

# E30 Racing Inc.

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## TECHNICAL BULLETIN

No. 1 of 2018

### Miller MAF Gen III

Issued 7 March 2018

## MILLER MAF SYSTEM ISSUES

Over the last 12 months, the committee has identified and rectified on a car-by-car basis various issues that have arisen following the installation of the Miller MAF Gen. III system to E30 Race vehicles. Common issues that have been identified are:

- Vehicle running rough
- Vehicle running rich at idle
- Engine hunting at idle
- Vehicle experiencing hesitation and or misfiring between 4000 and 5000 RPM
- Vehicle experiencing hesitation and or misfiring between 3000 and 4000 RPM
- Vehicle not starting due to over fueling on start circuit

With investigation into these issues, defined in this document is a cause list and proposed remedies based on assessments of all the vehicles which have displaying the above symptoms:

Symptom	Investigation	Treatment
<ul style="list-style-type: none"> <li>• <b>Vehicle running rough</b></li> </ul>	<ul style="list-style-type: none"> <li>• Identified tuning issues where by spark plugs electrode gap was considerably large due to worn electrode.</li> <li>• Air leak at throttle body</li> </ul>	<ul style="list-style-type: none"> <li>• Replaced spark plugs and adjusted gap to manufactures specifications</li> <li>• Sealed ICV deletion plug</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Vehicle running rich at idle</b></li> <li>• <b>Hunting symptoms at idle</b></li> </ul>	<ul style="list-style-type: none"> <li>• More prevalent to vehicles that have Idle Control Valve (ICV) deletion</li> <li>• Identified that TPS adjustment was in part throttle function at throttle closed or in idle mode.</li> </ul>	<ul style="list-style-type: none"> <li>• Vehicles that have had the ICV deletion were found to have a slightly richer and more difficult idle specifically when the vehicle was cold. Once warm, slight richness was observed but within manufactures tolerance.</li> <li>• This identification and treatment was to remove the throttle body from the inlet manifold and set the TPS to manufactures specification for closed, part and full throttle specification. Once this action was completed, rich idle symptoms ceased.</li> </ul>

	<ul style="list-style-type: none"> <li>• TPS resistance was out of manufactures specification where by the functionality of the TPS unit was malfunctioning internally.</li> <li>• Incorrectly fitted MAF wiring harness to MAF unit in engine bay</li> </ul>	<ul style="list-style-type: none"> <li>• This identification and treatment was to remove the throttle body from the inlet manifold and replace the TPS unit. Upon replacement, the TPS unit was set to manufactures specification for closed, part and full throttle specification. Once this action was completed, rich idle symptoms ceased.</li> <li>• The Female AFM wiring adaptor/plug can be fitted incorrectly to the installed MAF unit. Resistance when fitting the adaptor/plug can be the same when fitting in either direction. Care must be taken by aligning the adaptor/plug to the MAF unit. A male to female shank on the unit and adaptor/plug must be aligned.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Vehicle experiencing hesitation and or miss firing between 4000 and 5000 RPM</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hesitation and or misfiring between the 4000 and 5000 RPM range when part or ease throttle used.</li> </ul>	<ul style="list-style-type: none"> <li>• On investigation of this symptom, it was identified that a fuel pressure issue on most cars tested showed that 3.2 BAR maximum and 2.7 BAR minimum had been overridden. It was identified that the Fuel Pressure regulator was malfunctioning for some different reasons. To test the identified issue, replacement of the fuel pressure regulators have been replaced and the symptom ceased.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Vehicle experiencing hesitation and or missing firing between 3000 and 4000 RPM</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hesitation and or misfiring between the 3000 and 4000 RPM range when part or ease throttle used</li> </ul>	<ul style="list-style-type: none"> <li>• On investigation of this symptom, it was identified that a fuel pressure issue on most cars tested showed that 3.2 BAR maximum and 2.7 BAR minimum had been overridden. It was identified that the Fuel Pressure regulator was malfunctioning for some different reasons. To test</li> </ul>

		the identified issue, replacement of the fuel pressure regulators have been replaced and the symptom ceased.
<ul style="list-style-type: none"> <li>• <b>Vehicle not starting due to over fueling on start circuit</b></li> </ul>	<ul style="list-style-type: none"> <li>• Vehicle will not start once MAF unit was installed. Wet spark plugs, wet exhaust system</li> </ul>	<ul style="list-style-type: none"> <li>• Incorrectly fitted MAF wiring harness to MAF unit in engine bay</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Vehicle over heating during race events</b></li> </ul>	<ul style="list-style-type: none"> <li>• Investigated several vehicles with this symptom.</li> </ul>	<ul style="list-style-type: none"> <li>• This symptom seemed to affect a wide range of vehicles. When this symptom occurred, the weather at the event was extremely hot, not only in ambient temps but also track temp. It seems to be isolated to that event. We will monitor warmer events to see if any linked symptoms prevail.</li> </ul>

We are continuing to monitor the performance of the Miller MAF system and would like as much feedback from competitors as possible. We can only seek to address any issues with the Miller MAF if we received proper feedback with details on any issues encountered. We are committed to investigating and diagnosing any identified issues with the MAF, and we encourage all members to provide us with information should any issues with the MAF arise.

The Checklist on the next page has been developed as the starting point for the installation of the Miller MAF system.

We will continue to provide updates and information to all members during the year as information comes to hand.

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7 March 2018

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## **CHECK LIST TO ENSURE THAT THE MAF UNIT WILL PERFORM CORRECTLY IN ALL CIRCUMSTANCES.**

Tuning of engine components to manufacturer's specification is paramount to engine performance and reliability. The Miller MAF unit relies on all components being in good working condition and within the manufacturer's specifications. Below is a list of items that should be checked at the time of the installation of the Miller MAF unit and/or when any suspected issues with the Miller MAF unit arise:

- Make sure that Spark plug gaps are within tolerance
- Make sure that Spark plug leads/HT wires are free from cracks, burns and wear
- Make sure that resistance from end to end of each Spark plug lead/HT wire is within manufactures specification. (this is most likely checked with an Ohm meter)
- Make sure that the inductive spark pickup lead (small wire from #6 spark plug lead or HT wire) is free from cracks, burns and wear.

**Note** that because this wire runs around the front of the engine timing covers, it has been identified that rubbing on the timing belt cover can expose the core of the wire, thus resulting in limited engine performance.

- Make sure that the Fuel Pressure Regulator has a maximum and minimum of:
  - 3.2 bar Maximum fuel pressure
  - 2.7 bar Minimum fuel pressure
  - If these parameters are not observed, then the Fuel Pressure regulator will need replacing.
- Check operation of TPS unit. Adjust to manufactures specifications or replace unit as necessary
- Make sure that all body and engine earth leads are clean and secure
- Make sure that all wiring is secure to MAF units and that proper maintenance of wiring adaptors/plugs actioned
- A twice-yearly check of Air/Fuel ratios is advisable and should be added to the maintenance schedule of your vehicle. An Air/Fuel ratio check is performed on a vehicle dyno. A dyno inspection can be a useful source of information for identifying issues before they become problems.