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Chapter 13 Transmission Condition Diagnosis













Opening Your Class

| KEY ELEMENT | EXAMPLES |
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| Introduce Content | This course or class covers operation and service of Automatic Transmissions and Transaxles, 6e . It correlates material to task lists specified by ASE and NATEF. |
| Motivate Learners | Explain how the knowledge of how something works translates into the ability to use that knowledge to figure why the engine does not work correctly and how this saves diagnosis time, which translates into more money. |
| State the learning objectives for the chapter or course you are about to cover and explain this is what they should be able to do as a result of attending this session or class. | Explain the chapter learning objectives to the students. <ol style="list-style-type: none">1. Prepare for ASE Automatic Transmissions (A2) certification test content area "A" (General Transmission and Transaxle Diagnosis).2. Outline the procedures in verifying customer concern.3. Outline the procedures involved in diagnosing fluid level and condition.4. Outline the procedures in retrieving diagnostic trouble codes and checking for technical service bulletins.5. Outline the procedures in scan tool testing.6. Outline the procedures in visual inspections.7. Outline the procedures in finding the root cause. |
| Establish the Mood or Climate | Provide a <i>WELCOME</i> , Avoid put downs and bad jokes. |
| Complete Essentials | Restrooms, breaks, registration, tests, etc. |
| Clarify and Establish Knowledge Base | Do a round robin of the class by going around the room and having each student give their backgrounds, years of experience, family, hobbies, career goals, or anything they want to share. |








| ICONS | Ch13 Transmission Condition Diagnosis |
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|  | <p>1. SLIDE 1 Transmission Condition Diagnosis</p> <p>2. SLIDES 2-3 EXPLAIN OBJECTIVES</p> |
|  | <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/</p> <p>WEB SITE IS CONSTANTLY UPDATED</p> |
|  | <p>4. SLIDES 4-8 EXPLAIN Verifying Customer Concern</p> |
|  | <p>DISCUSSION: HAVE THE STUDENTS DISCUSS IMPORTANCE OF ACCURATE DIAGNOSIS WHEN REPAIRING AUTOMATIC TRANSMISSIONS & TRANSAXLES. REVIEW CHECKS LIKE FLUID, SCAN TOOL DIAGNOSIS, & PRESSURE TESTING AS WAYS TO DETERMINE CAUSE OF SYMPTOMS.</p> |
|  | <p>9. SLIDES 9-11 EXPLAIN Diagnosing Fluid Level and Conditions</p> |
|  | <p>DISCUSSION: HAVE THE STUDENTS DISCUSS HOW IMPORTANT PROPER FLUID CONDITION AND LEVEL ARE FOR CORRECT TRANSMISSION OPERATION. CAN YOU DIAGNOSE TRANSMISSION CONDITION BASED ON FLUID CONDITION?</p> |
|  | <p>HANDS-ON TASK: HAVE STUDENTS CHECK FLUID LEVEL IN AN AUTOMATIC TRANSMISSION OR TRANSAXLE. HAVE THEM READ THE INFORMATION ON DIPSTICK & FOLLOW ANY DIRECTIONS STAMPED THERE. MAKE SURE THEY IDENTIFY CORRECT FLUID FOR TRANSMISSION.</p> |
|  | <p>DISCUSSION: DISCUSS THINGS THAT CONTAMINATE FLUID. HOW COULD WATER OR COOLANT GET INTO TRANSMISSION? WHAT WOULD THIS DO TO AUTOMATIC TRANSMISSION?</p> |
|  | <p>HANDS-ON TASK: USING THE CORRECT SERVICE INFORMATION OR OWNER'S MANUAL, HAVE STUDENTS FIND THE PROPER PROCEDURE FOR CHECKING FLUID LEVEL IN A SPECIFIC VEHICLE. IS THERE A DIPSTICK?</p> |

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|  | <p>12. SLIDES 12-13 EXPLAIN Diagnostic Trouble Codes and Technical Service Bulletin</p> |
|  | <p>HANDS-ON TASK: HAVE STUDENTS USE APPROPRIATE SERVICE INFORMATION TO LOOK UP TSBS FOR A SPECIFIC VEHICLE. THIS INFORMATION, ALONG WITH ANY DIAGNOSTIC TROUBLE CODES (DTC) VEHICLE HAS, WILL BE HELPFUL IN REPAIRING VEHICLE.</p> |
|  | <p>DISCUSSION: HAVE THE STUDENTS TALK ABOUT TRANSMISSION DIAGNOSIS. WHAT TESTS WOULD THEY HAVE DONE TO DIAGNOSE VEHICLE DOES NOT MOVE IN DRIVE?</p> |
|  <p>QUESTION</p> | <p>SHOW VIDEO: 2 MINUTES <u>DIAGNOSING ELECTRONIC TRANSMISSIONS</u></p> |
|  | <p>www.myautomotivelab.com http://media.pearsoncmg.com/ph/chet/chet_mylabs/akamai/template/video640x480.php?title=Diagnosing%20Electronic%20ransmissions&clip=pandc/chet/2012/automotive/Auto_Transmission/A2T4.mov&caption=chet/chet_mylabs/akamai/2012/automotive/Auto_Transmission/xml/A2T4.xml</p> |
|  | <p>DISCUSSION: HAVE STUDENTS DISCUSS REPAIRS THAT CAN BE DONE WITH TRANSMISSION STILL IN VEHICLE. WHAT PARTS AND COMPONENTS CAN BE REPLACED WITH TRANSMISSION/TRANSAXLE STILL IN VEHICLE?</p> |
|  <p>QUESTION</p> | <p>DEMONSTRATION: SHOW THE LOCATION OF TRANSMISSION ID TAGS ON SEVERAL TRANSMISSIONS AND REVIEW WHAT THE NUMBERS & LETTERS STAND FOR.</p> |
|  | <p>HANDS-ON TASK: HAVE THE STUDENTS FIND TAG NUMBER ON AN AUTOMATIC TRANSMISSION OR TRANSAXLE. HAVE THEM WRITE THIS NUMBER & YEAR, MAKE, MODEL, AND VIN FOR TRANSMISSION IDENTIFICATION.</p> |
|  | <p>14. SLIDES 14-18 EXPLAIN Scan Tool Testing</p> |
|  | <p>TEST DRIVING VEHICLE WITH CUSTOMER IS VITAL. OFTEN CUSTOMER'S CONCERN IS NOT THE SAME AS THAT OF A TECHNICIAN DURING A TEST DRIVE.</p> |
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|  | <p>DISCUSSION: DISCUSS IMPORTANCE OF TAKING A TEST DRIVE AND ASKING THE VEHICLE OWNER A LOT OF QUESTIONS TO HELP WITH THE DIAGNOSTIC PROCEDURE. AFTER CHECKING FLUID LEVEL AND CONDITION, WHAT ARE THE DIAGNOSTIC STEPS TO TAKE?</p> |
|  | <p>DEMONSTRATION: DEMONSTRATE HOW A SCAN TOOL CAN BE USED TO COMMAND SHIFTS IN ELECTRONICALLY CONTROLLED TRANSMISSION.</p> |
|  | <p>HANDS-ON TASK: HAVE STUDENTS <u>HOOK UP A SCAN TOOL</u> TO 1996, OR NEWER, VEHICLE AND <u>SCAN FOR ENGINE/TRANSMISSION DTCS</u>. NOTE ANY CODES PRESENT. TALK ABOUT DTCS. JUST BECAUSE A CODE IS SET DOES NOT MEAN THAT COMPONENT IS BAD. CORRECT DIAGNOSIS AFTER A CODE IS SET IS IMPORTANT.</p> |
|  | <p>DISCUSSION: AFTER DEMONSTRATING HOW TO COMMAND TRANSMISSION TO <u>SHIFT WITH A SCAN TOOL</u>, HAVE STUDENTS DISCUSS RESULTS OF TEST. DID TRANSMISSION SHIFT AS EXPECTED? IF NOT, WHAT SYSTEM OF THE TRANSMISSION IS NOT WORKING CORRECTLY?</p> |
|  | <p>DISCUSSION: HAVE STUDENTS REVIEW PURPOSE OF <u>TORQUE CONVERTER CLUTCH</u>. WHAT PROBLEMS COULD ARISE IF THE TCC IS NOT WORKING CORRECTLY? HAVE THE STUDENTS TALK ABOUT WHETHER YOU CAN DIAGNOSE A TORQUE CONVERTER CLUTCH PROBLEM WITH A SCAN TOOL. WHAT SCAN TOOL DATA SHOULD YOU LOOK AT?</p> |
|  | <p>DISCUSSION: HAVE STUDENTS DISCUSS <u>TCM/PCM</u> WILL CHANGE HOW SHIFTS ARE COMMANDED IF THERE IS A PERCEIVED PROBLEM IN THE <u>TCM/PCM</u>. COULD A PROBLEM SOMEWHERE ELSE IN THE VEHICLE ALSO CAUSE THE <u>TCM/PCM</u> TO DO THIS?</p> |

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|   | <p><u>NATEF TASK:</u> PERFORM LOCK-UP CONVERTER SYSTEM TESTS; DETERMINE NECESSARY ACTION.</p> |
|   | <p><u>NATEF TASK:</u> DIAGNOSE ELECTRONIC TRANSMISSION/TRANSAXLE CONTROL SYSTEMS USING APPROPRIATE TEST EQUIPMENT AND SERVICE INFORMATION.</p> |
|  | <p>19. SLIDES 19-23 EXPLAIN Visual Inspections</p> |
|  | <p><u>DISCUSSION:</u> DISCUSS WHAT IS LOOKED FOR IN A VISUAL INSPECTION? DIAGNOSTIC PROCEDURES USED WITH ELECTRONICALLY CONTROLLED TRANSMISSION/TRANSAXLE COMPARED TO THOSE FOR A HYDRAULICALLY CONTROLLED TRANSMISSION. IS ONE TYPE OF EASIER TO DIAGNOSE THAN THE OTHER?</p> |
|  | <p>24. SLIDES 24-26 EXPLAIN Finding the Root Cause</p> |
|   | <p><u>NATEF TASK:</u> DIAGNOSE TRANSMISSION TRANSAXLE GEAR REDUCTION/MULTIPLICATION CONCERNS USING DRIVING, DRIVEN, AND HELD MEMBER (POWER FLOW) PRINCIPLES.</p> |
|  | <p><u>VIDEO: 4 MINUTES PRESSURE TESTING</u> <u>WWW.MYAUTOMOTIVELAB.COM</u></p> |
|  | <p><u>HANDS-ON TASK:</u> HAVE THE STUDENTS PERFORM A PRESSURE CHECK ON AN AUTOMATIC TRANSMISSION OR TRANSAXLE. MAKE SURE THEY LOOK UP SPECIFICATIONS AND COMPARE THE PRESSURE READINGS TO THE SPECS.</p> |
|  | <p><u>HANDS-ON TASK:</u> HAVE THE STUDENTS HOOK UP A <u>SCAN TOOL</u> TO A VEHICLE AND LOOK AT TRANSMISSION DATA. ARE THERE ANY PRESSURE READINGS? HAVE THE STUDENTS PERFORM A PRESSURE TEST & COMPARE ACTUAL READINGS TO THE READINGS FOUND ON THE SCAN TOOL. ARE THE SCAN TOOL READINGS ACCURATE?</p> |

http://media.pearsoncmg.com/ph/chet/chet_mylibs/akamai/template/video640x480.php?title=Pressure%20Test/Checking%20Modulator%20Operation&clip=pande/chet/2012/automotive/Auto_Transmission/A2T2.mov&caption=chet_mylibs/akamai/2012/automotive/Auto_Transmission/xml/A2T2.xml

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|   | <p><u>NATEF TASK:</u> DIAGNOSE PRESSURE CONCERNS IN A TRANSMISSION USING HYDRAULIC PRINCIPLES (PASCAL'S LAW).</p> |
|   | <p><u>NATEF TASK:</u> PERFORM PRESSURE TESTS (INCLUDING TRANSMISSIONS/TRANSAXLES EQUIPPED WITH ELECTRONIC PRESSURE CONTROL); DETERMINE NECESSARY ACTION</p> |
|   | <p><u>NATEF TASK:</u> DIAGNOSE NOISE AND VIBRATION CONCERNS; DETERMINE NECESSARY ACTION.</p> |
|  | <p>27. SLIDES 27-29 EXPLAIN Summary</p> |