

# MILLER PERFORMANCE



## M/S 5x Turbo Tuning Package

### Instruction Manual

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## Table of Contents:

1. General Information.....	4
1.1 Introduction.....	4
1.2 Tuning Package Description.....	4
1.3 Parts Included (Standard System Contents).....	4
1.4 Tools Required.....	5
1.5 Safety and Precautions.....	5
2. System Installation.....	6
2.1 Introduction.....	6
2.2 Battery Disconnect.....	6
2.3 W.A.R. Chip Installation .....	7
2.4 MAF Flange Install .....	8
2.5 Sensor Installation.....	9
2.6 Injector Installation .....	10
3. Drive your Vehicle.....	11
3.1 Initial Start up .....	11
3.2 Troubleshooting .....	11

# Limited Lifetime Warranty

**Miller Performance Ltd. warrants that products manufactured by Miller Performance Ltd will be free from defects in materials and workmanship for the life that you own your vehicle.** If any such product proves defective with the exception of electronic components during the applicable warranty period, Miller Performance Ltd., at its option, either will repair the defective product with charge for parts and labor or will provide a replacement in exchange for the defective product. **Items not manufactured by Miller Performance Ltd. or electronic devices have a limited warranty of 30 days past date of shipment.**

In order to obtain service under this warranty, the customer must notify Miller Performance Ltd. of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. In all cases the customer will be responsible for packaging and shipping the defective product back to the service center specified by Miller Performance Ltd., with shipping charges prepaid. Miller Performance Ltd. shall pay for the return of the product to the customer if the shipment is within North America, otherwise the customer shall be responsible for all shipping charges, insurance, duties and taxes, if the product is returned to any other location.

This warranty shall not apply to any defect, failure or damage caused by improper use or failure to observe proper operating procedures per the product specification or operators manual or improper or inadequate maintenance and care. Miller Performance Ltd. shall not be obligated to furnish service under this warranty 1) to repair damage resulting from attempts by personnel other than Miller Performance Ltd's. representatives to repair or service the product; 2) to repair damage resulting from improper use or connection to incompatible equipment; 3) to repair damage resulting from operation outside of the operating or environmental specifications of the product.

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# 1. General Information

## 1.1 Introduction

The Miller Performance tuning packages have been carefully developed to provide optimum performance without compromising dependability. We have always used a factory correct formula in the development of Miller Performance products and custom built ground up super cars.

This tuning package is engineered to upgrade your M50, M52, S50 or S52 to a more capable style of air flow sensor and tune providing the ultimate control of your turbo project. The performance of this application may be altered if you have done or will do other modifications to your car. You can contact our technical department if you have any questions regarding other modifications before installing this kit.

## 1.2 Tuning Package Description

The M/S 5x Tuning Package features the following:

- 650+ HP capable Miller MAF
- 100% plug and play design
- Blow Through configuration
- Stock ECU Retention
- Flawless stock like driveability
- End user adjustability
- Multiple tunes on one device

## 1.3 Parts Included (Standard System Contents)






Part Number	Description	Quantity
MP-MAF-MS24V	Miller MAF Sensor	1
MP-WAR-1000	Miller W.A.R. Chip	1
MP-MAF-M300	Aluminum Weld On Flange	1
MP-INJ-SD60	60 Lb/hr Injectors	6

## 1.4 Tools Required

The following tools and supplies (not included) or similar tools and supplies are required for fast and proper installation of this Miller Performance MAF System™:

- Flathead Screwdriver
- Philips Screwdriver
- 10mm socket wrench
- Wire strippers
- Allan Key set

## 1.5 Safety and Precautions

	<b>Warning:</b> Ensure vehicle cannot roll when working on the vehicle
	<b>Warning:</b> Disconnect the ground strap (negative) whenever doing work on electrical or fuel systems.
	<b>Warning:</b> Never run the engine unless the work area is well ventilated. Carbon monoxide kills!
	<b>Caution:</b> Before starting each procedure, ensure that you have all the necessary tools and parts on hand. Read all instructions thoroughly; do not attempt shortcuts use only parts and materials that are included in this kit or approved by Miller Performance.
	<b>Caution:</b> Be careful when using soldering iron. Temperatures can be in excess of 400 degrees and burns can be serious.

## 2. System Installation

### 2.1 Introduction

The following section provides information that **MUST** be read and understood before proceeding with the installation of your Miller Performance MAF Sensor. The information included in this section is considered basic essential information and may not include any or all possible complications you may experience during the installation of this system.

Limit the number of distractions while installing this kit. Pay close and careful attention to the instructions and information provided in this manual during the installation. Damage to your vehicle and/or personal injury may result due to lack of attention.

### 2.2 Battery Disconnect

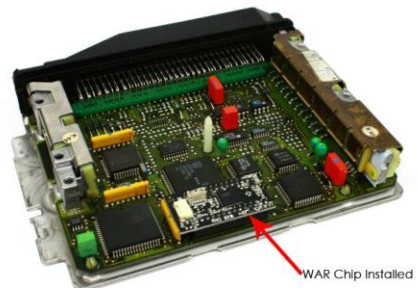
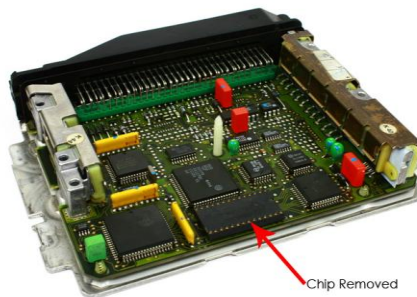
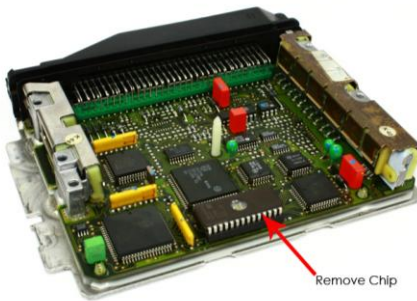


**Figure 1**  
**Disconnect the Negative terminal on the battery.**

## 2.3 W.A.R. Chip Installation

This section will guide you through the process of accessing your ECU to install the W.A.R. Chip. For more details refer to the W.A.R. Chip Specific Manual online.

1. A) For e34s open the hood and access the ECU in the E-box on the passenger side of the engine bay (Upper Side). Using a Philips screwdriver undo the four screws.  
  
B) For E36s open the hood and access the E-box located in the firewall on the passenger side and remove plastic cover to expose the ECU located in the small compartment.
2. Unplug and remove the ECU from its compartment.
3. Open the ECU. There are tabs around the bottom of the cover. As well your ECU may have 4 torx bolts to undo on the top side of the ECU. Remove the Chip in the ECU and replace it with the W.A.R. Chip.



## 2. 4 MAF Flange Install

Don't be intimidated by this procedure. If you cannot weld, find someone who can weld this for you. It is very simple just make sure you follow the directions as the flange is directional. **All our base tunes are designed to be used with a 3" charge tube.**

### READ THIS SECTION CAREFULLY!

1. You must use 3" cold side charge tubing or at the minimum a 3" housing for the MAF sensor. All Miller M/S 5x MAF calibrations are meant to be used with a 3" sensor housing.
2. The optimal "clocking" for your MAF flange is any position above 9 and 3 o'clock. This will prevent oil and moisture from building up inside the MAF degrading its performance and life span of not just the sensor, but possibly your engine! Placing the MAF Flange anywhere indicated by the green area will be OK.

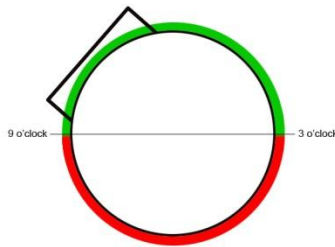


Figure 2

3. The next important part of installing your MAF flange is location. The ideal spot is on the cold side of your charge tubing. For best results, position the MAF flange in a spot that will allow 6" of straight or more before the flange and 4" or more after. This will reduce turbulence improving the signal quality from the MAF to your ECU. See example bellow

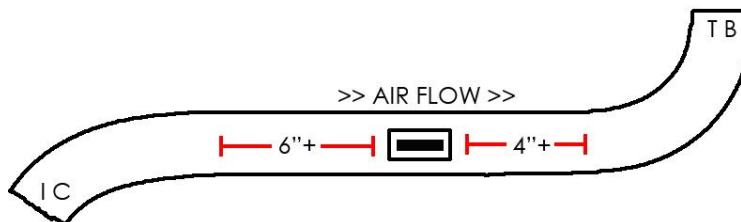


Figure 3



4. The flange is directional. Installing the flange backwards will prevent your sensor from reading the air flow! Looking at the picture bellow you will notice the bolt holes are not symmetrical. The side labeled “intercooler side” needs to be pointing to the intercooler. If you imagine yourself as the air, you would hit this side of the flange first on your way to the throttle body.

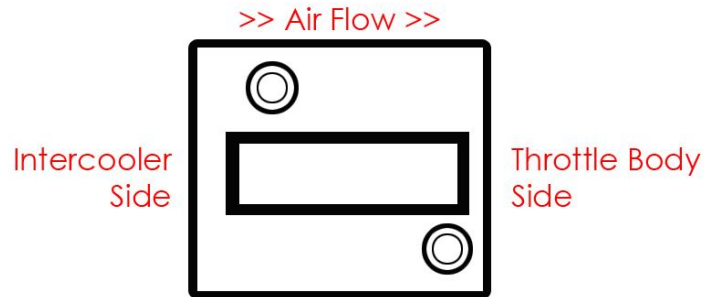


Figure 4

## 2.5 Sensor Installation

Be sure you installed the MAF flange properly as described in the previous section. Because the MAF can only sense air flow in one direction, it is critical to have positioned the flange correctly.

The MAF will only line up with the bolt holes in one direction. Line it up so that you can use the provided Alan head bolts and install the sensor.

Your factory MAF harness plug will plug right into our sensor. It may be a tight fit, but this is to ensure that the everyday vibrations the engine sees will not undo the sensor.

Just like the factory MAF, make sure you spin the harness plug to lock it in place.

## **2.6 Injector Installation**

Installing your injectors is quite easy. Make sure you are working in an environment without open flames. This should be obvious – but trust us, you'd be surprised...

In this section we will offer some tips on the replacement process.

- 1) Unbolt the plastic injector harness.
- 2) Unbolt the fuel rail and gently remove the injectors from their ports as an entire unit.
- 3) Now you should have the fuel rail with injectors still attached loose and free to move around slightly. Carefully remove the first injector by releasing the retainer. Use a rag to shield where the injector meets the fuel rail. The rail is pressurized so the rag will catch the fuel from the first injector.
- 4) Now that the pressure and first injector has been relieved you can remove the other 5.
- 5) Clean the injector mating surface and install new injectors into the rail.
- 6) Reassemble the fuel rail and wiring assembly.

For more detailed instructions please visit this great link:

<http://www.pelicanparts.com/BMW/techarticles/E36-Injector-Replacement/E36-Injector-Replacement.htm>

## 3. Drive your Vehicle

### 3.1 Initial Start up

Remember to connect you battery before you reassemble and start your vehicle. Once you have connected the battery you will be ready to test your newly installed items.

**\*\*Note: This is a base tune. For the sake of your wallet, use caution when boosting. We recommend setting your boost level around 8 to 10 PSI to start for “checking” purposes. Call us if you have any strange issues or concerns immediately.**

**DO NOT BAG ON THE CAR until you have verified the tune at a dyno.**

Your car should run well on the base tune out of boost. Once you are ready to dial in your tune, call and make an appointment with us so that we can tune you over email while at the dyno. After the tune is confirmed and we are happy with the power and AFR, go have some fun your car should haul!

### 3.2 Troubleshooting

If your car hasn't smoothed out after a 10 minutes of driving you may need to check some things.

1. Ensure MAF is plugged in.
2. Ensure you have no boost leaks.
3. Ensure you are using the correct base tune.
4. Ensure your injectors all plugged into the injector harness securely.

If you cannot resolve the problem please phone us and we will help walk you through a solution. You can reach us at our normal number, (604) 755 7692. We will not let you go unsatisfied.