



# ***Shark Injector™***

## **User's Guide Installing, Upgrading, And Restoring on BMW**


Please follow the enclosed instructions below to ensure the prompt, and effective upgrade of your vehicle in less than 40 minutes! The procedures for Upgrading and Restoring are the same.

*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.***

1. **STOP!!** – Please read thru ALL 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. Locate the round 20-pin diagnostic port in the engine compartment of your BMW. It will be found in close proximity to either the driver or passenger's side front shock tower or in the vicinity of the intake manifold and is covered by a tethered screw-on cap. Remove the cap by turning the ribbed lock ring and tucking it to the side. The tether should keep the cap attached to the base of the connector housing;  

3. If your vehicle is an E36 M3 with Automatic Transmission, at this time you should consult the **yellow supplemental instruction sheet** enclosed for assistance in temporarily disconnecting your Transmission Electronic Control Unit (EGS) prior to upgrading. **If you have an M3/A, you must complete this step prior to continuing!!** Owners of manual transmission equipped M3's, BMW M Coupes, M Roadsters and any other's may simply continue onward;
4. If your vehicle is a **1999-2000** and listed on the reverse side of the M3/A **yellow supplemental instruction sheet**, please ensure that you have previously had the **(SI 12 15 99) 00E-A01: Fault Readiness / O2 Readiness Codes Not Set** emissions recall update, if applicable. The reverse side of the M3/A **yellow supplemental instruction sheet** has further information on this update for your perusal. Failure to update your BMW as suggested may cause unnecessary delay in having to temporarily return your Shark Injector™ for a "code 147 analysis";
5. If your vehicle is a **09/98** or later production E39 528 or E39 540, 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**;
6. If your vehicle is a **09/98** or later production E38 740, at this time you must disconnect fuse 17 in the **Engine Compartment 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**;
7. To ensure a constant voltage for proper operation of the Shark Injector™, attach a high quality battery charger (example: Sears DieHard 71230, 310, 320, etc. but other retail stores may carry something similar) to the vehicle, **at the battery itself**, observing all necessary safety precautions such as the wearing of safety goggles;
8. Turn charger on at a minimum of the 10 amp setting (**20 amp setting if your vehicle is equipped with Daytime Running Lights – DRL's**) and ensure that charging is occurring;
9. The importance of proper battery voltage cannot be emphasized enough. **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;**
10. Lower drivers and passengers window, open hood and ensure proper hood support;
11. Wait a minimum of 20 minutes to cool engine & charge the vehicle battery with ample reserve power;
12. Exercise the buttons on the Shark Injector™ by pushing and releasing each 4-6 times;
13. Uncap the diagnostic port and insert the Shark Injector™ into the port by aligning the center index pin properly while rotating the locking collar so that the entire device lowers and locks into position. Usually you will hear a slight "click" as the locking ring seats fully on the port's housing.
14. Turn the ignition switch to the ON position but **DO NOT** start (**Check Engine** lamp **must** light up);
15. **Assure that ALL electrical loads are OFF** (Radio, Climate Control, Courtesy Lamps, etc); **and that those capable of turning themselves on** (Cell Phone) **are disabled temporarily;**

16. At this time, ensure that the vehicle is **EMPTY of ANY and ALL OCCUPANTS!!** **NO ONE** should remain inside the vehicle during use of the Shark Injector™;
17. Check your Shark Injector™, the **green STATUS** LED should now be illuminated SOLID green.
18. Press the **UPGRADE** button and within 3 seconds, the **green STATUS** LED will begin to *pulsate* indicating the transfer of programming data between the vehicle's ECU and the Shark Injector™ internal electronics package;
19. Sit back, relax, and watch, but **DO NOT TOUCH** anything inside the vehicle or the Shark Injector™ itself under **any** circumstances. **DO NOT OPEN THE VEHICLE DOORS** as this can disturb programming!;
20. In approximately 1½ to 6½ minutes, the **red ACTIVE** LED will turn on while the **green STATUS** LED continues to *pulsate* indicating that the Shark Injector™ is entering the REPROGRAMMING phase;
21. In approximately another 1 to 3½ minutes, the **red ACTIVE** LED will turn off, while the **green STATUS** LED will continue to *pulsate*, this is the final CHECK phase of reprogramming your vehicle;
22. Finally, in about 1 to 3½ minutes, the **green STATUS** LED will stop *pulsating* and illuminate **SOLIDLY**, this is your indication that a performance programming UPGRADE has been successfully verified. If you see a solid **green STATUS** and solid **red ACTIVE** LED, this indicates that a RESTORE to stock was successfully completed.
23. You may now open the vehicle door and turn the ignition completely off. Wait at least 30 seconds, but **DO NOT** remove or disconnect your Shark Injector™ at this time;
24. If your vehicle is an E36 M3 with Automatic Transmission, at this time you should reconnect the transmission ECU that was previously disconnected in step #3 above before proceeding. ***If you have an M3/A, you must complete this step prior to continuing!!*** Owners of manual transmission M3's, M Coupes/Roadsters and other BMW's may simply continue onward;
25. If your vehicle is an **09/98** or later production E39 528 or E39 540, and you previously removed fuses 17 and 31 in step #5 above, you should reinstall them before proceeding;
26. If your vehicle is an **09/98** or later production E38 740, and you previously removed fuse 17 in step #6 above, you should reinstall it before proceeding;
27. At this point, some people like to have an assistant watching the Shark Injector™ for peace-of-mind during the next two steps as things happen both subtly and quickly!
28. With the **Shark Injector™** still connected to the vehicle, turn the ignition switch to the ON position but **DO NOT** start (**Check Engine** lamp **must** light up);
29. Watch (but **DO NOT** touch!) your Shark Injector™, the **green STATUS** LED will begin to *pulsate* almost immediately indicating the transfer of some final information to the vehicle's ECU. This phase only lasts about 10-15 seconds before the **green STATUS** LED illuminates SOLID green. (In other words, if you are slow getting from the ignition switch around to the Shark Injector™ you may miss this short-lived event.) Once the **green STATUS** LED is illuminated SOLID green you may proceed.
30. You may now turn the ignition completely off. Please wait at least 30 seconds;
31. Remove the Shark Injector™ from the diagnostic port, and recap the port;
32. Turn off and remove the battery charger;
33. Close and secure the hood;
34. Start and enjoy your newly Sharked vehicle!!

## ***At The BMW Dealer***

Any time that you take your car to the dealer you should have the Performance Software removed from your car by doing a RESTORE function (the procedure is the same as an UPGRADE except for Step 22 which is slightly different). Failure to RESTORE the vehicle could result in the dealer erasing your Shark Injector software and may lead to the Injector needing an update from your Shark Injector dealer. Please note that an update may or may not be immediately available and in some cases a fee may apply.

If you took the car to the dealer and they installed a new version of BMW software, thereby erasing your Shark Injector™ software, you can still re-install the Injector™ by following the same steps as above (it will indicate an **UPGRADE** when done). However, if they install a version of BMW software *that was released after you received* your Shark Injector an update to the Injector may be necessary. The Injector will not be able to install and you will get a Code 147 error. Please note that an update may or may not be immediately available and in some cases a fee may apply.

## ***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 chart below!

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!! The vehicle battery is not sufficiently charged or is beyond serviceable life, the charger is not working or has insufficient output
  
- 124    **Programming voltage too low** – You ***MUST*** ensure sufficient charge for programming!! The vehicle battery is not sufficiently charged or is beyond serviceable life, the charger is not working or has insufficient output
  
- 125    **Programming voltage needed, not present** – Contact your Shark Injector™ dealer
  
- 142    **DME Hardware Unknown** – Return **DME** and Shark Injector™ for analysis (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!! The Shark Injector™ can only function on a stock programmed DME.
  
- 147    **DME Software Unknown** – Return Shark Injector™ for analysis (your car may have a old, new, or unusual version of BMW software installed). Most likely your car has recently been to the dealer and they have installed a new version of BMW software. You will have to send your Injector back for an update. Contact your Shark Injector dealer for further details.
  
- 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!
  
- 163    **Bad User Request** – User requested an UPGRADE when already upgraded, or a RESTORE when already restored to stock.

***Error Codes continued on next page***

### ***Shark Injector™ Error Codes, con't***

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!!

132	<b>DME Not Responding</b>
134	<b>DME Message Checksum Error</b>
135	<b>Protocol Error Busy</b>
136	<b>Protocol Error Rejected</b>
137	<b>Protocol Error Parameter</b>
138	<b>Protocol Error Function</b>
139	<b>DME reply is not known</b>
145	<b>DME Final Verify failure</b>
146	<b>DME Erase failure</b>

**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!

## ***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 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. BMW dealers use battery chargers when updating your car. Can you install the Shark Injector without the charger? No. The Injector checks for voltage several times during its programming. If at any time it detects voltage levels are too low it will give you an Error Code (123 or 124).

### **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).

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."

### **Is the Shark Injector tuned for a CAI and exhaust?**

Yes. The Shark Injector is compatible with a Cold Air Intake such as the one designed by Jim Conforti (also the designer of the Shark Injector). It is assumed that software will not be the only modification that you make to your vehicle and the Shark Injector software takes that into account. Cat-back exhaust modifications do not need special programming.

### **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 the 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.

### **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 is the BMW software 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 but, no, the Shark Injector software never disappears from the computer.

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

Yes, but it does not alter the transmission's programming. In other words, 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.

### **Will my car ping 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. The vast majority of customers with the Shark Injector and Conforti Cold Air Intake do not experience pinging problems. However, there have been instances with other aftermarket products, which have led to pinging when used with this poor quality fuel. Your car is equipped with knock sensors, however, so the risk of permanent damage to the engine is kept very low.

### **How do I know if my car has been Sharked?**

The only way the end-user will be able to tell, other than the increase in power, 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. Keep in mind if the Injector runs into any trouble during its installation it will give you an error code and you will know why the installation could not be completed.

**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.

**Do I ever need to get the Shark Injector updated?**

No. Generally speaking, BMW's engines are so finely tuned from the factory that further updates are not usually necessary. 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. 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 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.

For *US-spec* cars in a foreign country (people in the military, business overseas, etc) it is recommended NOT to have the local BMW dealer perform any software updates on your car. This can lead to the Shark Injector not re-installing after the BMW update. BMW may have different versions of their software in a foreign country than in the U.S. and Canada. And these foreign versions of the software are not available to Turner Motorsport or Jim Conforti.

**Why is there a better gain on a 323/328 than on a 325/330?**

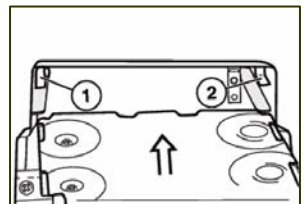
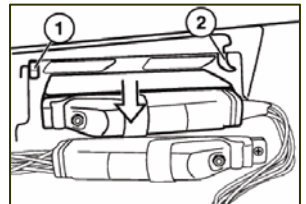
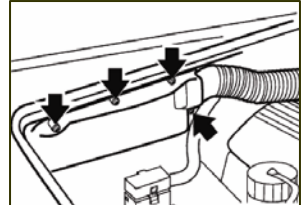
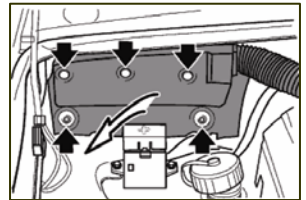
While being similar, the M52TU engine in the 323/328 is actually very different than the M54 in the 325/330. Jim Conforti tuned the software of each to safely gain horsepower without sacrificing drivability and reliability. More could be gained from the 323/328 engines, as the tolerances and sensitivity are not as close as in the 325/330.

# Supplemental Instructions:

## 1997-1999 E36 M3 Automatic Only

Before you begin programming your M3, you must temporarily disconnect your Transmission ECU (a.k.a. EGS) when directed in the main instructions. You may find it easier to temporarily unbolt the air pump directly in front of the firewall door and “flex” its pipes and wires out of the way. **Do not** disconnect the harness connector from the air pump assembly!

- The EGS Control Unit is located in the engine compartment behind a door on the passenger-side firewall. Raise the hood, and remove the foam insulator (arrows) from the firewall door.
- Unscrew the firewall door (arrows) using a Philips screwdriver.
- The EGS Control Unit is the TOP unit. Press the front (connector end) down to release it from the spring retainers (1 and 2).
- Pull the EGS Control Unit forward and down.
- Disconnect the harness from the EGS Control Unit by swinging the spring clip (2) forward and out, and removing the plug (1) by swinging the “clip end” away from the Control Unit body.
- When directed, reconnect the EGS Control Unit harness plug and place the Control Unit on the left and right rails of its mounting. Slide in inclined upwards in as far as it will go. In this position swing the Control Unit front (connector end) upward to engage the spring retainers (1 and 2).





## *Supplemental Information:*

### *Voluntary Emissions Recall 00E-A01 Fault Access / O2 Readiness Codes*

In an August 2000 letter, BMW notified customers that certain 1999 & 2000 model year automobiles (listed below) equipped with 2.5 liter and 2.8 liter engines may not fully meet EPA and CARB on-board diagnostic requirements. They suggested that the owner of the effected automobile contact their Authorized BMW center to schedule the repair, a reprogramming of the DME. Depending on the original “level” of the software in the vehicle, this update can also have other beneficial effects. Because of this, we have decided to standardize on this “software level” as the base level needed for our performance upgrades. If this upgrade is applicable to your vehicle and you have not yet had it performed, please do so before attempting to upgrade for the first time.

If for some reason you are unable or unwilling to obtain this update, please note that it is very likely that your first upgrade session will fail with a “Code 147” and you will need to then return your **Shark Injector™** for an analysis of your current software level. This will not affect the drivability of your BMW vehicle, it will merely delay your upgrade.

The following vehicles are listed (SI 12 15 99) as being possibly affected:

<u>Series</u>		<u>Production Dates</u>
E39	528i, 528iA, 528iT, 528iAT	2/99 – 7/99
E46	328i, 328iA, 323i, 323iA	3/98 – 7/99
E46	328Ci, 328CiA, 323Ci, 323CiA	3/99 – 7/99
E46	328iC, 328iCA, 323iC, 323iCA	2/99 – 7/99
E36/7	Z3 Coupe 2.8, 2.8A	4/99 – 7/99
E36/7	Z3 Roadster 2.8, 2.8A	4/99 – 7/99
E36/7	Z3 Roadster 2.3, 2.3A	9/98 – 7/99

If your vehicle is listed above, please verify that this upgrade has been performed or if necessary have it performed prior to the **Shark Injector™** upgrade. If your vehicle was produced after 7/99, and this recall is inapplicable, it should already contain this “new” software and you may now continue with your **Shark Injector™** upgrade procedure.