

General Module (GM) Replacement

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This is a guide (not BMW authorized) on how to replace the GM on a 1991 850i, your model and year might be different than this document, buyer beware.



The GM is located in the steering footwell, upper left side. This module is sometimes related to problems with the operation of the windows, trunk, wipers, alarm, door locks and other activities not related to the engine. Sometimes the GM is affected by low battery (drain, sitting for extended lengths), and relays (in trunk and under dash), loose connections and temperature, loose or broken wires. The GM is specific to your car in the respect that it is coded as to the destination of your car. If it was sold in the US, it is coded

for US, If your car was sold in Japan, it is coded for Japan. In all other respects the module is the same. Purchasing a new module (\$\$\$\$) is not necessary, they can be repaired.

Go to <http://forums.roadfly.com/forums/bmw/bmw-8-series-e31/> and search for “GM or General Module” you will find a lot of useful information.

This job is a fairly simple DIY weekend job and should take about 4 hours to complete. Your time may vary due to missing / broken parts (your gonna break a few) that are easy to get from the dealer ahead of time, They are cheap and you’ll probably need them on your next project so put them in your toolbox for later use. My experience with 15 year or older plastic connectors, covers, screws and fittings is that they are designed to be used once and if fiddled with later they break, so get some in advance. The two connectors you’ll need from the dealer are the Quik Screw and the white push thingy (BMW has a name and a part number for them) I just take them to the parts guy and show him, then he goes and gets um, they are cheap, buy a handful. These two connectors are common for a whole lot of BMW models so the part guy should know them, if not show him the picture.

Reminder, you are going to remove old plastic parts, and moving old wire bundles, be gentle, a guy speaking German put them in a long time ago, and he is probably retired now sitting in his living room watching Germany beat Italy in the Euro Cup, so you can’t call him to ask questions.

Tools you’ll Need

Phillips and slotted screwdriver, 10mm box end wrench, Socketwrench, 10mm socket, Long extension for socket. 4” Plastic Putty knife, “Z” shaped screwdriver thing, Pliers, Zip Ties, Light and a Mirror.

Let's Begin

Start by removing the phillips head screw from the Hood release handle and pull off the handle. There are two Quik screws that hold the speaker/footwell cover on, one is behind the handle. Quik screws are removed with a half turn with a slotted screwdriver to “unlock” them. Next we'll tackle the “boomerang” piece located at your knees, It is leather covered and shaped like an Australian boomerang. The connectors are the “white thingies” that accept a threaded stud into



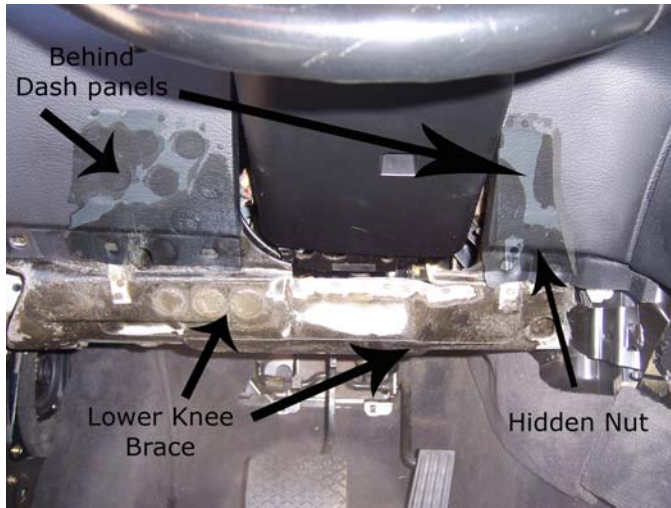
them, so the connectors are hidden, The long end that goes from the right of the steering wheel around to the end of the center console is old velcro, so give a little tug at that end first. Be careful, this piece is leather/plastic and can break. The “boomerang” and under dash cover are connected by two Quik screws. Look along the bottom of the boomerang to see them, one set on top and another set of hand twist screws on the bottom near the pedals, remove the top screws, and the bottom screws twist to release and stay in the piece.

Pull out the lower piece. Just above this piece is the heater duct that can come out with it. I just wiggled it and it fell out, but I think that it had been removed before so the screws were gone, so



your results may vary. Now wiggle the boomerang near the left end until a gap starts between it and the support behind it. To loosen more I used a plastic putty knife. Push it into the gap between the boomerang and the support structure, wiggle some more. What you're doing is pulling the threaded studs out of the white thingies. The studs are about an inch long and there are two on the back of the boomerang right under the steering wheel. Your going to replace the white thingies anyway so worry more about damaging the boomerang. Wiggle wiggle and it should release, pull the right side to release the velcro, it will sound like it is tearing.

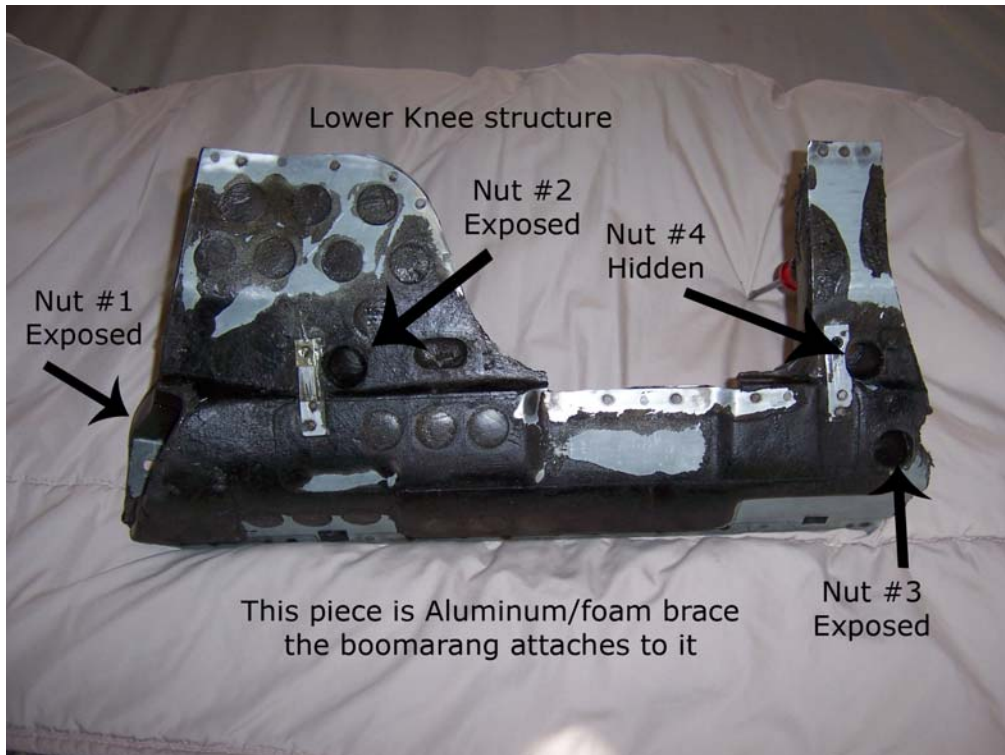
What you've just exposed under the Boomerang looks like a structural part of the dash, and looks like metal, but it is another piece I call the "Lower Knee Structure" that needs to come off to get to the GM. This piece is an Aluminum/Foam structure shaped like a two humped camels



back. The picture shows it superimposed over the lower dash pieces. There is one 10mm nut on the left side and three other bolts. Two bolts are exposed and one is hidden. The exposed nut to the left side is easy, get a 10mm and remove it. Then remove the other two bolts that are deep inside this structure with the 10mm and an extension. When you remove them nothing happens. One more bolt is left. It is behind the cosmetic plastic panel to the right of the steering wheel. Pull this plastic cover out a little at the bottom and you can see the hole where the bolt is. But, pulling

any more will break this plastic cover and it is not coming off to easy, so I did it the DIY way (bitch and twist), I pulled down on the camels back piece a little and got the left side released enough to wiggle it and then pull down on the right side a little. This exposed the hidden bolt hole enough to get the bolt loose with the socket. It also bent the bracket a little that it was attached to, but it is easy to bend it back in place.

Still nothing happens and it feels like it is still attached to something, but it is ready to come out. Wiggle, pull down, wiggle wiggle pull down, and then get a cup of coffee. Ok, wiggle, pull down, wiggle out it comes. This is the hardest piece to get out, but it will come out.



Ok, the GM is exposed. It is to the left / top of the footwell and has three electrical connectors attached to it, white, black, yellow. The other two modules have six electrical connectors attached to them. I don't know what those other modules are. What you are looking at is a box with 3 plastic cases that are each about the size of a VHS tape (remember those!). The center one (Picture with yellow connector) is the GM. The electrical connectors are easy to remove once you have done it once. I'll try to explain.



You see a white plastic vertical thing on the back of the blue connector. This is a "lever" that will move to the right. You see a little ridged tab looking thing just to the right of the white lever. Ok. get a little screwdriver and a bigger screwdriver. Take the little screwdriver and push down on the ribbed thingy a little, keep pushing a little, then take the bigger screwdriver and place it on the left side of the white thing and push to the right. The

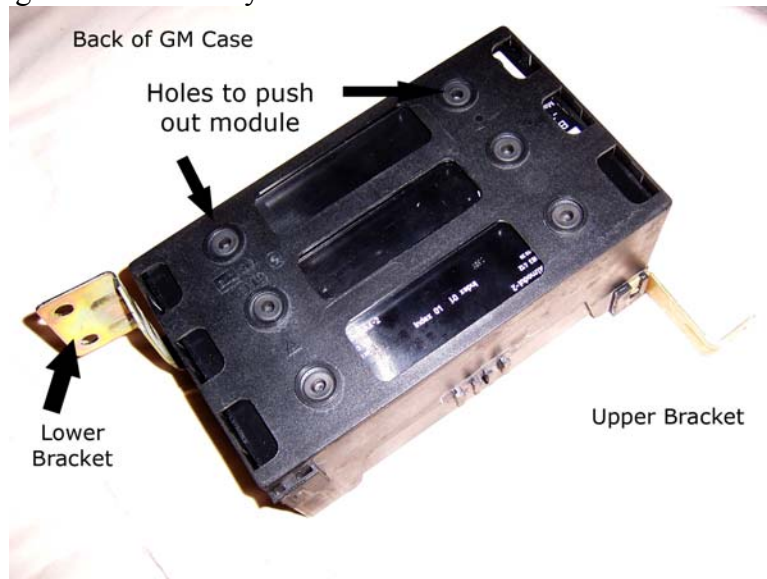
white lever moves a little, release the ribbed tab thing. Push the white thing more to the right and the connector is released, pull the connector out. Great, two more to go. Everything is color coded and reconnects in only one direction so you can't get it wrong unless you are color blind (hey, my friend is color blind so he has to mark everything).

Now you have a choice which way you want to go, remove just the GM module or remove the whole box!

The easy way is to remove just the center GM case, to remove the whole case go to the "Removing the Whole Thing" section. OK, first remove the four connectors on the bottom module. They are from left to right, Black, Green, Brown and Blue. The Green, Brown, and Blue ones remove like I just explained above, but the little black connector is different. It has two "buttons", one on top, one on bottom. I know, it is a little tight, but you need to squeeze the top and bottom of the connector and then pull it. Now go after the next three, from left to right, they are White, Black, and Yellow. The White one is tight, but use the screwdriver(s) technique and they will come off. A word of caution. These are fifteen to twenty year old connectors and the wires are just as old and probably have never been moved since leaving Germany. With that being said, move the wire bundles as little as possible and pull them together as best you can and

zip tie them out of the way. Now that the connectors are released you need to get one of those “Z” type screwdrivers, they have phillips on one end and slotted on the other.

The picture shows the back of the box that holds the 3 module cases. You see 2 rubber grommets for each module. Ok, what you are going to do is get your light and your mirror. Ready? Now look at the front of the case, on the left and right of the module are release tabs. Take a screwdriver and push the left tab a little left it pops the case out a little. Ok, you got the first part of this multi task. Now place your light and mirror so you can see the back of the case with the grommets. Find the grommets for the middle case (GM). Insert the screwdriver thing into the grommet on the left side of the case and push a little, then push comes out a little more. Do the same for the right grommet, and the right tab, just push it right a little and the case pops out, now you can just wiggle it a little, more and move the connectors out of the way. It is tight, but the case will slide out.



Slide the new module back in and replace all the connectors.

Replace the connectors from left to right. The white slide thing should be all the way to the right to start and then push the connector in, the white slider will move back to the left as you push and then lock in place. Before doing anything else, start your car. The Clock and Date need to be set but everything else should work.

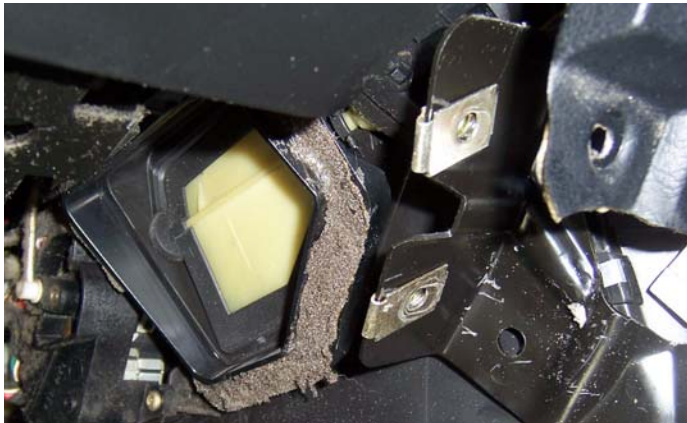
Finishing The Job

Replacement is reverse order, first the Knee-support-aluminum-foam-camel shaped thing. Then the lower cover/boomerang Quik screws. Next is the Boomerang, the white connector thingys pop out of the support structure. Use the new ones. First take plyers and pull them out. Push the new ones into the slots, they will snap tight, so push hard. Be careful with the Boomerang. Check the velcro, this is where the boomerang will come loose first. Ok, line up the studs onto the white connectors and push the boomerang on, push the right end of the boomerang onto the velcro. Replace the speakercover with the 2 quik screws, screw the hood release back on and your done.

Other Pictures



When I removed the lower cover (pedals to knee support) the heater ducting was just sitting in position and not connected to anything. I am in San Diego so the temperature here is 75, if it is not, it is something else! Anyway I just put it back where it was and went on.



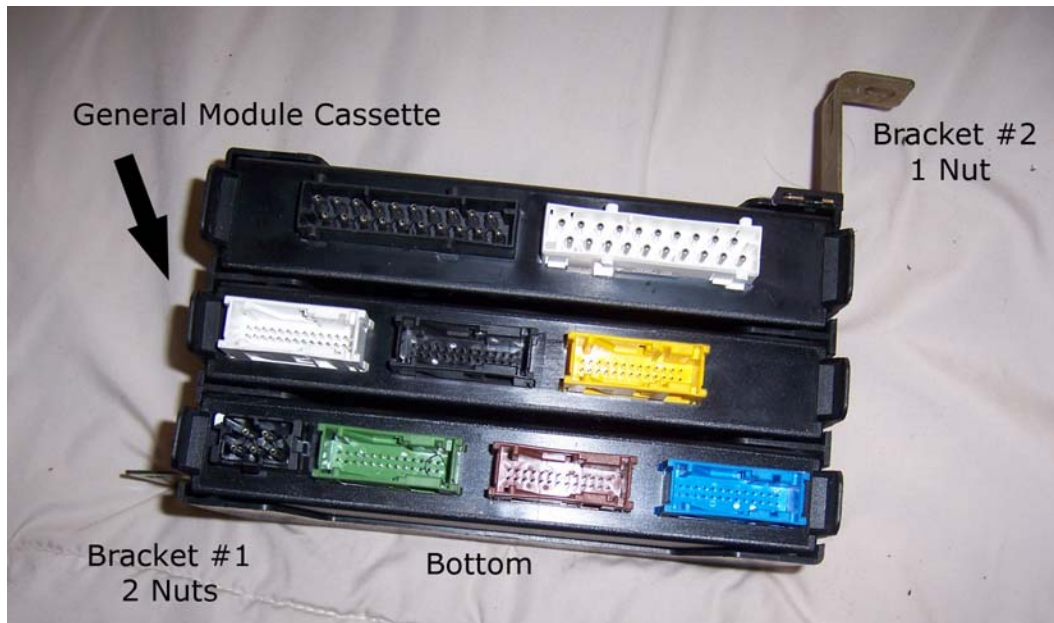
This picture shows the right bracket that holds the Knee-support. To remove that hidden upper bolt the bracket gets bent a little, but you can bend it back easily.

This picture shows everything removed. See the little velcro square on the lower right. This stuff doesn't work after 19 years and my "Boomerang" kept popping out. I got a 1" drywall screw



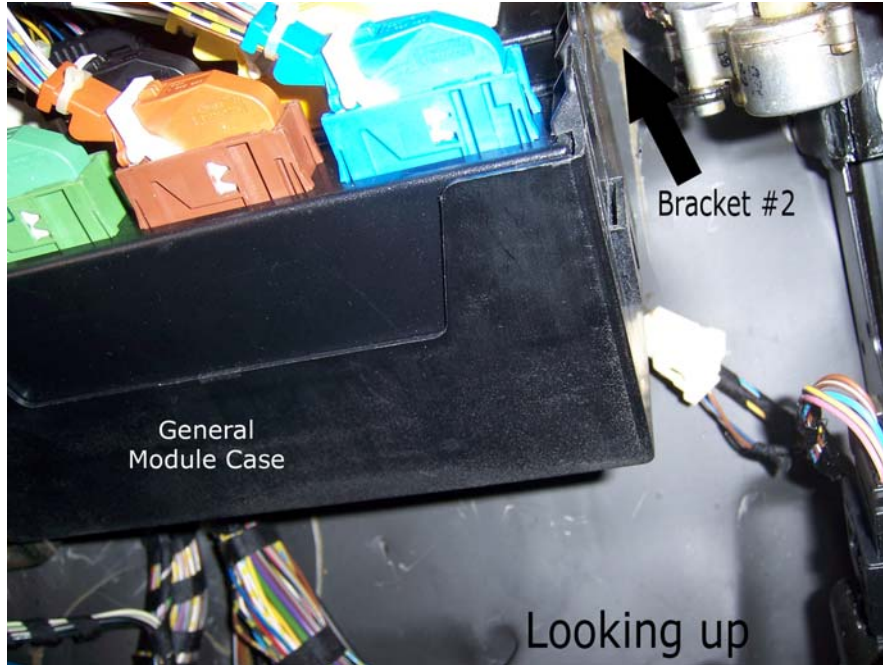
(black) and just screwed it through the boomerang and into the side of the center console. I used a punch and made a plastic cover and glued it on the screw, sounds brutal, but it works and you can't see it, since the seat covers it too.

This is a picture of the Case with 3 modules installed. The GM is the one with white, black and yellow connectors. The case is held on with 2 brackets, one on the bottom held in place with 2



nuts, and the top one with one nut, all 10mm. Each module has a set of tabs, one on each end, By pushing left on the left tab and right on the right tab the module will pop out a little. The back of the case has two rubber grommets for each module that when pushed helps remove the modules.

Removing The Whole Thing



Ok, you want the whole thing out. First get your 10mm socket with a long extension. Bracket #2 is up between the case and a silver controller. The nut may be covered by sound deadening felt so you might have to probe with a screwdriver to expose it. Loosen the nut, but do not remove it yet. The other bracket is on the bottom of the case on the left side and has a z shaped silver bracket attached to it with two 10mm nuts. Loosen, but do not remove the nuts. Now remove the connectors for the bottom

module, Blue, Brown, Green and the little black connector. Now remove the 3 connectors for the General Module, Yellow, Black and White. The last 2 connectors are removed a little differently. Carefully move all the connectors to the side and put a zip tie around them and tie them back. OK, back to the brackets, remove the nut to the top bracket and the two nuts on the bottom bracket and set the silver Z bracket to the side. Wiggle the case and it will drop down a little.

The two top connectors (black, white) come off by sliding the connector about an inch. The white one slides to the right and the black one slides to the left. Try holding the case with one hand, then push the white connector to the right with your other hand, it will slide about an inch then come out. I know, it seems weird, but try it. If it does not want to slide, try this. Look closely at the white connector from the bottom. It looks like the connector is inside a plastic box. Look on the right side of this "box" you will see the outside edge of the inner box sitting against the inside edge of the outer box. I know, this is getting even worse. OK, take a small screwdriver and put it between those 2 edges and twist the screwdriver, it should separate the walls and then you can slide it over. Once you get it, the black one is easy, just that it slides in the opposite direction. Now you can remove the whole case with the 3 modules intact. Replace the GM with your new one by releasing the tabs and pushing it out. To install the case, attach the large black and white connectors, slide direction is reversed. Then push the top bracket onto the stud and start the nut, do not tighten. Cut the zip ties and put the GM connectors on, first the white one, then the black, and last yellow. If you try yellow first the lever locking it in place will not work. Then put the bottom 3 connectors, first green, then brown, then blue. Make sure the levers are all "locked" like the photo above. Lastly push the small black connector in place. It will "click"

when it is locked, you are almost finished. Place the lower bracket on the studs and tighten the TOP bracket nut, yes tighten the TOP nut first, it will hold the case onto the lower studs for you. Don't forget the silver bracket, place it over the studs and tighten the nuts. To finish the job go back up to "Finishing The Job."

Use of this guide is at your own risk. Go slow, step by step and of course

Good luck.

Please contact me for modifications, feedback or errors to this guide.

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