

OMEGA
RESEARCH AND DEVELOPMENT, INC.

The
MERLIN

Magic Massage
system for vehicles

**INSTALLATION
INSTRUCTIONS**

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Overview of the MERLIN Magic Massage

The Omega Merlin Magic Massage adds massage-like vibrating operation to the driver's seat. Although the Merlin is an aftermarket accessory, it is designed so that it is fully integrated into the vehicle, and yet easy to install. The Merlin system in its standard form has:

- Six distinct vibrating "zones", in the form of off-balance weighted prewired electric motors (or "transducers") which are installed in the driver's seat back rest.
- A small processing and control unit which is also designed to be installed into the seat back. The transducers plug into this processing and control unit, along with a 2-conductor power and ground harness.
- A wireless remote control unit. This remote control unit's design also allows permanent mounting and direct wiring into the vehicle's electrical system for power and ground.

Merlin also offers "additional parts" option which is the addition of two more transducers to the seat's bottom cushion, which are an extension of the seat back's lower zones' operation.

About the Installation

Installation of the Merlin is actually very simple:

- The six transducer motors are mounted with spray adhesive into cavities cut into the seat back cushion material.
- The transducer motor wirers leads are routed to and plugged into the miniature processing and control unit, which is then connected to power and ground.

Typically the base Merlin system kit can be installed with minimal interior parts disassembly, and without removing the seat from the vehicle. In most vehicles, removing the seat back covering is an easy, straightforward process as outlined in this booklet. Please read these entire instructions before beginning the installation.

Contents of the MERLIN kit

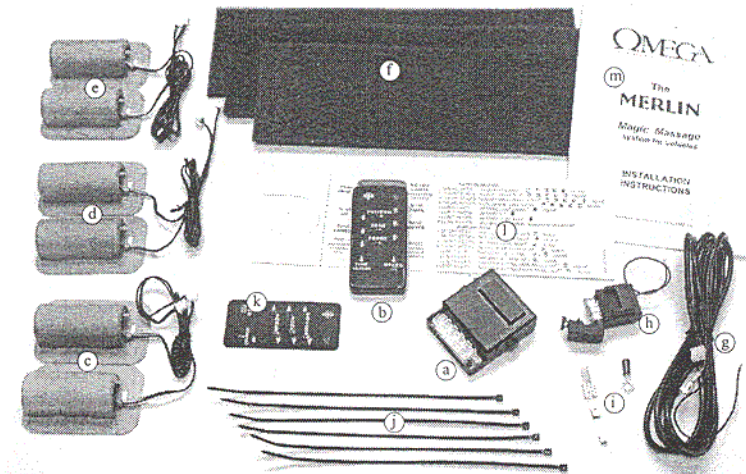


Figure 1- Merlin Kit contents:

- a) 1 processing and control unit.
- b) 1 wireless remote control unit.
- c) 2 transducer motors w/ 46cm harness.
- d) 2 transducer motors w/ 61cm harness.
- e) 2 transducer motors w/ 76cm harness.
- f) 3 foam pads.
- g) 1 power & ground harness.
- h) 1 fuseholder w/ 3 amp fuse.
- i) 1 each terminals: fuse tap, female spade, and ground ring.
- j) 6 nylon tie wraps.
- k) 1 horizontal face overlay for wireless remote control unit.
- l) 1 operating instruction card.
- m) 1 installation instruction booklet.

General Upholstery Tips

To install the Merlin, the driver's seat back covering must be removed or, in most cases, partially removed. When the standard system is installed, typically the driver's seat does not need to be removed from the vehicle. If the installation includes the optional additional pair of transducers to the seat's bottom cushion, removing the driver's seat from the vehicle is highly recommended. Please note that there is a wide range of variables in seat design and construction; these instructions are general tips and information.

Step 1 - Start by protecting interior areas, such as the seat bottom, which need not be accessed with a clean drop cloth. Begin this step with an inspection of the interior; any damage or blemishes should be brought to the customer's attention at this time to avoid potential misunderstandings that the damage occurred during or as a result of the installation.

Step 2 - Remove any hardware attached the seat back which will prevent the seat covering's removal. Such hardware items include armrests, seat back release locks and/or trim items.

- Armrests may have a fastener such as a bolt or nut, usually behind on the inside behind a trim cover. Another attachment method involves pushing or pulling the arm rest, allowing it to rotate outside of its normal travel, until it aligns with a slot in the seat's frame, allowing it to be removed by pulling it away from the seat back.
- Controls such as seat back release locks are typically knobs or handles which are attached by means of set screws, lock clips, or even friction alone. Close inspection and careful manipulation of the part usually is all that is needed to determine the correct removal method.

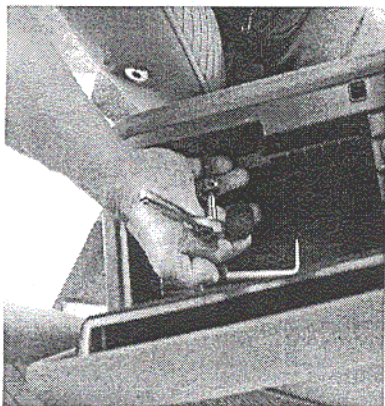


Figure 2- This armrest is removed by unscrewing a bolt from the inside, which is concealed behind a trim cover.

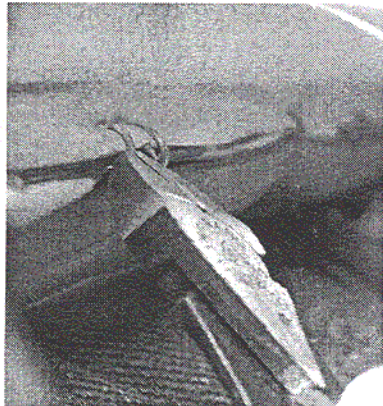


Figure 3- Upholstery rings are removed by cutting. Replace with a new ring, which requires special pliers.

- Trim items, if present, are typically retained with fasteners such as screws, which are usually found upon inspection. Otherwise, many of these trim items are held in place with some

type of "friction clip", which can be detected by careful examination and careful prying. Yet another attachment method is the "sliding clip" in which the part is released by sliding it in a sideways fashion. In some cases, especially older vehicles, the entire rear of the seat back is separate panel which must be removed in order to remove the seat's covering. Follow the same "trim items" guidelines, and particularly look for a combination of removable fasteners, clips, and/or the "slide to release" retention methods. If the seat has a separate headrest, it can usually be left in place, as the seat covering does not have to be removed from that high level of the seat back.

Step 3 - When all of the previously mentioned items have been removed, the actual seat covering material, whether cloth, vinyl or leather, is next removed from the seat padding. The average seat covering is basically like a sleeve, or "bag", and its open end is fastened together in a seam at the very bottom of the seat back. Fold the seat back forward, and examine this area. Fastening methods vary, but typically encountered are plastic strips which "lock" together (carefully pry to release the lock, then unsnap) or zippers, or upholstery rings (also known as "hog rings"). Once the seam is unfastened on this type of covering, simply grasp the bottom and carefully pull up towards the top one side at a time, allowing it to turn inside out, just like removing a sock from the foot.



Figures 4 & 5- This covering is secured by an interlocking plastic sleeve sewn to the fabric. Pry to release the locking tab on one end and it will unclip and release.

Installing the MERLIN kit

Step 1 - Remove the seat back covering enough to completely expose the padding cushion in entire back area. Access will be needed to both the front and rear of the seat back.

Step 2- Examine the seat back padding and structure for the best mounting locations for the six transducer motors and the processing and control unit.



Figure 6- Pull up the covering to expose the padding cushion material.

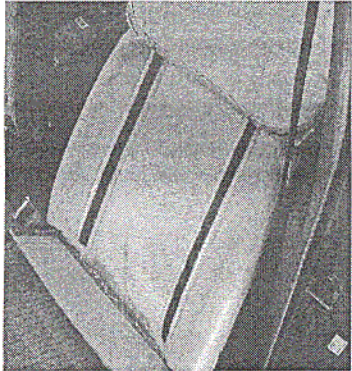


Figure 7- The padding exposed by turning the seat back covering inside out (seen at upper right).

- The transducer motors are ideally mounted at the shoulder blades, the lower part of the ribs, and at the pelvic area. However, the seat back's padding and structural parts should be taken into consideration. The transducers operate best when surrounded by as much padding cushion material as possible, and contact with any metal frame structure should be avoided to prevent rattles while the Merlin is in operation.

- During this initial examination, note that the processing and control unit mounting location should be within reach of the transducers' wiring harnesses. The ideal location for the processing and control unit is in the rear of the seat back; beneath the seat is also a mounting location option.

Step 3- After determining the mounting locations, cavities must be cut into the padding to mount the transducers. The transducer mounting location cut lines are then marked onto the padding to ensure accurate cutting of the cavities.

- The cavity dimensions needed for the transducer motors are 3cmW x 6.5cmL x 2.8cmD. This booklet includes a template inside the back cover. The expeditor installer in Figure 7 has made his own specific templates which ensures optimum transducer mounting for each type of vehicle while also saving valuable installation time. Typical horizontal distance between each pair of transducers is approximately 4".

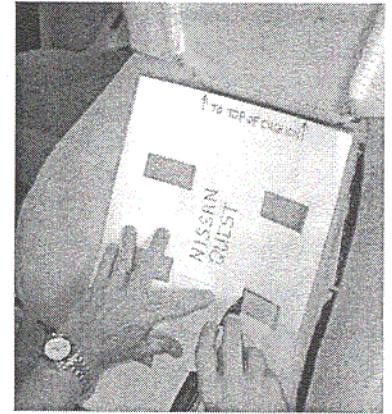


Figure 8- Marking the transducer cut lines onto the seat back padding.

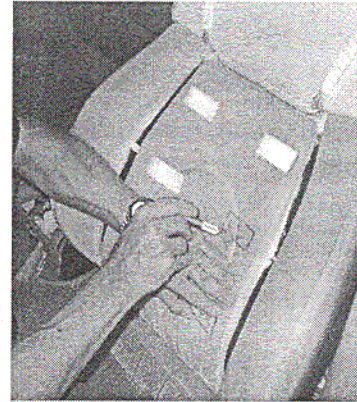
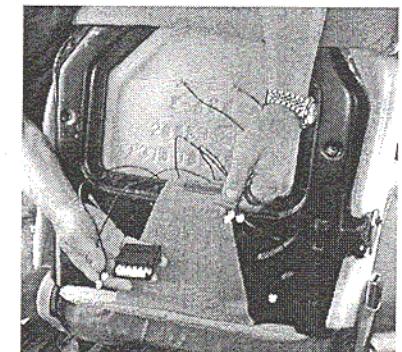
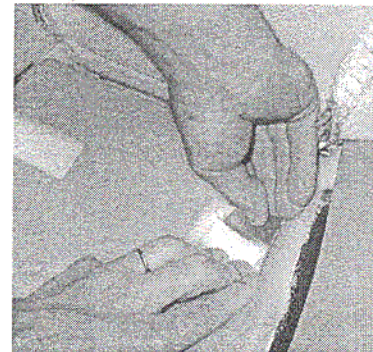


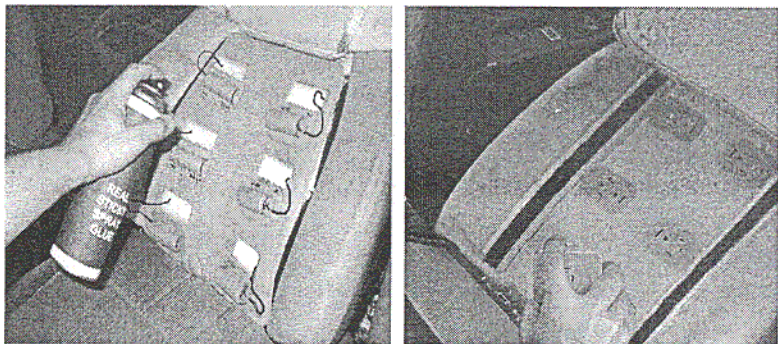
Figure 9- Cutting cavities into the seat back padding.

- After marking the padding, cut the perimeter of the cavities and remove the "plug". Use of an Exacto knife is excellent for the vertical cuts, and use of a bare box knife blade can be used to make the cavity floor cut. When the cavity is cut, test fit the transducers, then cut a small slit through the floor or side of the cavity so that the transducer wires may be routed to the rear of the seat back cushion.



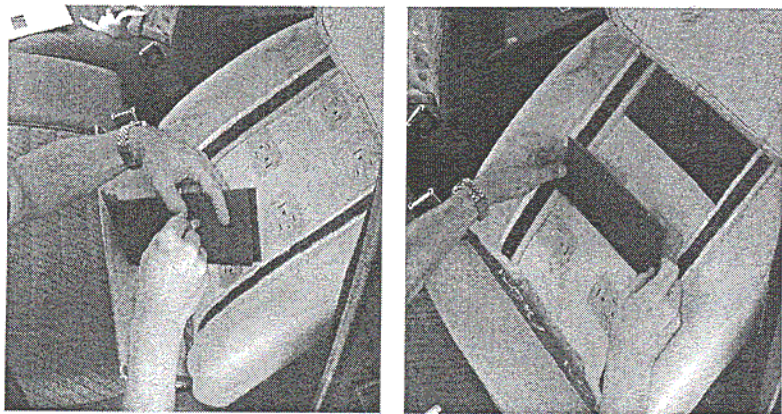
Figures 10 & 11- Cutting the cavity floor; routing the wires through the cushion.

Step 5- Route the wires to the rear of the seat back, then carefully spray adhesive into each cavity and surrounding area, and spray the transducers as shown. Exercise caution and control to limit spraying the glue to the needed areas only. When spraying the transducers, avoid spraying glue into the open transducer ends. Use a quality interior grade spray adhesive to ensure that the transducers are firmly fastened into the padding cavities.



Figures 12 & 13- Placing the transducers next to the cavities and spraying the adhesive. After allowing it to "tack", install the transducers into the padding.

Step 6- Allow the spray adhesive to tack per the manufacturer's instructions, then install the transducers. Trim the foam pads included in the kit to cover the transducer mounting areas. Spray adhesive onto the pads and the transducer mounting areas, then affix the foam pads.



Figures 14 & 15- Trimming the foam pads to fit the transducer mounting areas, then installing the foam pads after applying the spray adhesive.

Step 7- Gather and route the transducer wiring harnesses to the processing and control unit mounting location. Plug the transducer wiring harness connectors into the processing and control unit. Then, the power harness must be routed and connected. In the typical installation, this involves removing the step plate and routing the harness from a source of power, such as the fuse box, and ground, and then to the processing and control unit. Make the Black wire ground connection using the supplied ring terminal to an existing bolt fastened to the vehicle's metal structure. Then insert the Red power wire into the fuseholder, and connect the fuseholder's Red wire to Ignition +12 volts. The LED on the processing and control unit may be used to test the Ignition +12 volt source, as it illuminates whenever the processing control unit is receiving power and ground.

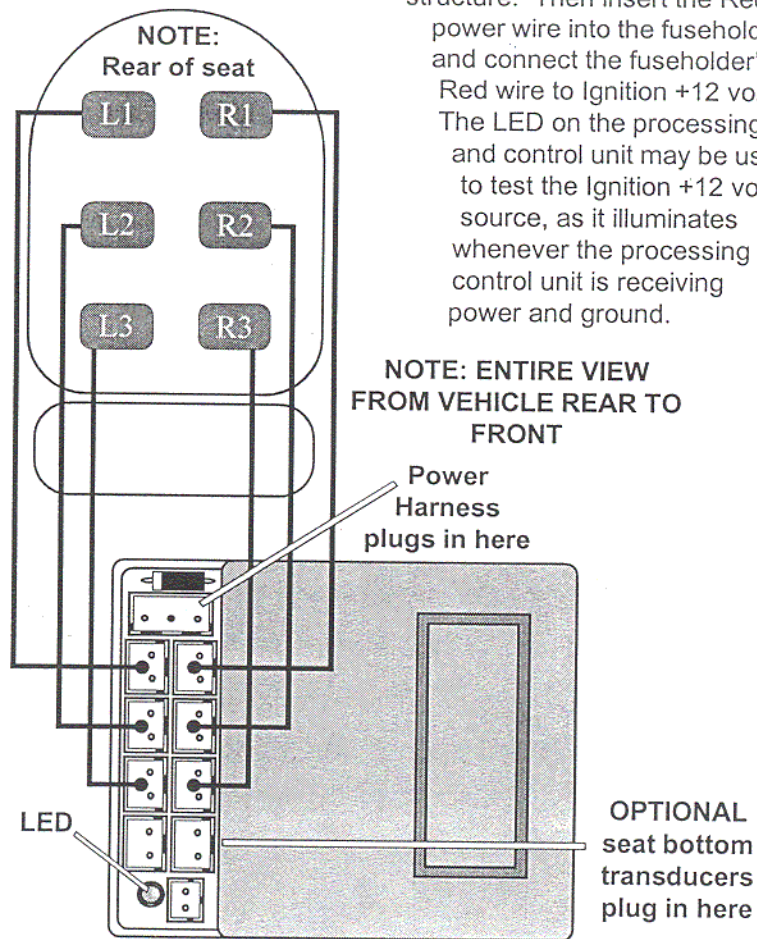


Figure 16- How to plug in the transducers in the correct order and location of power harness port and power indicator LED.

Step 8- Now test the Merlin's functions. Refer to the operating instruction card for complete operations description. However, the purpose of this quick operational test is to ensure that all transducers are operational and that the transducers are plugged into the processing and control module correctly. To test, sit in the seat in order to test the zones properly, and then:

- 1- Press the remote control unit's POWER button; Merlin should beep once and start the vibrating action.
- 2- Repeat pressing PATTERN "up" until 1 long beep is heard; ensure that all six transducers are vibrating.
- 3- Repeat pressing PATTERN "down" until 1 short beep is heard; ensure that the following zone occurs: upper left, upper right, middle left, middle right, both lower and both middle zones, after which the operational pattern will repeat itself.

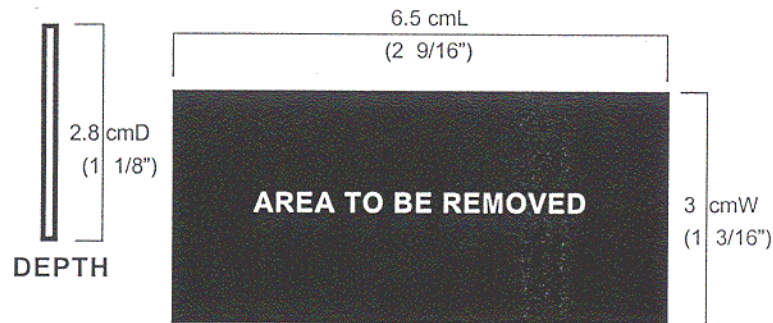
If all of the above indications are correct, the system test is successful, and the installation may be completed. If any faults are found, correct them now.

Step 9- Upon successful completion of the Merlin's system test, all that remains to complete the installation is reinstalling the vehicle's removed parts.

- Reinstall the seat back's cover, which is reversing the removal procedure. If the cover utilized hog ring fasteners, use new hog rings which are installed with special pliers. Reinstall, if removed, the armrest and/or all trim items.
- Reinstall any other panels or trim items, such as the step plate, which were also removed.
- Place the wireless remote control unit and operating instruction card in a conspicuous location. The wireless remote control may be attached to operating instruction card hung from the rearview mirror or a control knob. The operating instruction card itself is designed to be placed on the sun visor for quick and convenient reference.

Optional Seat Bottom Transducers- An option for the Merlin system is the addition of two additional transducers to the seat bottom. Installation is the same process as the standard installation- the seat base covering is removed sufficiently to allow installation of the additional transducers in the seat's thigh areas. While this option greatly increases the effectiveness of the Merlin system, it does require somewhat more installation labor beyond the standard installation. As noted in the Figure 16 diagram, the processing and control unit has plug-in ports for these two additional optional transducers.

Template- To assist in the cutting of the cavities needed for the transducer motors, below is a template of the correct 3cmW x 6.5cmL dimensions (1 3/16" x 2 9/16"). As shown the text and Figure 8 on Page 7, making custom master templates for each vehicle application is a valuable timesaving practice. Also indicated below is the optimum transducer cavity depth of 2.8cmD (1 1/8").



This device complies with FCC Rules part 15. Operation is subject to the following two conditions, (1) This device may not cause harmful interference and, (2) This device must accept any interference that may be received, including interference that may cause undesired operation.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.