Mercedes Fix

Mercedes Automatic Climate Control System II:

Installation Manual and General Information

Before Installation:

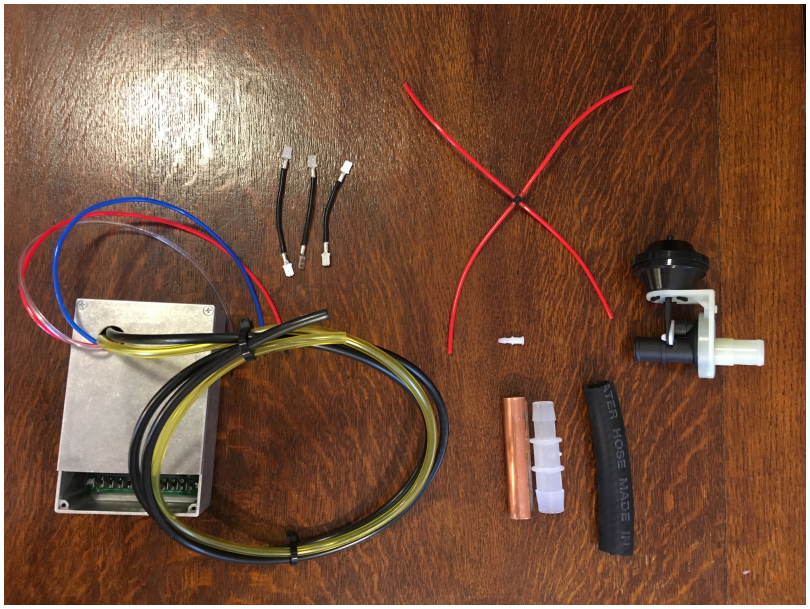
-The typical installation takes about two hours to complete.

-Ensure that all fuses are in good condition, and not corroded or knocked out of place.

-You'd be surprised how often a faulty fuse causes the whole system to fail.

-Start the car and cycle through every climate control setting. Make sure any of the issues present in your automobile are not vacuum leaks. If your climate control system is not functioning properly as a result of vacuum leaks, this will not solve your problem.

-Before working under the hood, ensure the car has had plenty of time to cool. Make certain the vehicle is in park with the emergency brake on. Also, disconnect the negative battery cable to prevent any electric shocks or shorts.



What's Included

(1) New electronic control unit with **five** vacuum hoses attached

(1) Heater core "hot water" vacuum valve

(1) Copper tube

(1) 5/8" to 3/4" radiator hose coupler

(1) 3/4" Diameter radiator hose

(3) Quick-connect cables for servo amplifier bypass

(1) 4-Way vacuum hose connector

(1) 1/8" Vacuum Plug

Helpful/ Necessary Tools

-Phillips screwdriver (multiple sizes and lengths)

-Flat-head screwdriver/ pry tool

-Various pliers (needle-nose, channel locks)

-Socket Set

-Multimeter (optional for testing)

-Gauge to measure vacuum (if the car has a vacuum leak)

How it Works

-The purpose of the Mercedes Automatic Climate Control II system is for the car to regulate the fan speed and heater valve positions to maximize the passenger's comfort, based on the inputs from the thumbwheel. In the original design, the a/c compressor is constantly running and is mixed with varying levels of heat to reach the desired temperature in the cabin. The amplifier-servo setup receives a certain resistance value based on the car's three-sensor chain and then uses that information to determine whether it is in heating or cooling mode, and the optimal fan speed to balance the desired temperature with the actual temperature. Although the original design sounds fantastic in theory, the servo and amplifier are poorly designed parts sourced from Chrysler, and simply cannot stand the test of time.

-Our modern update kit easily integrates into the existing system to maintain the original controls, and provide OE function. The central control unit you are about to install takes the job of both the amplifier and the servo. It uses a modern electronics system to analyze that same sensor chain, and make real-time calculations to balance the temperature and fan speed. The central control unit is made up of three solenoid motors that are able to open and close vents inside the car and the heater valve based on inputs from the user, just as the original system did. These solenoid valves are designed for medical instruments, and are thus very durable.

Plan for Installation

****Ensure the car is off and cold before working! Also, disconnect the battery.****

-Make note of any vacuum issues before installing the update kit.

1) Remove the glove box to gain access to the amplifier-connector.

2) Following the diagram, install three jumper wires across ports on the amplifier-connector.

3) Disconnect the vacuum block and wiring harnesses from the servo under the hood.

4) Unscrew the servo from the mounts, and then loosen the cooling hoses from the bottom four ports.

5) Remove the servo from the car and set it aside.

6) Install the copper tube between the return lines.

7) Install the hot water vacuum valve between the auxiliary water pump and heater core.

8) Cut and insert the source vacuum line.

9) Connect the vacuum line to the hot water vacuum valve.

10) Connect the vacuum hoses from the control unit to the vacuum block removed from the servo.

11) Connect the old servo wiring harness to the new electronic central control unit.

12) Install cable ties to hold the central control unit to the old bracket/ firewall/ appropriate location.

13) Tidy up and reinstall the battery. Then, crank the car and test for functionality.

Make Note of any Vacuum Leaks Before Installation

-Make sure you correct any vacuum leaks you are aware of before installing the update kit, as they will hinder the function of your new kit. If finding and fixing vacuum leaks is above your comfort level, consider taking your vehicle to a trusted mechanic to have the vacuum system tested.

-Behind the glovebox, you will find the car's vacuum switches. These are often the source of vacuum leaks. You can test for system functionality by bypassing certain switches if you believe they are leaking. One switch in particular (labeled #14 or #19 depending on the chassis) controls whether the blower motor can come on or not. If your blower motor **only functions on defrost,** you likely have a vacuum leak or faulty vacuum switch. Some folks have installed an electronic toggle switch in place of vacuum switch #14/ #19 to manually control whether the blower motor can receive power.

-You need at least 6 inHg of vacuum in the system for the kit to function properly.

Step #1: Remove the Glovebox

**Please note plastic fasteners on these old cars are brittle. They will break if you use too much force.

1) Around the perimeter of the glovebox, you will find up to seven two-piece plastic fasteners. Using a flat-head screwdriver, carefully pry the center piece out first, and then lift up to remove the outer-section of the plastic fastener.

2) Remove the screws holding the glovebox latch in place. Set these parts aside for reassembly.

3) Gently pry around the edges of the glovebox light. It will pop out, and you can slip it back through its hole vertically, so it is safely behind the glovebox liner and out of the way.

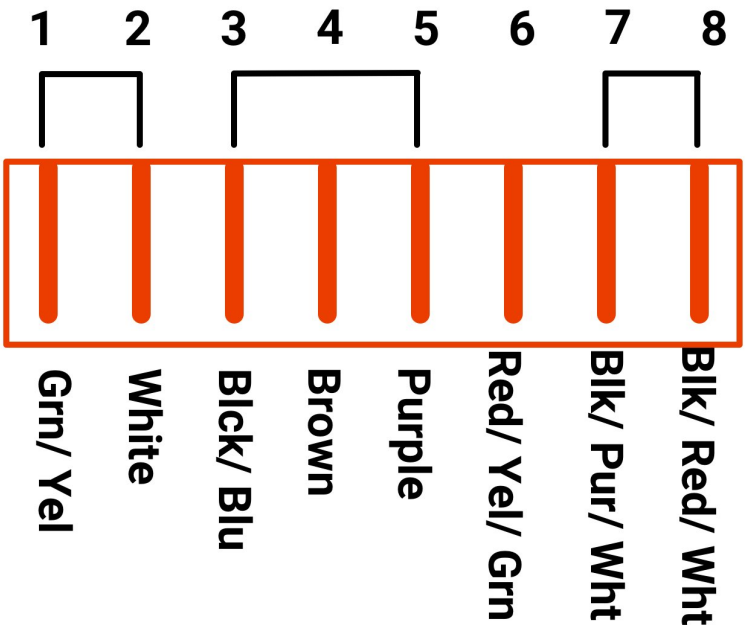
4) Once every fastener is fully removed and set aside, grip the edges of the glovebox liner and work it out of the car. It too is old and liable to crack, so be extremely careful. After some maneuvering, you will free the glovebox liner to reveal the inside of your dash. Set the glovebox liner aside for reassembly.

Step #2: Bypassing the Amplifier

1) Locate the climate control amplifier. On the R107 chassis, it is located in the back left of the glovebox cavity (steering wheel side). For the other models, it is located on the back right side (fender side).

2) The amplifier is held in by two Phillips head screws. They can be exceedingly time consuming to remove. Thus, many people prefer to simply remove the wiring connector and leave the amplifier in place, which is fine.

3) Slide the wiring connector off the amplifier. Then install the **three included jumper wires** to connect pins 1-2, 3-5, and 7-8. Make sure the jumper wires seat fully in connector ports. **PAY CAREFUL ATTENTION TO THE WIRE COLORS BELOW. YOU DO NOT WANT TO INSTALL THESE BACKWARDS.** See the diagram below:



Steps #3, #4, and #5: Pulling the Servo

1) Remove the Phillips head screw in the middle of the vacuum block attached to the top of the servo. Then slide the vacuum block out of the servo.

2) Slide both wiring connectors off the servo. Set aside for later.

3) Loosen the hose clamps holding the coolant hoses onto each of the four ports on the bottom of the servo (do not remove the hoses yet).

4) Loosen the two bolts holding the servo to the bracket.

5) See the photo below to tag which side of the servo is for “return” and which is the “source" for the heater core. Be ready to cork or stop the lines quickly after removing them from the servo. Minimal coolant loss is very important to prevent too much air from entering the system. Once you are prepared, carefully slip the lines off the servo one at a time and stop/ cork them.

6) The servo is now free. Disconnect the two vacuum lines on the bottom of the servo upon removal of the servo. Then, set it in a safe location (it may drip coolant).

Steps #3, #4, and #5: Pulling the Servo (Continued)

-The “return side” of the servo is the side with the two wide openings. Between these two lines, you will later install the copper tube.

-The “source side” of the servo is the side with the smaller opening on one end, and the larger on the other. Between these two lines, you will later install the vacuum-valve.

Steps #6 and #7: Installing the Copper Tube and the Valve

1) Referring back to the image on page #10, separate the “return” and “source” sides.

2) Quickly pull the stoppers from the two return lines (one at a time), and use the provided copper pipe to connect the two lines. Make sure the hose clamps (from the servo) are loosely on the lines in advance, so you can quickly tighten them down and secure the copper pipe between the return hoses.

3) For the source lines, the hose coming off the auxiliary water pump is 5/8” and the hot water vacuum valve you will install requires a 3/4” hose on both sides. Thus, we included a 5/8” to 3/4” coupler and a piece of 3/4” hose. Trim and bend the 5/8” coolant hose already on the auxiliary pump to the proper length and direction (differs slightly depending on your chassis), to allow the hot water vacuum valve and the hose adapter to fit between the two lines. Please see the photos for an example from an R107 380sl.

4) Once the 5/8” hose already on the auxiliary pump is the proper length and direction, install and clamp the 5/8” to 3/4” coupler to the 5/8” hose auxiliary pump hose.

5) Then trim a short piece of the 3/4” hose and attach it to the **black side** of the hot water vacuum valve. Using hose clamps, fasten the 3/4” hose on the hot water valve to the 3/4” side of the 5/8” coupler you previously installed on the auxiliary pump coolant hose.

6) To complete the cooling-system, attach the **white side** of the hot water valve to the heater core “in” line. This line is already 3/4” so no conversion is necessary.

Steps #6 and #7: Installing the Copper Tube and the Valve (Photos and Details)

(You will likely loose coolant during this process, which is not optimal, but you will add coolant to the coolant-tank at the end, so a system bleed is typically not necessary.)

Step #8: Control Unit Vacuum Source

1) The black vacuum line coming out of the new central control unit will be the kit's vacuum source. This must be connected to a constant source of vacuum, for example, the vacuum reservoir line. See steps #2 or #3 for adequate vacuum sources.

2) (for w116 and w123 only) Behind the brake booster, you will find a three-way connection between a yellow line, black line, and grey line. The black line branching off the yellow vacuum line is the best choice here, as it carries vacuum from the driver's side to the passenger side (where you will mount the central control unit). Follow this black line to the passenger side of the car. Then, cut the line and tap into it. The black line coming out of the new central control unit is preinstalled with a three-way "T" made up of hoses to tap into any of these lines. The two halves of the cut line will slip into the two hoses coming out of the new black line.

3) (for R107 only) The vacuum reservoir is located in the passenger front fender. Right by the coolant tank (along the passenger fender), there will be a yellow and grey striped line entering into the passenger fender. This is a good vacuum source. Cut the line and attach it to the black source line coming out of the new central control unit. The two halves of the cut vacuum line will slip into the two hoses coming out of the three-way "T" on the black vacuum source line.

Steps #9 and #10: Vacuum Accessory Connections

1) The thick, clear vacuum line coming out of the new central control unit slides onto the fitting onto of the hot water vacuum valve you previously installed.

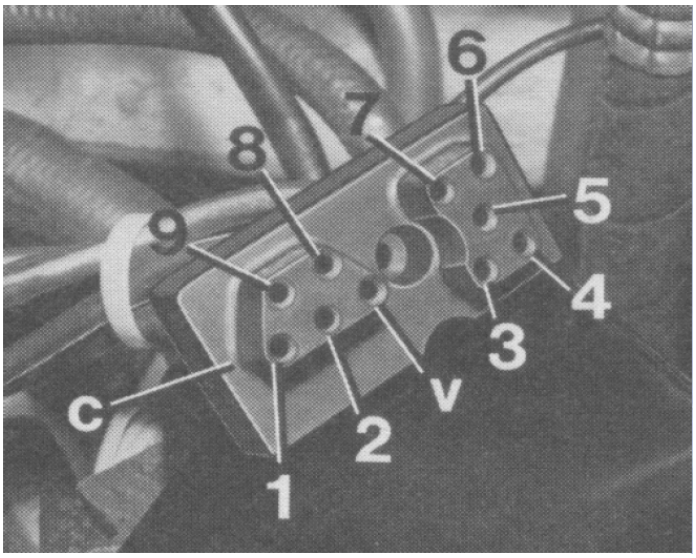
2) See the diagram of the connector removed from the servo unit below:

-Push/ connect the blue line from the new central control unit into port #8.

-Push/ connect the clear line from the new central control unit into port #5.

-Push/ connect the red line from the new central control unit into port #7.

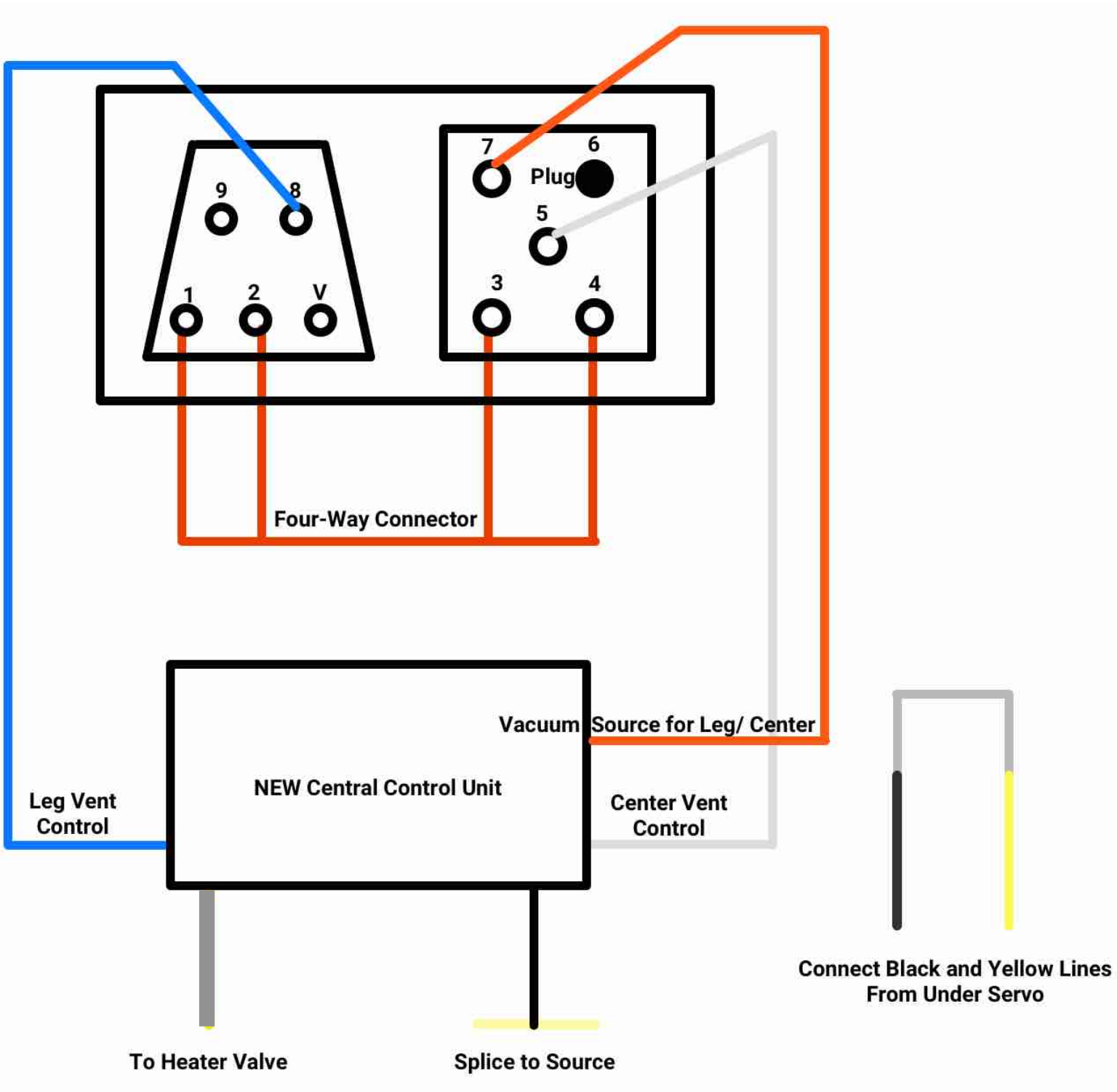
-Push/ connect the provided 4-way vacuum line connector into ports 1, 2, 3, and 4.



-Push/ connect the provided 1/8” vacuum plug into port #6.

3) On the bottom of the servo, you disconnected a yellow (or white) and black vacuum line previously. Using the provided short piece of 1/8” inside diameter vacuum line, slide each vacuum line into the hose to attach them together.

Steps #9 and #10: Vacuum Accessory Diagram



Step #11: Connect the Wiring Harness

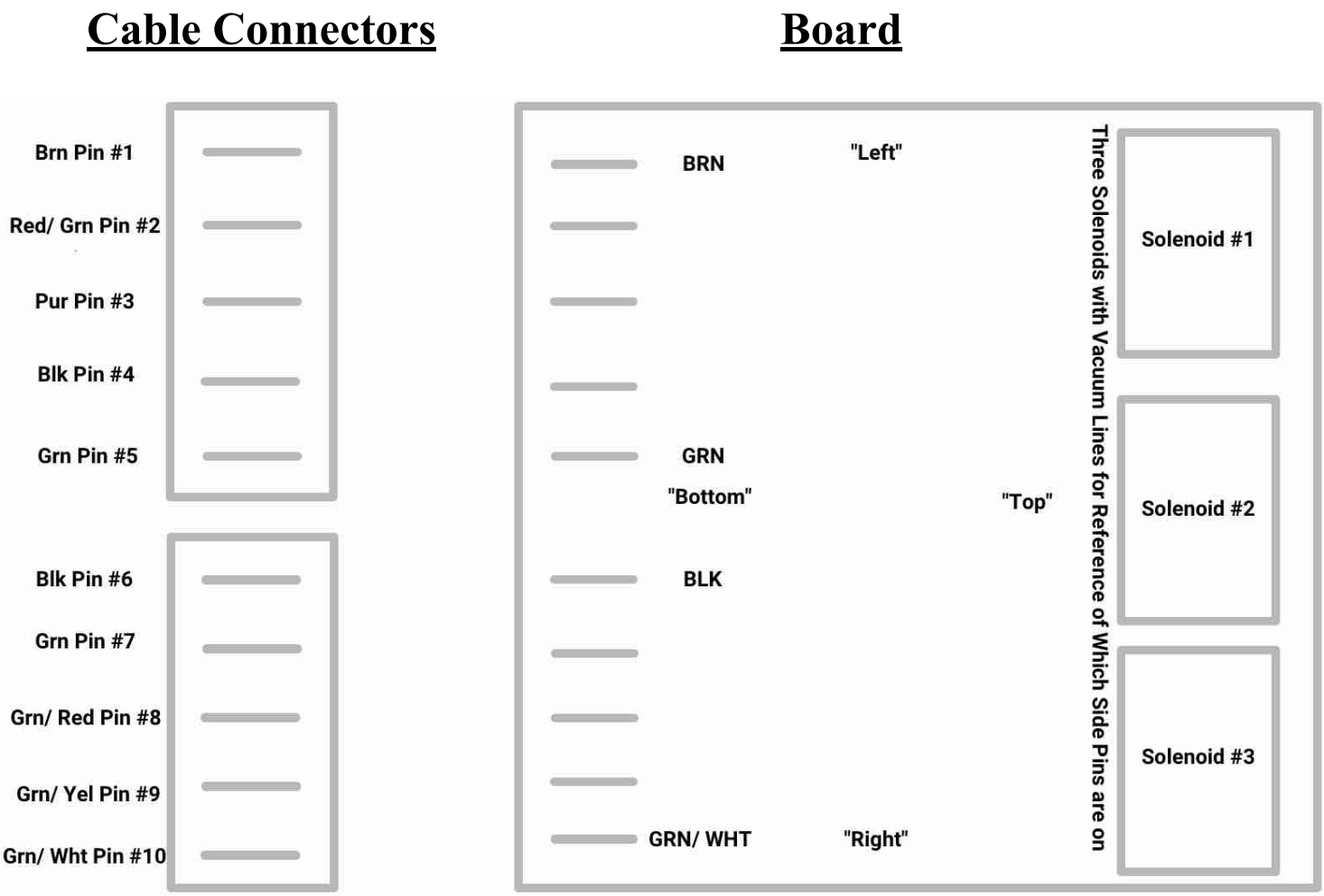
1) Locate the two wiring connectors you removed from the servo.

2) Remove the four screws holding the top onto the new central control unit included in the kit. Identify the 10 harness connector pins at the bottom of the board. On the bottom side of the board, there are two sets of five pins, and each set holds one of the two wiring connectors. On the far end of either set, you will see the color of the corresponding wire. For example, one connector slot is labeled “BRN” on one end and “GRN” on the other. Line up the proper connector so the brown wire is on the “BRN” pin, and the green wire is on the “GRN” pin.

3) See the diagram on page 16 to identify which of the two Mercedes wiring connectors goes on each of the two 5-pin groups. Slide each of the respective wiring connectors onto their 5-pin attachments on the board.

4) Once the two wiring connectors are fastened to the board, route the wires through the cutout on the lid of the central control unit case before reinstalling the four screws. See the photos below.

Step #11: Connecting the Wiring Harness Diagram



Step #12: Securing the Central Control Unit

1) Once you have attached all vacuum lines (plus double checked your connections) and fastened the two wiring harnesses to the pins on the board, you are ready to attach the new central control unit to the servo bracket.

2) Depending on your chassis, the kit can mount in different ways. Feel free to use cable ties. Alternatively, you can drill holes in the cover of the control unit, and fasten it to the old bracket.

Step #13: Tidying and Testing

1) Using cable ties provided, organize the vacuum lines and wires in a clean manner. Make sure there are no vacuum lines in the way of moving parts, or against hot surfaces.

2) Double check the amplifier jumper wires. Make certain you didn't leave wires exposed or shorting against a piece of metal inside the dash. If you would like to wrap the amplifier connector in electrical insulation for piece of mind, this is highly recommended.

3) Reverse the steps outlined on page 7 to reinstall the glovebox.

4) Once all wires are neat and orderly, and nothing is left exposed to short, you may reconnect the battery cables. Follow proper procedure: positive first, then negative.

5) Start the car and perform the following test:

    1) Run the engine until the coolant warms to operating temperature.

    2) Press the defrost button (DEF). The blower should run at maximum temperature, and the dash vents should blow hot.

    3) Make sure the switch on your panel shows: "Air Cond" On

    4) Press "auto high" and slide the wheel all the way to 65 degrees. Allow a couple minutes for cold air to come out of the center vents. If functioning as designed, the hot water valve should close and the blower should run at maximum speed. Allow sufficient time for the interior to cool.

Step #13: Tidying and Testing (Continued)

5) When interior is getting close enough to the desired cold setting, the blower motor should slow down.

6) Continue to test hot/ cold functions as necessary.

-**My fuse blows every time I press auto low or high, what should I do?**

-Fuses blowing suggests a defect in the wiring harness. Go back through the wiring harness both inside the engine bay, and behind the glovebox to ensure there are no shorts. You want to look for pulled connectors or torn wire-casing.

-**The blower motor only comes on when I press DEF, what should I do?**

-First make sure power is getting to the central control unit, by checking the wiring harnesses with a multimeter. Another way to visually observe power getting to the central control unit is if the hot water valve is pulsing, then it is getting power.

-Second, you need to check your system for a vacuum leak. Make sure there are no cracked diaphragms or pulled vacuum lines. The issue is almost definitely a vacuum leak. You can test the hypothesis by disconnecting the connector from vacuum switch #14/ #19 (labeled #14 on R107/ #19 on W116 chassis), and jumping the connector on the wiring harness to bypass vacuum switch #14/ #19. This vacuum switch

Step #13: Tidying and Testing (Continued)

(Blower motor question continued) controls whether or not the blower motor can get power on non-defrost settings. Once you bypass it, so long as the ignition is on, your blower motor will run. If you cannot possibly find the vacuum leak, you can install a toggle switch between the wiring harness bypass wire to manually control when the blower is allowed to receive power or not.