

Shark Injector

Instructions for Upgrading & Restoring
of OBD Shark Injector

BMWs, 1999-2006

Covers the following models* –

N4MSS54, N4S54 software – E46 M3, MZ3 S54 engine

N4M5 software – E39 M5, Z8

N4MS42 software – E39 528i, E46 323/328, Z3 2.3/2.8

N4MS43 software – E39 525/528/530i, E46 325/330 M54 -2/03, X5 3.0 -05, Z3 2.5/3.0

N745 software – E46 325 M54 3/03-05, E46 325i M56, E46 330 3/03-05, E46 330i ZHP, X3 2.5/3.0 -05, Z4 2.5/3.0 -04

* -- check the label on your Shark Injector for the N4 or N7 part number. These instructions pertain to both but certain steps contain specific instructions for each

*Failure to follow all of the instructions explicitly and correctly may result in damage to your BMW's computer. Please note that due to the technical nature of flash reprogramming, we are **not** and will **not** be held responsible for any damage due to nor any damages arising from your use or attempted use of the **Shark Injector™**!!!*

By your use of the **Shark Injector™** you hereby agree to waive, release and discharge the manufacturer, resellers, and all other entities, persons and associations connected therewith from any and all claims arising out of, or relating to, the parts purchased including said parts fitness for any particular purpose. If residing in, or currently located in the State of California, you further waive and disclaim the provisions of California Civil Code Section 1542, which provides: "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known to him must have materially affected his settlement with the debtor".

Please read and understand the conditions of sale set forth above. You further understand that any performance products are to be used on your off-highway racing vehicle in compliance with California State Health and Safety Code Sections 39048 and 43001(a).

If this legal waiver is unacceptable to you, please return the unused Shark Injector™ to your retailer for a prompt refund.

Pre-Install Notes

If the Shark Injector encounters any difficulty during installation, the red led will flash an error code indicating the cause of the problem – **REFER TO PAGE 6 FOR FURTHER EXPLANATION.**

The procedures for an Upgrade and Restore are the same.

A battery charger is **mandatory**. The charger must be capable of providing a constant 10-20a charge.

If your vehicle is a 1999-2000 E39 528i, E46 323/328, or Z3 2.5/2.8, please read below for important information.

If your vehicle is an automatic or SMG-equipped car, please read below for important information.

Read through all notes and steps of these instructions before beginning programming.

Voluntary Emissions Recall – E39 528i, E46 323/328, Z3 2.3/2.8

In an August 2000 letter, BMW notified customers that certain 1999 and 2000 cars may not fully meet EPA and CARB on-board diagnostic requirements. A reprogramming of the DME was offered by BMW (BMW SI 12 15 99) and most cars have had that done. Because of this, we have decided to standardize on this “software level” as the base level needed for our performance upgrades. If this update is applicable to your vehicle and you have not yet had it performed, please do so before attempting to install the Shark Injector.

If for some reason your car did not receive this update, note that it is very likely that your Shark Injector will not install. You will need to either update your car through BMW or return the Shark Injector for a possible refund.

All 2002-2006 Vehicles With An Automatic Transmission

Any 2002-2006 vehicle with an automatic transmission should have its transmission computer disconnected, per BMW SI B 12 24 06. Otherwise communication between the Shark Injector and the engine computer can be disrupted. Disconnecting the automatic transmission computer (EGS) is done by unplugging the wiring harness from the computer itself. See the following page for vehicle-specific EGS locations.

By not removing the EGS components from the process, you run the risk of communication failure between the Shark Injector and the engine computer. If this happens at any time during the read or programming phase of installation, the total loss of the engine computer may occur. Repair or replacement of the engine computer and other components will be done at owner's expense.

All E46 M3 With An SMG Transmission

If the car is an SMG-equipped model – *note: not a paddle-shift retrofit to an automatic* – the fuses for the DSC module need to be removed. The SMG controller does not need to be removed or disconnected.

By not removing the SMG components from the process, you run the risk of communication failure between the Shark Injector and the engine computer. If this happens at any time during the read or programming phase of installation, the total loss of the engine computer may occur. Repair or replacement of the engine computer and other components will be done at owner's expense.

Automatic Transmission Computer Locations By Model

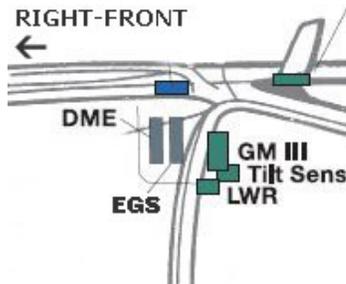
Disconnecting the automatic transmission computer (EGS) will prevent interruption or failure of communication between the engine computer and the Shark Injector. In most cases, disconnecting the EGS is a simple job of unplugging the connectors on the EGS unit itself. The EGS is typically located in the engine compartment in a dedicated area known as the "E-Box". See below for EGS locations and specific instructions for each.

If your model is not listed below, skip this step and move on to the install instructions.



2002-2006 E46 325i/325xi/330i/330xi

Under a black plastic cover on the driver's side of the engine bay, against the base of the windshield. The EGS has several wiring harnesses with light blue connectors. Disconnect the connectors completely from the computer.



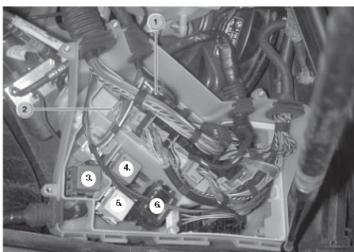
2002-2006 E53 X5 3.0

Under the cabin filter on the passenger's side of the engine bay, against the base of the windshield. Remove the cabin filter cover and then remove the white cover for the E-Box. The EGS has several wiring harnesses with light blue connectors. Disconnect the connectors completely from the computer.



2004-2005 E83 X3 2.5/3.0

Under a black plastic cover on the driver's side of the engine bay, against the base of the windshield. The EGS has several wiring harnesses with light blue connectors. Disconnect the connectors completely from the computer.



2003-2005 Z4 2.5/3.0

Under a black plastic cover on the driver's side of the engine bay, against the base of the windshield. The EGS has several wiring harnesses with light blue connectors. Disconnect the connectors completely from the computer.

Step-By-Step Installation

1. **STOP!!** – Please read thru ALL of the steps of this instruction sheet! If you are not comfortable with this procedure please return your Shark Injector to your retailer for a prompt refund;
 2. Check the sticker on your Shark Injector for the N4 or N7 part number. These instructions may contain specific information for each version;
 3. Locate the rectangular 16-pin OBD-II port in the interior of your BMW. It will generally be found in the driver's under-dash area, or on the forward end of the passenger side of the transmission tunnel. It is covered by flip-top plastic cover engraved with the word "OBD". In some cases there is a second removable "trim cover" over the actual plug assembly. Remove the "trim cover" if necessary, and open the flip-top cover to gain access to the diagnostic port;
 4. Note the direction that the LED's on the end of the Shark Injector will point when inserted in the OBD-II port. You will need to see these LED's from outside the vehicle for guidance during the installation. In many cases a mirror such as the back of a CD/DVD or a piece of aluminum foil will work fine. ***This is NOT optional!!***
 5. Lower driver and passenger windows, ensuring that you have access to reach the OBD-II port;
 6. At this time, ensure that the vehicle ignition is OFF and the key is temporarily removed;
 7. **N7** – If your vehicle is an automatic transmission listed on the previous page, you ***MUST*** disconnect the transmission computer harness from the computer. *Failing to disconnect the transmission computer may result in a blank or "dead" engine computer, which will need to be replaced at owner's expense.*
 8. If your vehicle is a 9/98-00 E39 528i or 9/98-04 E39 540i/M5/Z8, at this time you must disconnect fuses 17 and 31 in the ***Glove Box fuse panel***. This is to temporarily remove power to the DSC 3 module to allow upgrading of your DME per BMW bulletin SI 12 16 99;
 9. If your vehicle is a 2001-2006 E46 M3 with SMG transmission, at this time you must disconnect fuses 33, 56 and 61 in the ***Glove Box fuse panel***. This is to temporarily remove power to your ABS/DSC module to allow upgrading;
 10. To ensure a constant voltage for proper operation of the Shark Injector™, attach a high quality battery charger to the vehicle, **at the battery itself**, observing all necessary safety precautions such as the wearing of safety goggles;
 11. Turn battery charger on at a minimum of the 10 amp setting (*20 amp setting if your vehicle is equipped with Daytime Running Lights, Angel Eyes, or any other accessory powered on with the key*) and ensure that charging is occurring;
 12. ***Failure to maintain proper battery voltage throughout the procedure may result in an inoperable vehicle, where the only solution would be the physical replacement of control modules at owner expense.*** Voltage below ***12.5v*** as a minimum can cause permanent failure. **Owners should evaluate the age and condition of the vehicle battery before proceeding;**
- NOTE: so-called "trickle chargers" or chargers that shut down after a certain period of time are not acceptable. The charger must be on and provide a continuous 10+amp charge throughout the procedure!
13. It may be necessary to wait for the vehicle battery to charge with ample reserve power. The Shark Injector will tell you right away if there is not sufficient power to continue (Code 123);

Step-By-Step Installation, continued

14. Open the door nearest to the OBD-II port, and insert the Shark Injector into the OBD-II diagnostic port making sure not to depress the button while doing so. Note that the port is keyed, and the Shark Injector will positively “snap” or “click” into the port when fully seated. At this time, the green LED should now be illuminated *SOLID green*. If the green LED or red LED is flashing or *pulsing*, remove the Shark Injector, count to 10, and reinsert it into the port without depressing the button. The Shark Injector will be powered via the OBD-II port, even with the vehicle ignition (and ECU) switched off, and **the button must not be depressed during insertion into the port;**
15. If necessary, position the mirror such that you can see both the green LED and it's red counterpart from outside the vehicle. Test close the doors and ensure that you can see the LED's from a window;
16. Turn the ignition switch to the ON position but DO NOT start the car (**Check Engine/SES** lamp **must** light up);
17. **Assure that ALL electrical loads are OFF** (radio, climate control, lights, etc); **and that those capable of turning themselves on** (cell phone, stereo, etc) **are disabled temporarily**. The climate control in many vehicles can be turned off by simply lowering the fan speed past its lowest setting Please note – **NO ONE** should be inside the vehicle during use of the Shark Injector;
18. *Exit the vehicle at this time and close all doors*, wait at least 30 seconds, and then press the button and within 3 seconds, the **green** LED will begin to *pulsate* (flicker) indicating the transfer of data between the vehicle's ECU and the Shark Injector. Note that the pulsating LED may be faint or very fast and you will need to look closely to confirm.
19. You will need to monitor the installation from outside the vehicle. **DO NOT LEAVE THE SHARK INSTALL UN-ATTENDED. DO NOT SIT INSIDE THE VEHICLE OR TOUCH** anything inside or the Shark Injector itself under any circumstances. **DO NOT OPEN THE VEHICLE DOORS** as this can disturb programming!;
20. **N4** – In approximately 1½ to 6½ minutes, the **red** LED will turn on *solid* while the **green** LED continues to *pulsate* indicating that the Shark Injector is entering the REPROGRAMMING phase;
N7 – In approximately 9 minutes, the **red** LED will turn on *solid* while the **green** LED continues to *pulsate* indicating that the Shark Injector is entering the REPROGRAMMING phase;
21. **N4** – In approximately another 1 to 3½ minutes, the **red** LED will turn off, while the **green** LED will continue to *pulsate*, this is the final CHECK phase of reprogramming your vehicle;
N7 – In approximately another 5 minutes, the **red** LED will turn off, while the **green** LED will continue to *pulsate*, this is the final CHECK phase of reprogramming your vehicle;
22. **N4** – Finally, in about 1 to 3½ minutes, the **green** LED will stop *pulsating* and illuminate **SOLIDLY**, this is your indication that a performance programming UPGRADE has been successfully completed and verified. If you see a solid **green** and solid **red** LED, this indicates that a RESTORE to stock was successfully completed and verified;
N7 – Finally, in less than 30 seconds, the **green** LED will stop *pulsating* and illuminate **SOLIDLY**, this is your indication that a performance programming UPGRADE has been successfully completed and verified. If you see a solid **green** and solid **red** LED, this indicates that a RESTORE to stock was successfully completed and verified;
23. Turn the ignition off without removing the key (you may open the door for better access). Wait at least 1 minute but **DO NOT** remove or disconnect your Shark Injector at this time;
24. If your vehicle is a 9/98-00 E39 528i or 9/98-04 E39 540i/M5/Z8, and you previously removed fuses 17 and 31 in step #7 above, you should reinstall them before proceeding;
25. If your vehicle is a 2001-2006 E46 M3 with SMG transmission, and you previously removed fuses 33, 56 and 61 in step #10 above, you should reinstall them before proceeding;

Step-By-Step Installation, continued

26. **N7** – If your vehicle is an automatic transmission, you should reconnect the transmission computer harness to the transmission computer.
27. Close the door and assure all electrical loads are off again. With the Shark Injector still connected to the vehicle, turn the ignition switch to the ON position but DO NOT start the car (**Check Engine** lamp **must** light up);
28. Wait at least 1 minute, then again press the button on your Shark Injector, the **green** LED will begin to *pulsate* indicating the transfer of some final information to the vehicle's ECU. This phase lasts 10-30 seconds before the **green** LED illuminates SOLID green. Once the **green** LED is illuminated SOLID green you may proceed. If you are performing the RESTORE function, you will again see a solid **green** and solid **red** LED as in step #22 above;
29. You may now turn the ignition completely off;
30. Wait at least 30 seconds, then remove the Shark Injector from the OBD-II port and recap the port. Turn off and remove the battery charger;
31. Last step! Start and enjoy your newly Sharked vehicle!!

Post-Install Notes

1. the Shark Injector will clear any fault codes stored in the DME. If you previously had a Check Engine or Service Engine Soon light, indicating a fault code(s), this will be reset when installation is completed. Should a CEL or SES light come on after the Shark Injector installation, it is most-likely due to a condition that pre-existed the Shark install. You should have the DME scanned for fault codes and take appropriate action.
2. the Shark Injector will also clear adaptation values back to original setting (if so equipped). Adaptation takes place when the DME senses the need for correction to maintain an 'ideal' air/fuel ratio for things like altitude or fuel quality. If a pre-existing condition persists the DME will revert back to its previous adaptation values. Diagnosis and repair of the condition by a qualified technician is advised.

At The BMW Dealer

Any time that you take your car to the dealer, it's advisable to let your dealer know you have Performance Software installed and for them NOT to perform any software updates without checking with you first. You can also have the Performance Software removed from your car by doing a RESTORE function (the procedure is the same as an UPGRADE except for Step 23 which is slightly different). Failure to Restore the vehicle could result in the dealer erasing your Shark Injector software. In most cases the Injector can simply be re-installed. However, it is possible that the dealer did something that will prevent re-installation. Please be aware that there is a limit to the number of times your DME can be flashed. Depending on the model, the limit may be 11-23 times. Once the limit is reached, the DME will not allow any more software changes – flashes, upgrades, restores, or updates.

If you took the car to the dealer and they installed a new version of BMW software, it may be necessary to have your Shark Injector updated to recognize the new BMW software. You will know if an update is necessary because you will get a Code 147 error during the UPGRADE process. At this point contact the Shark Injector dealer you bought it from for update instructions. In some cases a fee may apply for the update.

Shark Injector Error Codes

Should the Shark Injector encounter any exceptions or difficulties, the red LED will flash out a 3-digit code at a pace of 0.5 sec per flash with 2 seconds pause between digits. All codes begin with a single flash, and none of the digits will repeat. If you encounter any flash codes, refer to the list below!

IF YOU ENCOUNTER ANY CODES WHATSOEVER, do not simply un-plug the Shark Injector. Turn the ignition off, wait at least 30 seconds, and then un-plug the Injector from your car. Failure to properly remove the Injector could result in damage to the Injector itself or to your vehicle!

The following codes indicate that your vehicle is now drivable, but could NOT be successfully programmed for some reason – follow the advice below to correct the situation. If you must return the DME and/or Shark Injector for analysis, please contact your Shark Injector dealer first for shipping instructions.

- 123 **Vehicle voltage too low** – You ***MUST*** ensure at least 12.5v for programming!! Most likely, your battery charger is not charging at 10amps or above. It may have shut off or reduced its output.
- 124 **Programming voltage too low** – You ***MUST*** ensure sufficient charge for programming!! Most likely, your battery charger is not charging at 10amps or above. It may have shut off or reduced its output.
- 125 **Programming voltage needed, not present** – Contact your Shark Injector dealer
- 126 **Bad Key Index** – Contact your Shark Injector dealer
- 128 **Login Authentication Failed** – Contact your Shark Injector dealer
- 142 **DME Hardware Unknown** – Your DME hardware is different from any one we have seen to date.
- 143 **DME Contents not stock** – Your existing DME programming is not stock!! It may already have performance software installed. The Shark Injector can only function on a stock programmed DME.
- 147 **DME Software Unknown** – Return Shark Injector for analysis (your car may have an old, new, or unusual version of BMW software installed). Most likely your dealer has installed a new version of BMW software. Contact your Shark Injector dealer for instructions on updating your Injector to be compatible with the new BMW software.
- 152 **Injector Stock Storage failure** – Return Shark Injector for analysis
- 153 **Injector not Prepared** – Return Shark Injector for analysis
- 162 **Vehicle Mismatch** – Shark Injector™ was previously used or attempted to be used on a different BMW!! The unit will only work on one car. This code could also be the result of BMW's new system of re-programming cars. Contact your Shark Injector dealer for more info.
- 163 **Bad User Request** – User requested an UPGRADE when already upgraded, or a RESTORE when already restored to stock.
- 257 **Blocking ECU Detected** – another module or computer is preventing communication between the Shark Injector and the DME – such as an automatic transmission computer or SMG controller.

Error Codes continued on next page.

Shark Injector Error Codes, continued

The following codes indicate that your vehicle could NOT be successfully programmed for some reason, and that it's drivability is in question due to the failure – Please note WHEN and/or WHERE this failure occurred in the process, the state of the **red ACTIVE** and **green STATUS** LEDs and Contact your Shark Injector dealer IMMEDIATELY!!

127	Signature Check Failed
132	DME Not Responding
134	DME Message Checksum Error
135	Protocol Error Busy
136	Protocol Error Rejected
137	Protocol Error Parameter
138	Protocol Error Function
139	DME reply is not known
145	DME Final Verify failure
146	DME Erase failure

Shark Injector FAQ

How does the Shark Injector work exactly?

The Shark Injector's software replaces the stock BMW software but not all of BMW's programming is changed. When plugged in and the button is pressed, the Injector reads the stock software and stores it for later retrieval if necessary. It also records the VIN number and other required information. Then it programs the DME with its new Shark Injector files. After programming, the Shark Injector verifies that the transfer of data was completed.

What's the USB port for?

The USB port is part of a feature planned for the future. At this time, the USB port is not functional.

What octane must be used?

The minimum octane rating for the Injector is 91. However, on certain models the Shark Injector is offered in a "high octane" setting of 93. It is recommended that you purchase the version that you will use now and possibly in the future. Many states are abandoning 93 octane in favor of 91.

Do I really need a battery charger?

Yes! The installation of the Shark Injector requires power from the battery. It needs more power than the battery can provide without the alternator generating a charge (and it's obviously not possible to have the engine running). This is why a battery charger is necessary. You will not be able to install the Shark Injector without the charger. The Shark checks voltage several times and will stop programming if voltage is too low.

Does the Shark Injector void my warranty?

No. Federal law prohibits a manufacturer from voiding a warranty simply because aftermarket parts are present. The installed aftermarket part has to be the cause of a failure on the warranty part (the Magnuson-Moss Warranty & Federal Trade Commission Improvement Act). Oftentimes, it's not BMW themselves that say a warranty is voided, but rather an uninformed or stubborn dealer that is unwilling to support the owner.

According to BMW's own literature on the subject, "the BMW warranty on a component is void due to a modification where *the modification, alteration or installation of an aftermarket part was directly responsible for the failure*" [emphasis added]. In other words, the aftermarket part has to be the direct cause of a failure; its presence alone is not grounds for voiding the warranty.

Shark Injector FAQ, continued

Is the Shark Injector tuned for any other upgrades?

There are different Shark Injector files for different modifications. Generally speaking, the Shark Injector is compatible with standard “bolt-on” modifications such as a cold air intake or exhaust. Upgrades such as sport cams, headers, or larger air flow meters will work better with a special software file.

Is it possible to “share” the Shark Injector?

No. Because the Shark Injector needs information from the car’s DME that is *specific* to the car itself, the unit cannot be used on another car. The Shark Injector will give you Error Code 162 if it has been previously installed on another vehicle.

A note about eBay or buying from classifieds: the Shark Injector is designed to be used on one car and only one car. Once it is used on a car the Shark Injector cannot be used on a different car. Even if the Injector was removed from the car, specific vehicle info is stored for the next time and the Injector will not work on another car. In other words, once it has been plugged into the car and the button is pushed, it stays with that car. For a small fee, we can reset a Shark Injector but only if it was first removed from the car.

Does the Shark Injector cause any Check Engine lights?

No. The Shark Injector is only refining certain parts of the BMW software to maximize the greater potential of higher octane fuel. Changes are made to the timing and fuel maps to achieve this. If the Check Engine light does appear, it’s telling you there is a problem with something else – not caused by the Shark Injector.

Does the software “go away” over time and will the Shark need to be re-installed?

No. BMW software is adaptive to your driving habits and environment but the Shark Injector software never disappears from the computer.

Will the Shark Injector work on a car with an automatic transmission?

Yes, however, the transmission computer needs to be disconnected during install in some cases. But it does not alter the transmission’s programming. The shift points and maximum allowed rev limit remain the same as before. All of the benefits of the Shark Injector are there – including the horsepower gains.

Can the Shark Injector damage my ECU?

No. The procedure that the Shark Injector follows is really no different than the one BMW uses to update your car. As long as you follow and understand the instructions the procedure is painless and transparent. In the end, this is software that is being loaded into the car; the hardware remains the same.

There is a limit to how many times a BMW computer can be “flashed”. This limit depends on the model and will vary from 11-23. The Shark keeps track of how many times you have used it to flash the DME but we advise keeping unnecessary flashes to a minimum.

Will my engine ping/pre-detonate with the Shark Injector?

No. Pinging/detonation/knocking can occur with or without the Shark Injector installed. The greater cause of this issue is the quality of the fuel available to you. Your car is equipped with knock sensors, however, so the risk of permanent damage to the engine is very low.

Shark Injector FAQ, continued

How do I know if my car has been Sharked?

At the end of the installation, one or both of the LEDs will illuminate. For an UPGRADE, the green LED will shine. For a RESTORE, the green and the red LED's will be on. One other way to tell, other than the change in engine behavior, is by probing the new rev limit. On most BMWs this is raised to 7000 rpm. On cars equipped with automatic transmissions it will be difficult or impossible to reach this point without performance software for the transmission. A shop can also plug in their diagnostic computer and tell if non-stock software is installed.

How do I un-install the Injector?

Follow the same procedure as you did for installation. When doing a Restore function you will see both the green and red LED lights light up at the end.

Do I ever need to get the Shark Injector updated?

No. Jim Conforti has spent many years tweaking BMW's software to the point that the engine is at its peak efficiency when the Shark Injector is installed and used with premium fuel. As a general rule, updates to the Injector are not necessary.

What do I do when I have to take the car to the dealer?

If your car needs to visit the dealer for a new upload of BMW software you should perform a Restore function with the Shark Injector. This will allow the BMW dealer to upgrade your software without over-writing the Shark Injector's performance software. New software is not always strictly necessary and you can always refuse when the dealer wants to install new software.

What do I do when I have to have a state inspection?

In most cases, you will not have to remove the Shark Injector to pass state inspections. In rare cases, the state requires performance upgrades to be state-certified, please note that the Shark Injector is not certified with any US state or federal agency. Check your local laws and regulations for more information. "Race" or "no-cat" software is not legal for any street-driven vehicle and Shark Injectors with these software tunes are not designed to pass any emissions testing or inspection.

What should I do when my Check Engine light or Service Engine light comes on?

A) You can bring your car to a BMW service facility and have them read the trouble codes from the car's computer. Or B) you can purchase the Peake Fault Code Reader from any number of aftermarket retailers and save yourself a trip to the BMW dealer. This will tell you exactly what is wrong with the car; however, it will not be caused by the Shark Injector.

Is it legal in California?

These products are not CARB-certified or legal for sale or use in the state of California on any pollution-controlled motor vehicles.

Will the Shark Injector work on a Euro-spec car?

No. European-spec cars – and the software used on them – are not available in the U.S. The software in a European DME will be different than on a US car and the Injector will not install. The Shark Injector works on cars that are sold for the U.S. and Canadian markets only. It will only work with US/Canadian software.