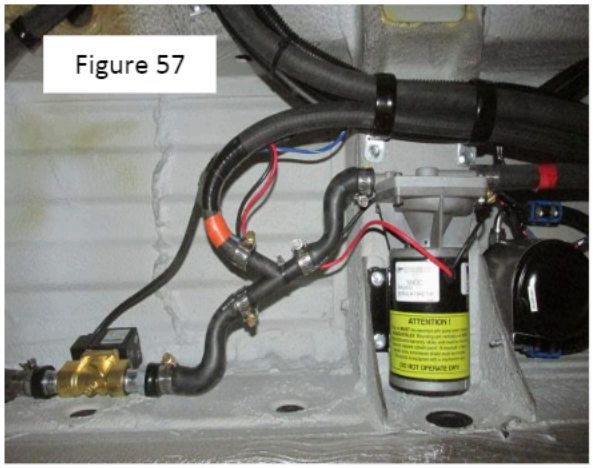


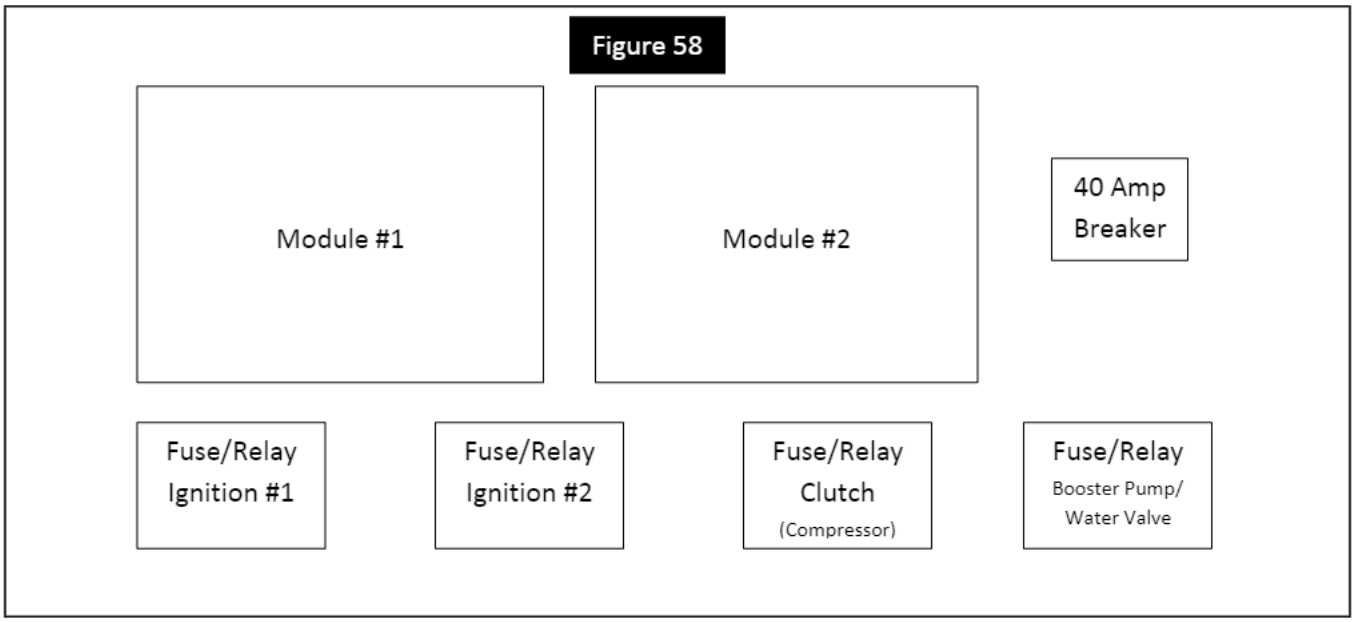
Figure 57

30. The final process of installation is to create the Control Panel. Typically, this is a piece of plywood, sometimes covered for aesthetics, and mounted somewhere out of the way in the vehicle but accessible. The following devices must be mounted on the panel:

- Module #1 (Multi-Speed Board), 01 000 539
- Module #2 (Multi-Speed Board), 01 000 539
- 40 Amp Breaker, 01 000 320
- 20 Amp Fuse prewired to 40 Amp Ignition Relay #1, 01 000 239, controls Module #1
- 20 Amp Fuse prewired to 40 Amp Ignition Relay #2, 01 000 239, controls Module #2
- 15 Amp Fuse prewired to 40 Amp Booster Pump/Water Valve Relay, 01 000 012
- 7.5 Amp Fuse prewired to 40 Amp Clutch (Compressor) Relay, 01 000 334

Figure 58 is a possible layout while Figure 59 shows the actual component layout in this configuration:

Figure 58



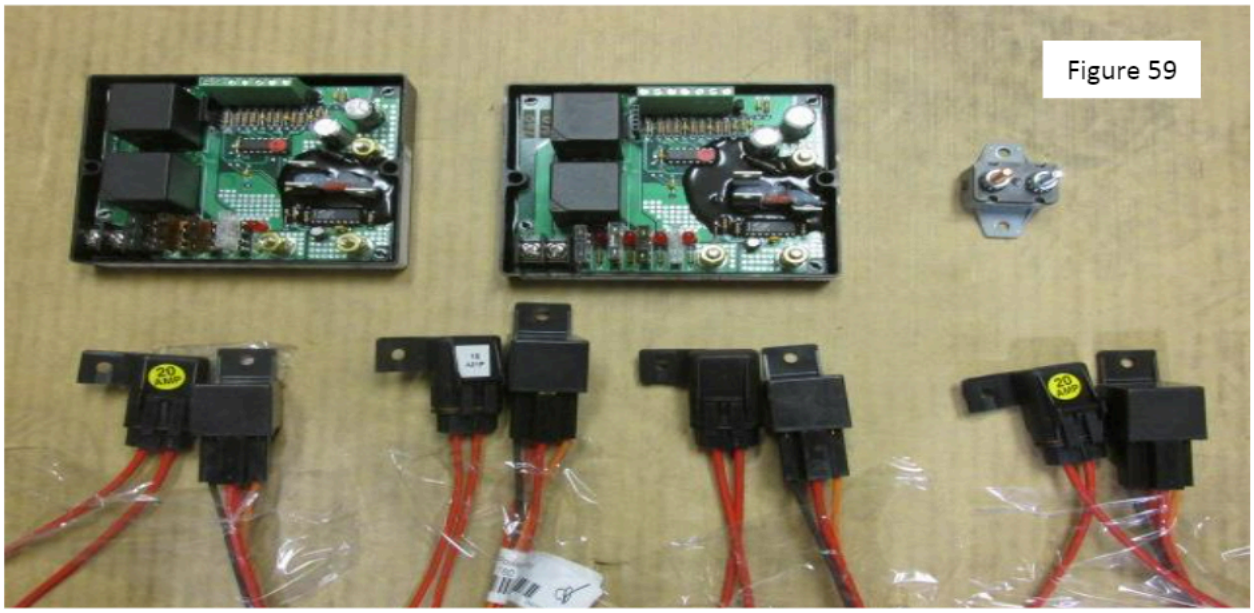


Figure 59

31. The various devices in the system (Compressor, Condenser, Evaporator, Water Valve and Booster Pump) are powered by the 12 volt vehicle electrical system and are controlled by two modules that "talk" to the devices. Board commands and power for the devices pass through relays connected to the devices.

Once the Control Panel is constructed, it can be wired by either following Diagrams 3 and 4 at the end of these instructions or by using the wiring list provided in Figure 60. Connections are generally made with butt connectors or eyelet lugs/terminals. Diagram 5 illustrates the relays wiring schemes.

The wiring for the panel comes from wiring already attached to the components on the board and from the Evaporator Harness, Condenser Harness and Customer Created Harness.

CONTROL PANEL WIRING

Figure 60

✓	Item	A	Connection	B
☐	1	Customer Created Harness/Blue-White Stripe	Butt Splice	Booster Pump Relay Power Out/Red
☐	2	Customer Created Harness/Red-White Stripe	Butt Splice	Ignition Relay #1 Signal In/Orange
				Ignition Relay #2 Signal In/Orange
☐	3	Customer Created Harness/ 12 Gauge Red	Butt Splice	Clutch Relay Power Out/Red
☐	4	Condenser Harness/Blue		
☐	5	Customer Created Harness/6 Gauge Red	Terminal	40 Amp Breaker-BAT/Red
☐	6	Condenser Harness/Black	Terminal	40 Amp Breaker-AUX/Black
☐	7	Module #1 Cool/Blue	Term/BS	Evaporator Harness-Low P SW In/Blue
☐	8	Module #1 Heat/Orange	Terminal	Booster Pump Relay Signal In/Orange
☐	9	Module #1 +12VDC/Red	Terminal	Ignition Relay #1 Power Out/Red
☐	10	Module #1 Output/Orange	Term/BS	Evaporator Harness/Orange (either)
☐	11	Module #2 +12VDC/Red	Terminal	Ignition Relay #2 Power Out/Red
☐	12	Module #2 Output/Yellow	Term/BS	Evaporator Harness/Orange (either)
☐	13	Fuse, 20 Amp Tied to Ignition #1 Relay Power In/Red	Terminal	40 Amp Breaker-BAT/Red
☐	14	Fuse, 20 Amp Tied to Ignition #2 Relay Power In/Red	Terminal	40 Amp Breaker-BAT/Red
☐	15	Fuse, 7.5 Amp Tied to Clutch (Compressor Relay Power In/Red	Terminal	40 Amp Breaker-AUX/Red
☐	16	Fuse, 15 Amp Tied to Booster Pump Relay Power In/Red	Terminal	40 Amp Breaker-AUX/Red
☐	17	Booster Pump Relay Ground/Black	Eyelet	Vehicle Chassis
☐	18	Clutch (Compressor) Relay Ground/Black	Eyelet	Vehicle Chassis
☐	19	Ignition Relay #1 Ground/Black	Eyelet	Vehicle Chassis
☐	20	Ignition Relay #2 Ground/Black	Eyelet	Vehicle Chassis
☐	21	Module #1 Ground/Black	Term/Eye	Vehicle Chassis
☐	22	Module # 2 Ground/Black	Term/Eye	Vehicle Chassis
☐	23	Clutch (Compressor) Relay Signal In/Orange	Butt Splice	Evaporator Harness High P Sw Out/Blue

32. The Control Panel is finished by wiring the Thermostat. The Thermostat is connected to the Thermostat Harness 01 000 538 by a 7- pin connector on one end of the harness (Figure 61). The other end of that harness is hard wired into Module #1 (Figure 62). Five of those connections on Module #1 are jumpered over to Module #2 (Figure 63). The wire for that process is cut off of the bare end of the harness (about 8 inches) before the harness is connected (Figure 64). Follow the same color coding on the jumper wires.

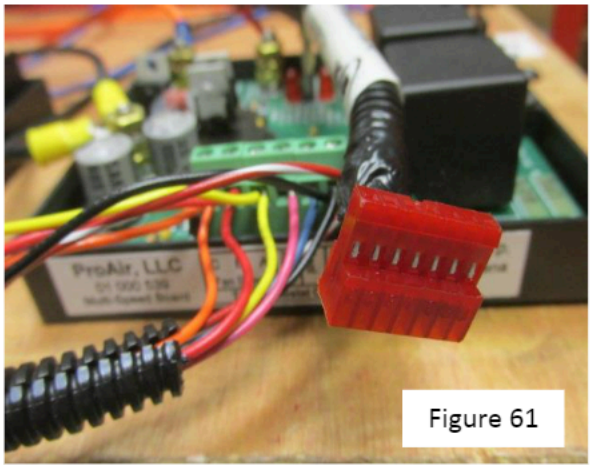


Figure 61

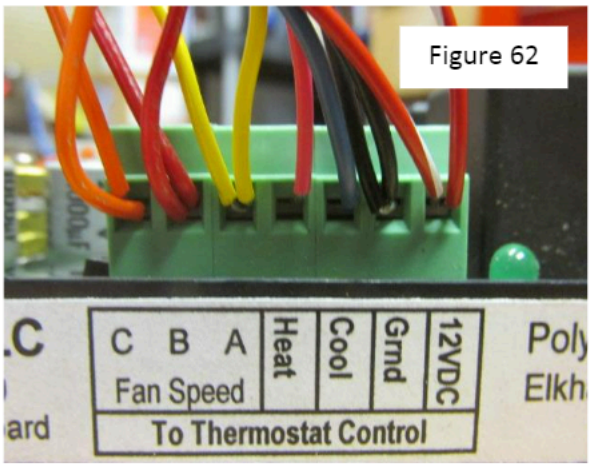


Figure 62

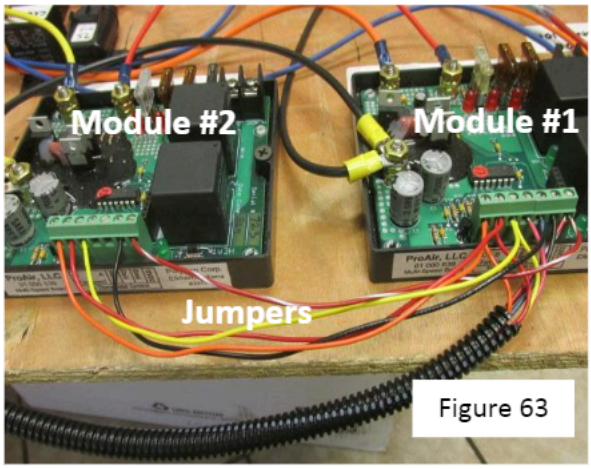


Figure 63

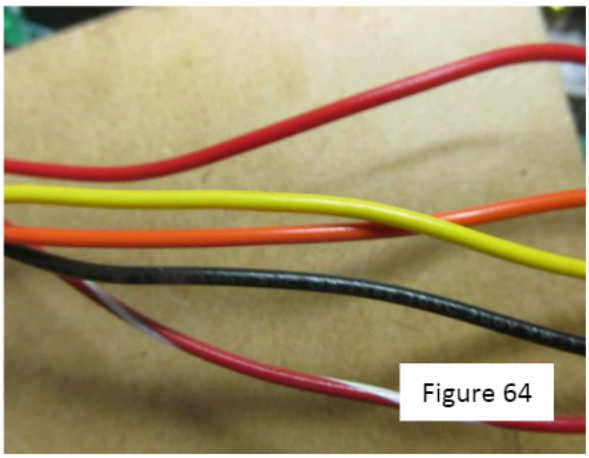


Figure 64

THERMOSTAT CONNECTION

Thermostat wires connect to terminal block on Module 1 as follows and are jumpered Module 1 to Module 2 if needed:

Thermostat Wire	MD 1 Terminal	Jumper to MD 2?
Red/White	12VDC	Yes
Black	Ground	Yes
Blue	Cool	No
Pink	Heat	No
Yellow	A	Yes
Red	B	Yes
Orange	C	Yes

33. The Thermostat (01 000 540) can now be connected to the Thermostat Harness. Four screws (02 000 037) are supplied for mounting the unit to the location you select (Figure 65).

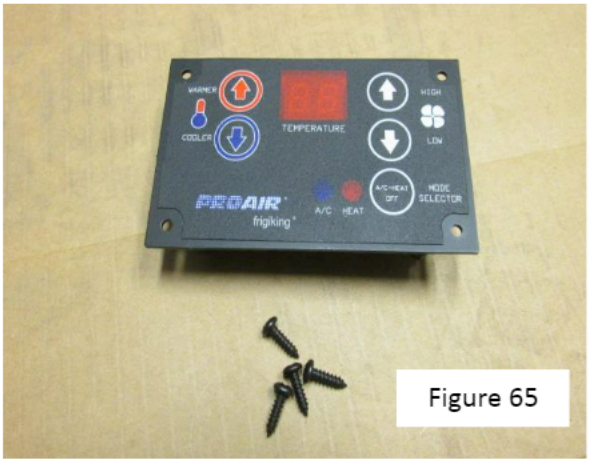


Figure 65

34. With the installation now complete, seal all holes with silicone seal. This includes holes created for hoses/wiring harnesses to enter and exit the vehicle (Figure 66). This is to keep out moisture and contaminates. Also apply silicone behind the water valve and any locations where hoses come in contact with any vehicle structures (Figure 67), especially OEM related components.

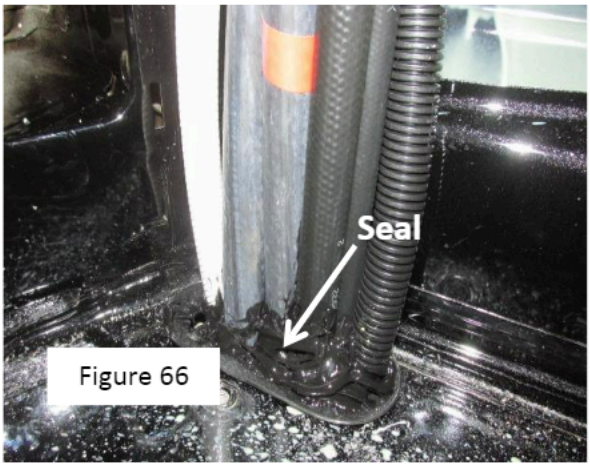


Figure 66

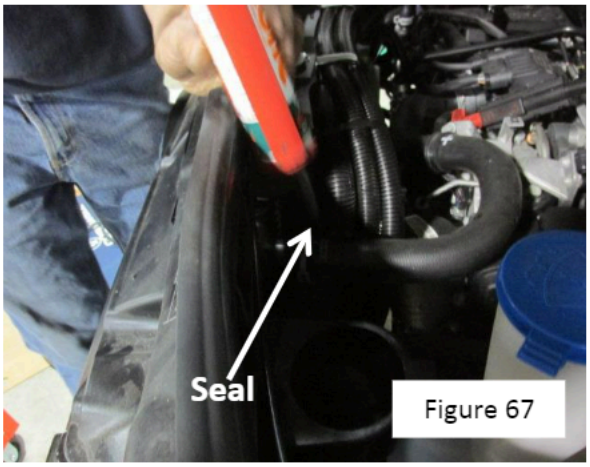


Figure 67

35. The cooling system should now be evacuated. PAG Oil and R134a refrigerant are then added according to the chart below based on the Evaporator and Condenser you have in your system :

Evaporator	Condenser	Refrigerant (oz)	PAG Oil (oz)
EZ5	110	84	10.5
560	110	72	9.0
560	109	68	8.5

36. Several informational labels are provided to document installation and provide those who service the system with proper maintenance information. Those are:

09 000 035

This label notes the refrigerant and PAG oil capacity of your system. It should be applied somewhere in the engine compartment.

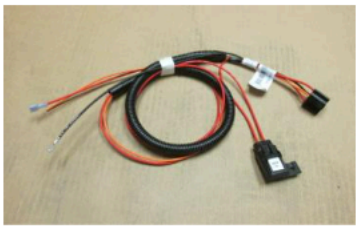
09 000 037

This label notes the anti-freeze mixture ratio and should also be applied in the engine compartment.

09 000 046

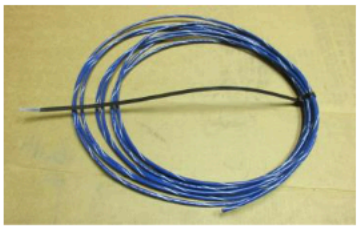
This label provides information as to date of installation and the installer's name. The serial numbers for the Condenser and Evaporator are noted here as well as your kit number. It should be attached to the driver side door jamb.

PARTS



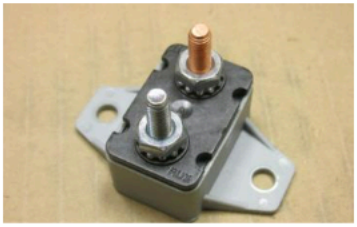
01 000 012

01 000 239



01 000 318

01 000 319



01 000 320

01 000 334

01 000 335

01 000 352

01 000 400

01 000 412

01 000 538

01 000 539

01 000 540

01 000 615

02 000 015

02 000 021

02 000 023

01 000 037

02 000 052

02 000 074

02 000 132

02 000 138

02 000 235

02 000 390

04 000 009

04 000 010

04 000 025

04 000 044

04 000 053

04 000 054

04 000 055

04 000 077

04 000 078

05 000 020

05 000 029

05 000 089

05 000 110

05 000 481

05 000 484

05 000 502

05 000 504

05 000 527

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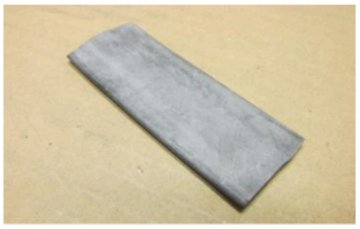
05 000 547

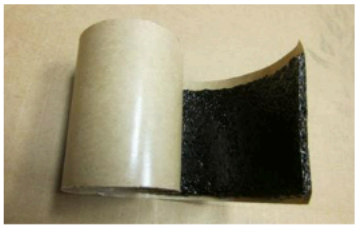
05 000 551

05 000 631

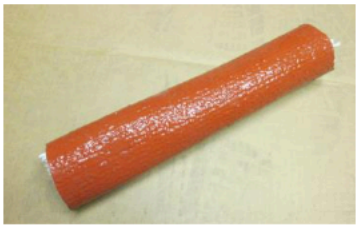


05 000 971

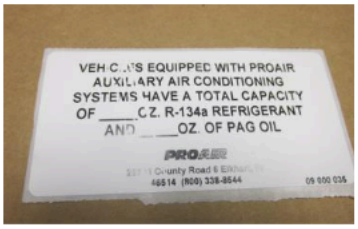
06 000 533



08 000 017



08 000 124



09 000 035

09 000 037

09 000 046

09 000145

09 000186

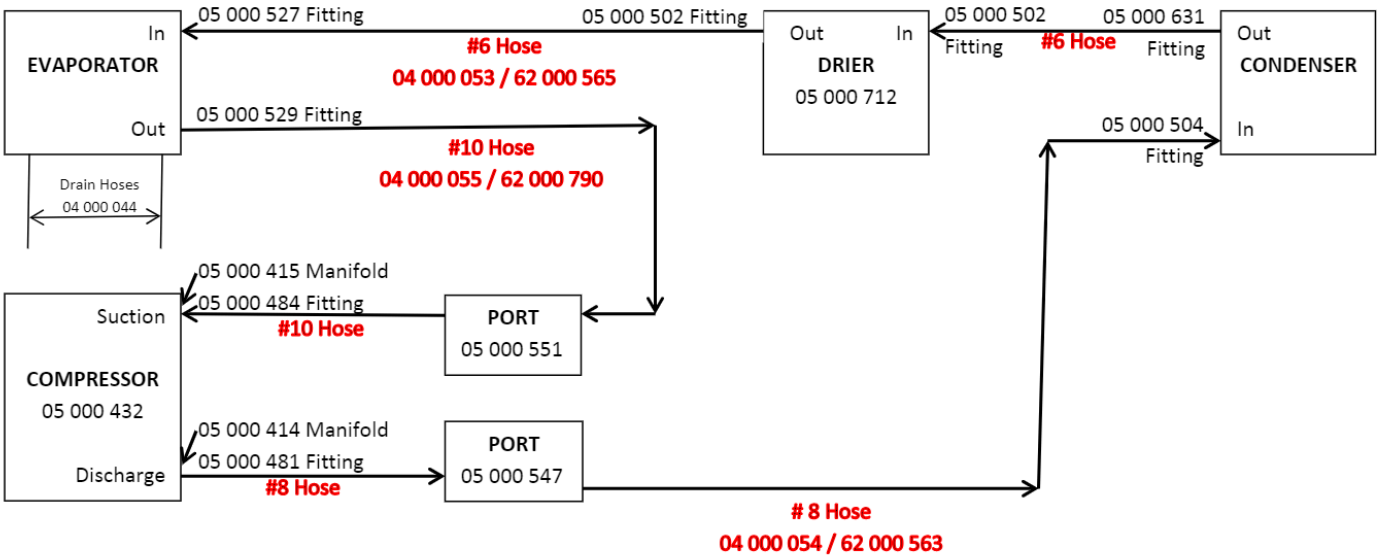
09 000 189

09 000 190

62 000 274

Diagram 1

AIR CONDITIONING LAYOUT – EZ5 EVAPORATOR

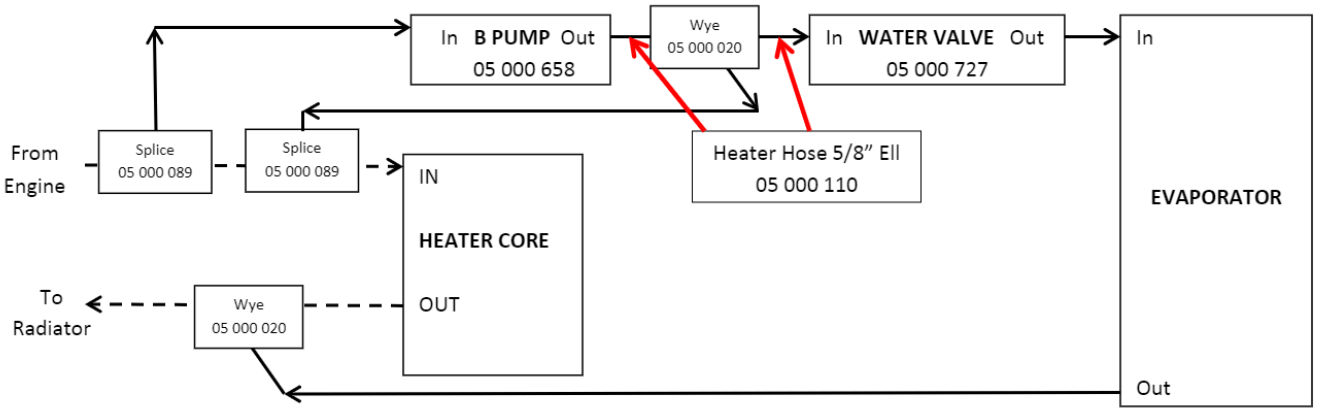


Notes:

- Part Numbers for fittings for hoses connecting to devices are noted
- #6 Hose=5/16”=PN 04 000 053, #8 Hose=13/32”=PN 04 000 054, #10 Hose=1/2”=PN 04 000 055
- Fittings require a special crimp tool

Diagram 2

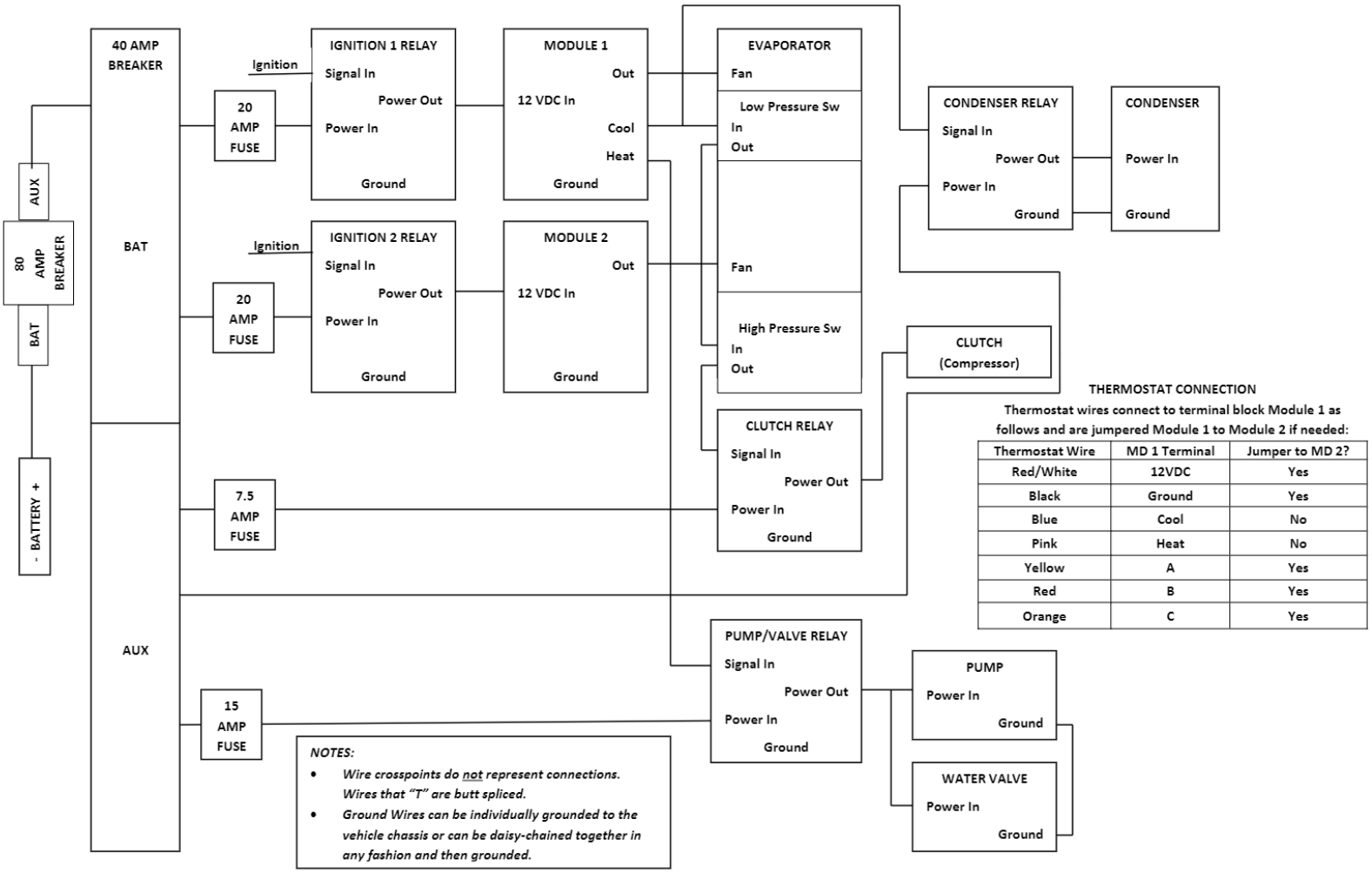
HEATING LAYOUT – EZ5 EVAPORATOR



Notes:

- Dotted lines above represent OEM installed hose
- Kit installed hose is 5/8" standard heater hose PN 04 000 025 attached with clamps 02 000 390

WIRING DIAGRAM / EZ5 EVAPORATOR WITH DIGITAL CONTROL

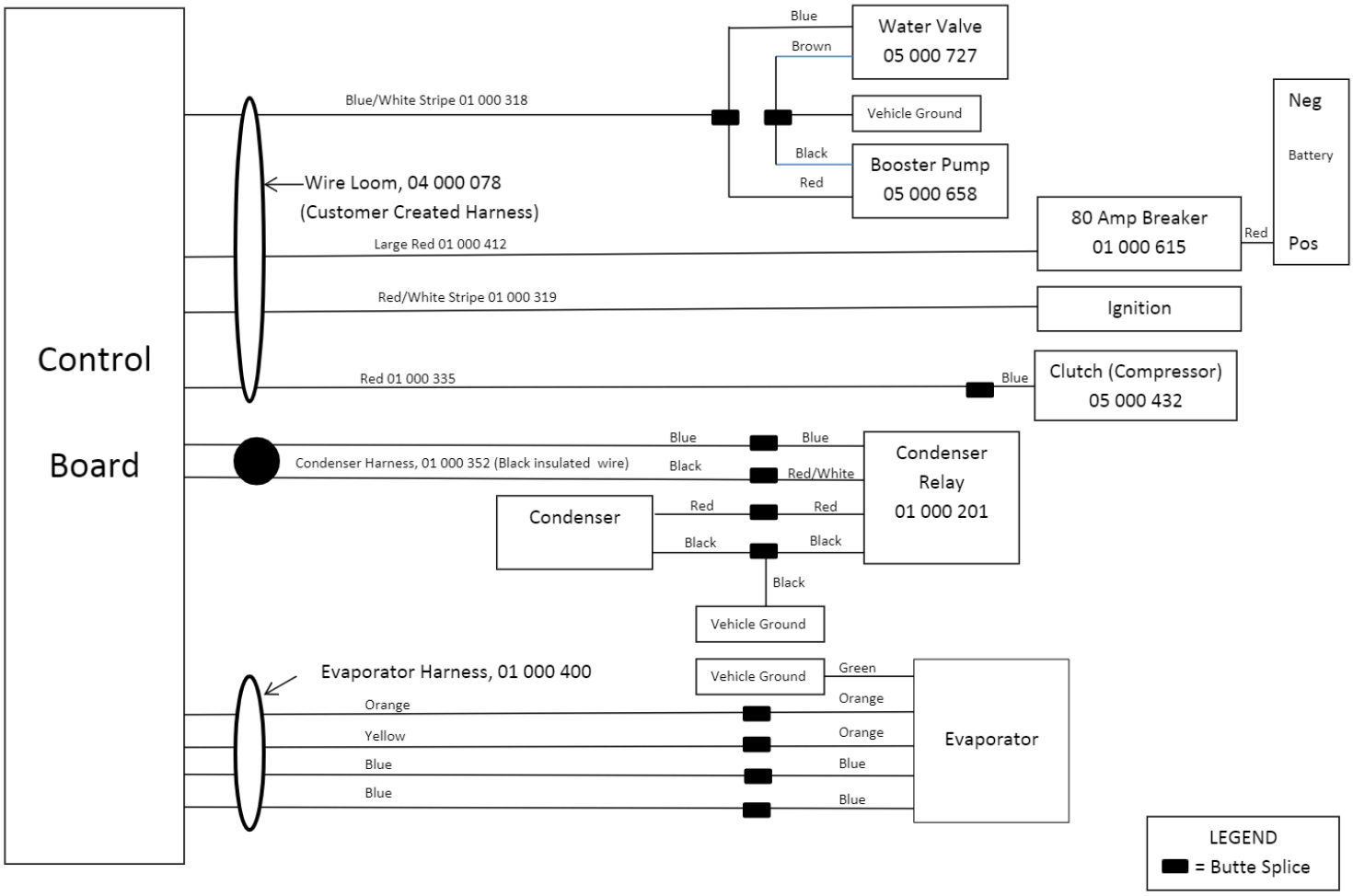


THERMOSTAT CONNECTION

Thermostat wires connect to terminal block Module 1 as follows and are jumpered Module 1 to Module 2 if needed:

Thermostat Wire	MD 1 Terminal	Jumper to MD 2?
Red/White	12VDC	Yes
Black	Ground	Yes
Blue	Cool	No
Pink	Heat	No
Yellow	A	Yes
Red	B	Yes
Orange	C	Yes

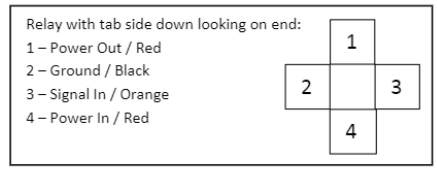
HARNESS DIAGRAM – SPRINTER 170 WITH EZ5 EVAPORATOR/DIGITAL CONTROL

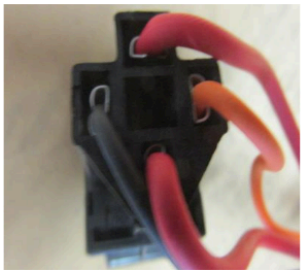


RELAY WIRING

Relays 01 000 012, 01 000 239
01 000 334
Power Relay

Relay with tab side down looking on end:
1 – Power Out / Red
2 – Ground / Black
3 – Signal In / Orange
4 – Power In / Red





Relay 01 000 199 / 01 000 201
Condenser Relay

Relay with tab side down looking on end:
1 – Power In / Red-White
2 – Signal In / Blue
3 – Ground / Black
4 – Power Out / Red