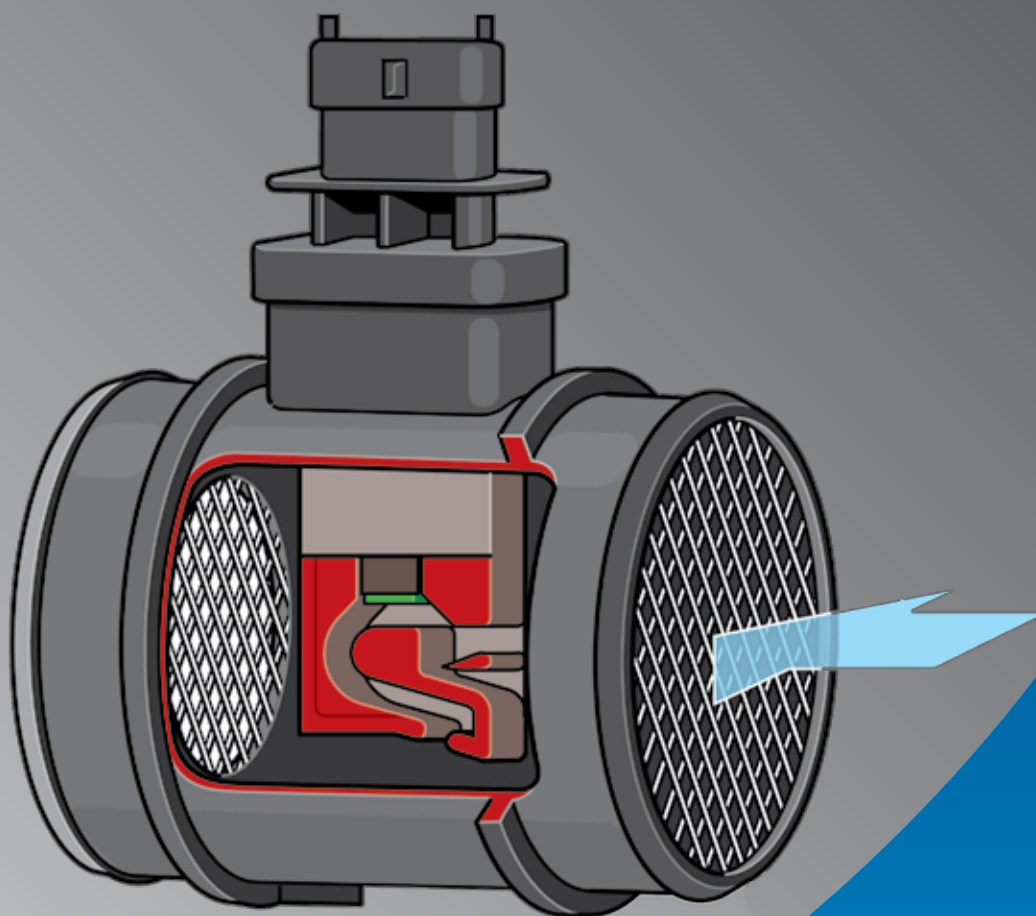


Service Training



## Self-Study Program 840293

# Engine Management Systems



Volkswagen Group of America, LLC  
Volkswagen Academy  
Printed in U.S.A.  
Printed 2/2010  
Course Number 840293

©2010 Volkswagen Group of America, LLC

All rights reserved. All information contained in this manual is based on the latest information available at the time of printing and is subject to the copyright and other intellectual property rights of Volkswagen Group of America, LLC, its affiliated companies and its licensors. All rights are reserved to make changes at any time without notice. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, nor may these materials be modified or reposted to other sites without the prior expressed written permission of the publisher.

All requests for permission to copy and redistribute information should be referred to Volkswagen Group of America, LLC.

Always check Technical Bulletins and the latest electronic repair information for information that may supersede any information included in this booklet.

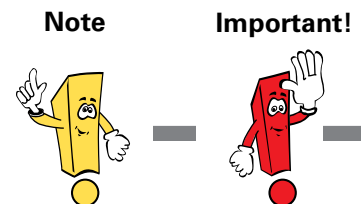
Trademarks: All brand names and product names used in this manual are trade names, service marks, trademarks, or registered trademarks; and are the property of their respective owners.

# Contents

<b>Introduction .....</b>	<b>1</b>
<b>Motronic ME 7 .....</b>	<b>8</b>
<b>Motronic ME 7.1.1 .....</b>	<b>18</b>
<b>Motronic MED 9.1.....</b>	<b>29</b>
<b>Motronic MED 9.1.1.....</b>	<b>41</b>
<b>Motronic MED 17.5 .....</b>	<b>48</b>
<b>Reference Materials.....</b>	<b>53</b>
<b>Glossary .....</b>	<b>54</b>
<b>Knowledge Assessment.....</b>	<b>59</b>

This Self-Study Program covers information on the Volkswagen Engine Management Systems. This Self-Study Program is not a Repair Manual. This information will not be updated.

For testing, adjustment and repair procedures, always refer to the latest electronic service information.



---

**Page intentionally left blank**

---

## What

Since the introductions of the D-Jetronic fuel injection system in Model Year (MY) 1968, the Motronic ME7 torque-based system in MY 1999, and the current Motronic MED17.5 dual gasoline/diesel system, Volkswagen engine management systems continue to evolve to meet the demands of changing emissions and fuel economy standards.

This Self Study Program (SSP) discusses changes and additions implemented since the April of 2000 publication of SSP 841003, Engine Management Systems. Components that are unchanged from previous engine management systems are listed with the new system, but are not described in detail. If a component is not described in this document, you will be referred to a previous SSP that contains the information.

## Why

Volkswagen is continually upgrading engine control systems to meet the increasing demands for increased performance and greater fuel economy, all the while decreasing tailpipe emissions.

California emission standards have been traditionally more stringent than the EPA requirements, but their evolution and structure is similar to that of the federal legislation. The California Air Resources Board (CARB) first adopted Low Emission Vehicle (LEV) standards in 1990. These first LEV standards were in effect from 1994 through 2003.

LEV II regulations, adopted in November 1998, are in effect from 2004 through 2010. LEV II affects passenger cars, light-duty trucks (such as the Touareg 2), and medium-duty vehicles.

A number of other states have adopted emission standards equivalent to the California LEV II legislation, including New York, Massachusetts, Maine, and Vermont. Adoption of California standards has been considered also by Connecticut, Rhode Island, Pennsylvania, New Jersey, Oregon, and Washington.

# Introduction

---

## Low Emission Vehicle (LEV) Standards

These California emission standards, which applied through model year 2003, were expressed using the following emission categories:

- Tier 1
- Transitional Low Emission Vehicles (TLEV)
- Low Emission Vehicles (LEV)
- Ultra Low Emission Vehicles (ULEV)
- Super Ultra Low Emission Vehicles (SULEV)
- Zero Emission Vehicles (ZEV)

Car manufacturers were required to produce a percentage of vehicles certified to increasingly more stringent emission categories, according to schedules based on vehicle fleet emission averages for each manufacturer. After 2003, Tier 1 and TLEV standards were eliminated as available emission categories.

The same standards for gaseous pollutants applied to diesel- and gasoline-fueled vehicles. Particulate Matter (PM) standards applied to diesel vehicles only. Emissions were measured over the FTP 75 test and are expressed in g/mile. The additional Supplemental Federal Test Procedures (SFTP) were phased-in in California between 2001 and 2005.