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Details the construction, operation, diagnosis, service, and repair of late-model automobiles and light trucks. Automotive Scan Tool PID Diagnostics (Diagnostics Strategies of Modern Automotive Systems) By Mandy Concepcion In this section, the different techniques of scan tool parameter (PID) analysis will be exposed. Techniques involving PID analysis are quickly catching on, due to their speed and accuracy. By properly analyzing the different scanner PIDs, the technician can arrive at the source of the problem much faster and accurately. These procedures give rise to the new term "driver seat diagnostics", since most of the preliminary diagnostic work is done through the scanner. However, these techniques will in no way replace the final manual tests that are a part of every diagnostic path. They are simply geared to point the technician in the right direction. Table of Contents INTRODUCTION (Introduction to scan tool diagnostics and the relevance of using

PIDs or scanner parameter to perform the first leg of all diagnostics.) - Theory of Operation Behind the Different PIDs (Describes CARB, the difference between generic and enhanced PIDs, the FTP) - OBD II Generic PIDs (PID calculated and actual values, calculated data relationships, base injection timing, ECM value substitution) - OBD I & II General PID analysis (erasing code-or not, recording, analyzing and pinpoint tests, separating PIDs into groups) - Fuel Delivery Fault Detection (fuel delivery issues, intake air temp. sensor, BARO sensor, Engine LOAD, RPM PID, Short-Term Fuel Trims, Long-Term Fuel Trims, 60% of check engine light issues, block learn/integrators, Example 1: injector fault, Example 2: intake gasket issues, fuel status, ignition timing, MAP/MAF, TPS, O2 sensor, IAC, Closed Throttle, injector pulse width, voltage power, injector duty cycle, fuel trim cell) - Test #1 (Determining an engine's fuel Consumption (rich-lean operation, duty-cycle to fuel trim relationship, O2 sensor to fuel trim relation, FT and vacuum leaks, ignition timing and idle control, test conclusion) - Test # 2 (Misfire Detection Strategy, EGR, Ignition and Mechanical misfires) (misfires and OBD2, scanner misfire detection - a time saver, OBD2 40 and 80 cycle misfire, ignition, injector and EGR density misfire, coil-on-plug, misfires and O2 sensor, lean O2 & Secondary misfire, O2 sensor & injector misfires, leaky injector, EGR and the MAP, Type A, B, C misfires, test conclusion) - Test # 3 (Air/Fuel Ratio Faults) (air-fuel imbalance, MAF and post O2 sensors, open-closed-loop, fuel enable, HC & CO relation to AF issues, test conclusion) - Test # 4 (BARO, MAP & MAF PID analysis) (MAP & valve timing faults, ECM behavior, fuel delivery or duty cycle test, volumetric efficiency, , test conclusion) - Test # 5 (Clogged exhaust) (clogged catalytic converter detection, TPS, MAF and converters, idle and WOT or wide open throttle values, vacuum readings, MAP to WOT charts analysis, engine and MAP vacuum, test conclusion) - Test # 6 (EGR Fault Detection) (EGR and MAP values, ECM reaction to EGR issues, EGR temp sensor, DPFE sensor, EGR and O2-MAP and lift position sensor, EGR and engine pre-loading, EGR and the ECM erroneous high LOAD issues, test conclusion) - Test # 7 (O2 Sensor Heater) (O2 heaters and why?, tough to check O2 heater

issues, O2 heater effect on signal output, O2 heater bias voltage, engine off and O2 changing value, test conclusion) - Test # 8 (Resetting Fuel Trims) (resetting injection pulse corrections, long-term and short-term fuel trims, learn condition, Lambda, case study on fuel trims, FT resetting according to manufacturer, test conclusion) - Test # 9 (Engine Cranking Vacuum Test) (MAP/MAF cranking vacuum, vacuum to PID analysis, vacuum leaks, gauge-PID test, sources of leaks, cranking values, test conclusion) This book tells the story of the modern car industry from the inside. What is it really like to work for the carmakers - the industrial giants that influence the daily lives of millions? How are mass-production cars really designed, engineered, and manufactured? What does it take to engineer a successful vehicle? The story is told through the author's own journey around the globe - starting as a young graduate engineer working for Nissan in the UK, to working for Nissan in Japan and, finally, for Renault in France as Chief Engineer of its 'halo' sports-car, designed to relaunch the Alpine brand. It tells the behind-the-scenes story of three well-known vehicles, whose development teams were led by the author - the Nissan Qashqai, the Renault ZOE, and the Alpine A110 - revealing some of the fascinating stories of how these vehicles came into being. The book seeks to show the real work that goes on behind the glamour of the Motor Shows and the well-honed corporate press releases - work that is sometimes exciting, but often grindingly difficult.

MODERN AUTOMOTIVE ELECTRICAL SYSTEMS Presenting the concepts and advances of modern automotive electrical systems, this volume, written and edited by a global team of experts, also goes into the practical applications for the engineer, student, and other industry professionals. In recent decades, the rapid and mature development of electronics and electrical components and systems have inevitably been recognized in the automotive industry. This book serves engineers, scientists, students, and other industry professionals as a guide to learn fundamental and advanced concepts and technologies with modelling simulations and case studies. After reading this book, users will have understood the main electrical and electronic components used in electric vehicles

(EVs). In this new volume are many fundamentals and advances of modern automotive electrical systems, such as advanced technologies in modern automotive electrical systems, electrical machines characterization and their drives technology for EVs, modeling and analysis of energy storage systems, applied artificial intelligence techniques for energy management systems, fault detection and isolation in electric powertrains, and thermal management for automotive electrical systems. Also covered are new innovations, such as the use of power electronics in low and high voltage circuits, electrified propulsion systems, energy storage systems, and intelligent energy management methods in EVs. Valuable as a learning tool for beginners in this area as well as a daily reference for engineers and scientists working in these areas, this is a must-have for any library. This is the story of six extraordinary men who each built something from nothing, redefined the automotive industry after World War II, and redirected its course for the future: Henry Ford II (visionary autocrat with an iron will), Shoichiro Honda (most successful automotive entrepreneur since Henry Ford I), Eberhard von Kuenheim (founder of the modern BMW), Lee Iacocca, Ferdinand Piech (builder of Volkswagen Group) and Robert Lutz (who left retirement at 70 and is still highly influential at General Motors). What made them special was the sheer volume of fundamental change they brought to the largest industry in the history of the world. They not only re-shaped the auto business, the six made a sizable dent in the societies they lived in. To a man they were great cognitive thinkers. Their minds worked with animal speed, even instinct speed. But more than anything these were brave and cantankerous souls who rode the waves of history. Each could see the future. They could just make it out-sometimes imperfectly, but could see it nonetheless. They took a business that had begun to mature and decline by the 1930s and found ways to make it fresh and whole again.- The compelling story of the global car business over the past half-century.- A lively and engaging narrative that recounts some times collaborative, sometimes archly antagonistic interactions among the men- Full of business revelations at the highest level, written

by a journalist operating at the heart of the industry- Global appeal that shows how automotive groups in the USA, Europe and Asia have influenced each other- A business story interlaced with personal details that explains why the six were determined to be successful. -- Publisher. An Introduction to Modern Vehicle Design starts from basic principles and builds up analysis procedures for all major aspects of vehicle and component design. Subjects of current interest to the motor industry - such as failure prevention, designing with modern material, ergonomics, and control systems - are covered in detail, with a final chapter discussing future trends in automotive design. Extensive use of illustrations, examples, and case studies provides the reader with a thorough understanding of design issues and analysis methods. The Modern Automotive Technology MLR Shop Manual: Maintenance and Light Repair Job Sheets for Performance-Based Learning covers 100% of the tasks in the 2013 NATEF Maintenance and Light Repair Task List. It is designed specifically for use in MLR-accredited training programs, as well as programs seeking MLR accreditation. This manual is divided into eight sections that correspond to the ASE certification areas and eight areas of the NATEF Task List. Each section of the manual is further divided into a number of jobs. Each job is a hands-on activity that covers one or more NATEF maintenance and light repair tasks. The eight sections of the manual and jobs they contain are color coded to make it easy to locate specific content. Each job in this manual is designed to be accomplished in a single lab session. Check boxes are provided in the left-hand column of the jobs so the student can mark off tasks as they are performed. Blanks are provided for recording service-related information. In addition, three types of special notices appear throughout the jobs in this manual. These notices point out special information or safety considerations for the task being performed. They are color coded according to the type of information being provided. "Modern Automotive Technology details the construction, operation, diagnosis, service, and repair of late-model automobiles and light trucks. This comprehensive textbook uses a building-block approach that starts with

the fundamental principles of system operation and progresses gradually to complex diagnostic and service procedures. This newly revised text provides thorough coverage of the latest developments in the automotive field, including hybrid drive systems, computer network communication, and tire pressure monitoring systems. Organized around the eight ASE automobile test areas, Modern Automotive Technology is a valuable resource for students preparing for a career in automotive technology, as well as experienced technicians who are preparing for the ASE certification tests. The Instructor's Manual provides numerous instructional resources that support each chapter of the textbook including teaching strategies, test masters, answer keys, introductory activities, reproducible masters, and additional resources. All of the resources for teaching each chapter are conveniently grouped together."--Publisher description This section gives an in depth look at the many actuators and solenoids that make up a modern automotive system. In this book, we'll explore the different actuators' theory of operation, as well as practical testing procedures that will make diagnosing them a lot easier. Additionally, the operation of the basic emission components is also covered. Be patient and take your time in absorbing the information. Hopefully this will make for a great bedside reading. Enjoy and broaden your mind. This work has been a labor of love. It is meant to compliment and broaden the working knowledge of the modern automotive technician. No theoretical information is given, except under certain explanatory circumstances and sections. But most of all, this book was done for you, "The Lone Automotive Mechanic or Technician". The guy (or girl in some cases) who works all day long and studies at night to further his/her career in spite of the stress of the day, the guy who's not appreciated for what he does because to the rest of the world he's the dirty mechanic that doesn't know better, the guy who spends thousands of dollars in tools and equipment but that nobody has any idea that he did, and the guy who in spite of all the drawbacks of our profession is happy at what he does and keeps America rolling. This work was done for you. I hope you enjoy and learn from it. Remember, no

matter what happens, keep building your knowledge and it'll pay-off in the end. Edition 4.0
Section 2- Actuators and EVAP Testing, Copyright 2004, 2011, All rights reserved.
Section 2 Table of Contents * Leak detection pump - (LDP Operation, LDP solenoid, reed switch and related vacuum hoses, analysis of the LDP, conditions that affect the LDP, EVAP system leak, ELECTRICAL TESTS, scanner test, solenoid tests, reed tests, MECHANICAL TESTS) * Fuel injector troubleshooting strategy - (Fuel Injector Operation, correct fuel flow and spray pattern, ground controlled, Injector drivers, saturation and the peak-and-hold type driver, ground or positive controlled, injector cut-off routine, injector waveform analysis, high impedance injector, low impedance injectors, conditions that affect injectors, injector testing, current waveform capture, injector ground test, clogged injector tests) * GM (CS series) alternator repair strategy - (CS alternators operation, different types of alternators, principle of induction, series of diodes, Terminals L, P, F and S, conditions that affect operation, charge output wire tests, alternator testing, L-terminal test, ground test, positive test, using the test light and volt-meter) * Idle Air Control (IAC) Troubleshooting - (IAC operation, IAC stepper motor, pre-programmed desired idle speed, IAC scanner count, duty cycle controlled, regular DC motor IAC, NOSE SWITCH or THROTTLE SWITCH, coolant temperature activated IAC, coolant temperature activated type, IAC testing, using the scan tool and IAC actuator to test, PID tests) * EGR System Troubleshooting Strategy - (EGR theory of operation, coolant temperature activated type, exhaust backpressure sensing, EGR temperature sensing, EGR valve lift position sensing, and MAP/O₂ sensor feedback sensing, Ford DPFE sensor, Ref. High and Ref. Low Signal, direct method of EGR monitoring, EGR testing, scanner, multi-meter and vacuum testing, EGR boost sensor, electrical wiring/connector/ECM tests) * EVAP System Diagnostics - (EVAP theory of operation, charcoal canister, supporting fuel vapor hoses, and EVAP purge valve, integration with the ECM, FUEL TRIMS, needed to detect a 0.040" fuel leak, solenoid, LDP type and Reed EVAP sensor, LDP EVAP diagnostics system, LDP diaphragm pump, solenoid based EVAP,

closing the vent solenoid, EVAP vacuum switch, condition that affect EVAP operation, cracked vapor hoses, defective fuel tank cap, faulty seals and sensors, broken fuel tank, leaky purge valve, EVAP smoke machine, EVAP Nitrogen test) See what really goes into every aspect of car design. Automotive Vehicle Strategies and ECM Modes (Diagnostic Strategies of Modern Automotive Systems) By Mandy Concepcion This book is divided into two sections, "Vehicle Operational Strategies", which detail what's needed for an engine to start. In other words, this section concentrates on the signals needed for a particular manufacturer to make the engine run. These signal strategies are true regardless of the system and the section simply zeros in on the actual signal, whether it's a distributor, DIS, COP, etc. The second section is the "ECM operational modes" and goes into details on why and how the ECM does what it needs to do to run the engine. In other words, this section has to do with the behavior of the ECM according to outside conditions. VEHICLE OPERATIONAL STRATEGIES This section is designed to serve as a functional guide to some of the more difficult to diagnose faults. It basically came about from the trial and error experimentation with different systems, during the diagnostic process. It is not a study section per se, but will definitely enlighten the technician as to the logics of different systems on the market today. Hopefully, it will serve to pinpoint the source of an actual problem. ECM OPERATIONAL MODES In this section, we'll take a look at automotive OPERATIONAL MODES. The section deals with the specifics of internal ECM programming strategies. The knowledge gained here will aid the modern technician in deciphering why the ECM is functioning in a specific way. This section, as in other parts of this book, helps to answer the technician's diagnostic basic question "What is the ECM seeing, that's causing it to do what it does?" Table of Contents VEHICLE OPERATIONAL STRATEGIES- HONDA IGNITION & INJECTION STRATEGY- MAZDA IGNITION STRATEGY- MAZDA EEC IV IGNITION STRATEGY- MITSUBISHI/HYUNDAI IGNITION STRATEGY- NISSAN IGNITION STRATEGY- NISSAN COP IGNITION STRATEGY- TOYOTA IGNITION STRATEGY ECM

OPERATIONAL MODES • CRANKING ENRICHMENT MODE • ENGINE WARM-UP MODE • OPEN-LOOP MODE • CLOSE-LOOP MODE • ACCELERATION ENRICHMENT MODE • DECELERATION ENLEANMENT MODE • IDLE SPEED CONTROL MODE • LOW VOLTAGE CORRECTION MODE • CLEAR FLOOD MODE • SELECTIVE FUEL INJECTOR CUT-OFF MODE • LIMP-HOME MODE • EXHAUST VARIABLE VALVE TIMING/EGR CONTROL MODE

Helps to teach and visually reinforce the key concepts from each chapter. Includes chapter objectives, definitions of new terms, and ample discussion questions.

Automotive Computer Network Repair (Diagnostic Strategies of Modern Automotive Systems) By Mandy Concepcion

In this book we will cover the intricacies of automotive inter-module communication systems or networks. The scope of this section will also go beyond the normal needs of an automotive technician. Hence, this will probably be the most difficult part of this series to comprehend. Be patient and open minded. Always give yourself time to absorb the knowledge and do not be discouraged. Special emphasis will be placed on the CAN system (Controller Area Network), since it is now the standard. CAN is one of the 9 OBD-2 protocols. A protocol is an agreement on communications interchange. It is in essence a computer communication language and specifies signaling, wiring, size of cables used, who controls the network and voltage levels. Various protocols were used in the past, some proprietary and some generic such as ISO 9141 and SAE 1850 VPW, but the standard is now the CAN protocol. Virtually all vehicle networks now talk to each other through the CAN protocol. It is now common place to see the seat belt, SRS-Airbag, transmission, ABS-Brakes, engine and radio modules or computer talking to each other through the network. Ever wondered why your radio volume goes up when you accelerate the vehicle? That's the engine computer or module telling the radio to raise the volume due to a higher RPM and hence higher ambient noise. It is also common to see a non-shifting transmission due to a faulty network and the issue not being related to the transmission at all. Hopefully this book will shed some light on the operation and knowledge needed to tackle

automotive networks in today's vehicles.....

Enjoy. Table of Contents

1. INTRODUCTION * - Automotive inter-module communication systems or networks * - Asian, Domestic and European Vehicles * - Fully Networked vehicles.
2. THE NEED FOR IN-VEHICLE NETWORKING * - Use of electrical and electronic components * - Networked automotive sensors. * - Sharing of sensor information * - Weight savings and the simpler wiring harnesses * - Networking and modular systems
3. THE NEED FOR PROTOCOLS * - CAN or Controller Area Network communication protocol * - CLASS A - Low speed * - CLASS B - Medium speed * - CLASS C - High speed * - SAE (Society of Automotive Engineers) * - ISO (International Standards Organization) * - What is a Gateway?
4. NETWORKING ESSENTIALS * - the 7-layer ISO/OSI reference model * - PHYSICAL LAYER * - DATA LINK LAYER * - APPLICATION LAYER * - Medium Access * - CARRIER SENSE MULTIPLE ACCESS or CSMA * - Network latency * - The Topology of a network * - The STAR topology * - The BUS topology * - The TREE topology * - The RING topology
5. DIFFERENT COMMUNICATION NETWORK * - The CCD data bus (Chrysler Collision Detection) * - CCD bus ground * - CCD bus bias voltage * - OEM scan tool (DRB III) * - NO TERMINATION message fault * - The PCI bus (Programmable Communications Interface) * - A CSMA/CD media access scheme * - The Header, DATA, CRC, IFR and EOF elements * - DCL (Data Communications Link) * - circuit 914 and 915 * - SCP (J1850) (Standard Corporate Protocol) * - Dual wire twisted pair bus topology * - The ISO 9141 protocol * - The NGS "DATA LINK DIAGNOSTICS" menu option * - GM (Data Line) UART Serial Communications * - UART data line communications * - GM CLASS 2 data bus * - State of health messages * - The Tech-2 scanner has a dynamic menu configuration * - The Tech-2's PING-ALL-MODULES
6. CAN (Controller Area Network) * - implementation of the CAN protocol * - 11 bit and 29 bit identifier * - EPA approved for MY 2003 and up * - CAN A, B and C * - MID and PID CAN identifiers * - Master time-keeper-node * - Drive-by-wire systems * - Byteflight, Flexray, and Time-triggered CAN or TTCAN * - The CAN Data-Frame * - The CAN bus-access arbitration * -

SOF (start-of-frame) bit * - Control bit * - Arbitration bits * - Data bits * - EOF or end of frame bit

The Modern Automotive Technology Shop Manual contains 178 jobs that are grouped into 48 projects. Each project contains the jobs required to diagnose and service a specific automotive system or component, providing initial training for employment as an entry-level automobile technician. This comprehensive product offers complete coverage of all of the priority one (P-1) tasks and many of the priority two (P-2) and priority three (P-3) tasks specified in the 2008 NATEF Task List, making it ideal for performance-based instruction. Full color is used throughout this manual to improve the educational value of each photograph and illustration. The NATEF Standards Job Sheets are correlated to the 2008 NATEF Task List. Modern Automotive Technology MLR Shop Manual: Maintenance and Light Repair Job Sheets for Performance-Based Learning covers 100% of the tasks in the 2013 NATEF Maintenance and Light Repair Task List. It is designed specifically for use in MLR-accredited training programs, as well as in programs seeking MLR accreditation. This manual is divided into eight sections that correspond to the ASE certification areas and eight areas of the NATEF Task List. Each section of the manual is further divided into a number of jobs. Each job is a hands-on activity that covers one or more NATEF maintenance and light repair tasks. The eight sections of the manual and the jobs they contain are color coded to make it easy to locate specific content. Each job in this manual is designed to be accomplished in a single lab session. Check boxes are provided in the left-hand column of the jobs so the student can mark off tasks as they are performed. Three types of special notices appear throughout the jobs, bringing attention to special information or safety considerations for the task being performed. This book introduces the principles and practices in automotive systems, including modern automotive systems that incorporate the latest trends in the automobile industry. The fifteen chapters present new and innovative methods to master the complexities of the vehicle of the future. Topics like vehicle classification, structure and layouts, engines, transmissions, braking, suspension and steering

are illustrated with modern concepts, such as battery-electric, hybrid electric and fuel cell vehicles and vehicle maintenance practices. Each chapter is supported with examples, illustrative figures, multiple-choice questions and review questions. Aimed at senior undergraduate and graduate students in automotive/automobile engineering, mechanical engineering, electronics engineering, this book covers the following: Construction and working details of all modern as well as fundamental automotive systems Complexities of operation and assembly of various parts of automotive systems in a simplified manner Handling of automotive systems and integration of various components for smooth functioning of the vehicle Modern topics such as battery-electric, hybrid electric and fuel cell vehicles Illustrative examples, figures, multiple-choice questions and review questions at the end of each chapter Delivering more vehicles and creating more income only scratches the surface of Beyond the Walkaround. The "New Vision" takes sales consultants on a journey unlike any other. Create the ideal environment that allows for customer comfort and consultant confidence, the true key to success in all sales. Learn to counter, transition, and close like you never have before. Author Rob Hamilton takes us all on a fun trip through the realm of car sales. Go beyond the basics and uncover key skills and knowledge that will make you the best in the world at what you do. It's here for anyone wishing to dive into this interesting and exciting career. Learn about overcoming and countering any and all concerns and objections. Whether these relate to price, payment, trade-in, or anything else, you will be prepared. Learn how to put all of your new-found skills together to close and deliver more units while holding more profit. Discover the value of proper follow-up and how to see past the first customer to a future of many. If you are new to the business, have been in a long time, or are struggling a bit, buy this book. You cannot be without it. Presents a comprehensive overview of automotive technology, providing information on engines, computer systems, fuel systems, electrical systems, cooling and lubrication, emission, and more. Includes illustrations, photographs, and diagrams. Modern Automotive Technology is an easy-to-

understand, up-to-date book detailing the operation, construction, and repair of automobiles and light trucks. This comprehensive text uses a building-block approach that starts with the fundamental principles of system operation and progresses gradually to complex diagnostic and service procedures. The 2009 edition features a new chapter on hybrid drive train operation and service, as well as a new chapter on career success. It also contains new information on the latest developments in the field, including tire pressure monitoring systems, computer networks, and direct gasoline injection. Organized around the eight ASE automobile test areas, this text is a must for students preparing for a career in automotive technology. Full-color illustrations, short sentences, concise definitions and thousands of photographs make teaching successful and learning easy. Modern Automotive Technology is backed by a strong teaching package, including a Shop Manual with 177 NATEF Standards Job Sheets that are organized into 48 projects. This full-color Shop Manual provides complete coverage of all the P-1 tasks, as well as many of the P-2 and P-3 tasks. All the teaching package items give you the tools to provide successful automotive instruction. This bundle includes a copy of the Student Text and an Online Text (6-Year Classroom Subscription). Students can instantly access the Online Text with browser-based devices, including iPads, netbooks, PCs, and Mac computers. With G-W Online Textbooks, students easily navigate linked table of contents, search specific topics, quickly jump to specific pages, enlarge for full-screen reading mode, and print selected pages for offline reading.

Automotive Repair Case Studies (Diagnostic Strategies of Modern Automotive Systems) By Mandy Concepcion In this section, we'll take a look at automotive diagnostics in action. An effort has been made to look at problems in different ways, in each of the examples. Although there are many ways to perform the same task, the idea here is to show the technician or avid DIY mechanic the different ways to go about diagnosing automobiles. Special attention is given to specific systems and different makes and models. The different real life diagnostic cases are explained from narrated

perspective to make learning easier. Hopefully you find this section enlightening and productive. Enjoy your readings.

Table of Contents*

- Audi data bus signal recognition (exposes the intricacies of diagnosing vehicle networks and how computers talk to each other.)*
- Cadi idle re-learn (explains the importance of module re-learn procedure, which is done by re-adapting the ECM to a new sensor.)*
- Case of the EVAPs (these emission systems are difficult to diagnose, due to their complexities.)*
- Computer Data Lines (scan tools talk to the different engine modules or computers through the data line or bus. See how to diagnose this type of problem.)*
- Faulty EGR operation (the EGR is in charge of lowering combustion temperatures. But issue with this system can cause ping, performance, misfire and countless other issues.)*
- Lean (dirty) MAF (the lean condition comprises about 60% of all engine performance issues. Learn to deal with this situation.)*
- The case of the low volume (Fuel pumps deliver both pressure and volume. If one of these is missing then the engine has problems.)*
- Unsynchronized CAM & CRK signals (CAM and CRK signal synchronization is needed for the engine to start.)*
- Wrong MAP reading (The manifold air pressure is a main input to the ECM. See how this sensor creates havoc with the engine.)*
- The Cadi's dual crank affair (this Cadillac's engine control system has dual crank sensors. Learn to diagnose these systems.)*
- Analytical misfire code (Misfires are difficult to diagnose and this case shows precisely that.)*
- The misfire ghost (A case of hard to find misfire.)

Covers both the theory and service of today's "high tech" cars. All systems and major components, including electronic fuel injection, self-diagnosis, four-gas analyzers, oscilloscopes, computers, and more, are explained in detail. James Duffy shows how to master the manifold and comprehend the carburetor. Modern Automotive Technology Shop Manual: NATEF Standards Job Sheets for Performance-Based Learning covers 100% of the tasks in all three sections of the 2013 NATEF Task List (MAST, AST, and MLR). This comprehensive manual is divided into eight sections corresponding to the ASE certification areas and the eight areas of the NATEF Task List. Each section of the manual is further

subdivided into a number of projects, or collections of closely related jobs. Each job is a hands-on activity that corresponds to one or more NATEF tasks. The eight sections of the manual, as well as the projects and jobs they contain, are color coded to make it easy to locate specific content. All jobs are designed to be accomplished in one or two lab sessions. The projects in this manual include a brief introduction about the type of service being performed, a list of the jobs included in the project, and a tools and materials list for the jobs. Three types of special notices appear throughout the jobs, bringing attention to special information or safety considerations for the task being performed. Helps to teach and visually reinforce the key concepts from each chapter. Includes chapter objectives, definitions of new terms, and ample discussion questions. Ever wondered about what it takes to bring a successful modern car to market? This book gives a rare glimpse inside the automotive industry, through the development stories of three vehicles - the Nissan Qashqai, the Renault ZOE and the Alpine A110 sports car. Utilizing the Concepts of Modern Automotive Sales will increase both volume and gross profit for any and all consultants who choose to take the time and master the strategies, tactics, and word tracks presented. The sales process used for decades in the automotive sales industry has long been proven and effective. Moving into the 2020s, with all of the resources and data available to the consumer, the time is now for an augmentation of sorts. Modern concepts will enable sales consultants to be more efficient and productive with this in consideration. This book and the material it presents are not a deviation or an alteration, but a supplementation to current strategies and tactics. In a simple format, such ideas will allow for better communication with all consumers. Our words will be heard because the customers will be more receptive. Learn and grow now. Modern Automotive Technology for Maintenance and Light Repair is an easy-to-understand, up-to-date textbook detailing the construction and operation of automobiles and light trucks. It has been designed to help prepare aspiring technicians for exciting and productive careers in automobile technology. It also provides the

information needed to prepare for the ASE Maintenance and Light Repair certification test. No longer can the untrained person effectively service and repair modern vehicles. As technology has evolved, even the most basic automotive systems have become increasingly complex. Multiple on-board computers are now used to monitor and control the engine, transmission, suspension, brakes, emission controls, and other vital vehicle systems. As the demand has grown for technicians who can service and repair these increasingly sophisticated automotive systems, so has the need for a learning solution that prepares students for entry-level employment in this exciting field. Modern Automotive Technology for Maintenance and Light Repair will give you the tools needed to begin your career in the challenging and ever-changing world of automotive technology. This exciting addition to the Modern Automotive Technology teaching package combines the entire contents of the Teacher's Resource Binder and the GW Test Creation Software in a single, easy-to-use CD-ROM! With the Instructor's Resource CD, you will have instant access to literally hundreds of useful resources, ready to be output to your laser or inkjet printer as you need them. Modern Automotive Technology details the construction, operation, diagnosis, service, and repair of late-model automobiles and light trucks. This comprehensive text uses a building-block approach that starts with the fundamental principles of system operation and progresses gradually to complex diagnostic and service procedures. Short sentences, concise definitions, and thousands of color illustrations help students learn quickly and easily. The 2000 edition provides thorough coverage of the latest developments in the automotive field, including OBD II diagnostics, enhanced emissions testing, misfire monitoring, air bag systems, anti-lock brakes, and security systems. Organized around the eight ASE automobile test areas, this text is a valuable resource for students preparing for a career in automotive technology, as well as experienced technicians preparing for ASE Certification/Recertification Tests.

- [Modern Automotive Technology](#)

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