

















# Automatic Transmissions and Transaxles, 6e














## Chapter 14 In-Vehicle Transmission/Transaxle Service

### Opening Your Class

KEY ELEMENT	EXAMPLES
<b>Introduce Content</b>	This course or class covers operation and service of <b>Automatic Transmissions and Transaxles, 6e</b> . It correlates material to task lists specified by ASE and NATEF.
<b>Motivate Learners</b>	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.
<b>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.</b>	Explain the chapter learning objectives to the students. <ol style="list-style-type: none"><li>1. Prepare for ASE Automatic Transmissions (A2) certification test content area "B" (In-Vehicle Transmission and Transaxle Service).</li><li>2. Discuss fluid replacement.</li><li>3. Describe the procedure to follow when replacing seals.</li><li>4. Perform linkage adjustments in automatic transmissions.</li><li>5. Describe the correct procedure for replacing powertrain mounts and performing band adjustments.</li></ol>
<b>Establish the Mood or Climate</b>	Provide a <i>WELCOME</i> , Avoid put downs and bad jokes.
<b>Complete Essentials</b>	Restrooms, breaks, registration, tests, etc.
<b>Clarify and Establish Knowledge Base</b>	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	Ch14 In-Vehicle Trans/Transaxle Service
      	<p>1. SLIDE 1 IN-VEHICLE TRANSMISSION/TRANSAXLE SERVICE</p> <p>2. SLIDES 2-3 EXPLAIN OBJECTIVES</p> <p>Check for <b>ADDITIONAL VIDEOS &amp; ANIMATIONS</b> @ <a href="http://www.jameshalderman.com/">http://www.jameshalderman.com/</a>  <b>WEB SITE IS CONSTANTLY UPDATED</b></p> <p><b>HANDS-ON TASK:</b> HAVE THE STUDENTS IDENTIFY THE TRANSMISSION OR TRANSAXLE IN A SPECIFIC VEHICLE. USING A SERVICE MANUAL OR AN OIL-PAN SHAPE CHART MAY BE HELPFUL FOR THEIR IDENTIFICATION PROCESS.</p> <p><b>NATEF TASK:</b> CHECK FLUID LEVEL IN A TRANSMISSION OR A TRANSAXLE EQUIPPED WITH A DIP-STICK. CHECK FLUID LEVEL IN A TRANSMISSION OR A TRANSAXLE NOT EQUIPPED WITH A DIP-STICK. CHECK TRANSMISSION FLUID CONDITION; CHECK FOR LEAKS.</p> <p>4. SLIDES 4-6 EXPLAIN Fluid Changes</p> <p>7. SLIDE 7 EXPLAIN FIGURE 14-1 Draining the fluid from an automatic transaxle by allowing the fluid to flow into a container after most of the retaining bolts have been removed.</p> <p>8. SLIDE 8 EXPLAIN FIGURE 14-2 Always check that the filter is secured by a clip or other fastener to keep it from dropping out of its position.</p> <p>9. SLIDE 9 EXPLAIN FIGURE 14-3 cork-rubber gasket is glued to the pan and is ready to be installed. The retaining bolts need to be tightened in sequence, but be aware that over-tightening will cause a leak. Also, some manufacturers recommend using only an RTV sealer, but never use an RTV sealer and a gasket together.</p> <p>10. SLIDE 10 EXPLAIN Fluid Changes</p> <p><b>DISCUSSION:</b> DISCUSS NEED TO WATCH FOR FALLING PARTS WHEN REPLACING A TRANSMISSION FILTER. SOME MODELS USE CHECK VALVE THAT WILL FALL WHEN THE FILTER IS REMOVED. WHAT COULD HAPPEN IF THIS CHECK VALVE IS NOT INSTALLED CORRECTLY?</p>

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	<p><b>DISCUSSION:</b> HAVE THE STUDENTS TALK ABOUT THE IMPORTANCE OF CORRECTLY INSTALLING <u>FILTER</u> IN AN AUTOMATIC TRANSMISSION. WHAT WILL HAPPEN IF FILTER SUCKS AIR?</p>
	<p><b>NATEF TASK:</b> DRAIN AND REPLACE FLUID AND FILTER(S).</p>
	<p><b>HANDS-ON TASK:</b> HAVE THE STUDENTS RAISE VEHICLE ON A LIFT USING ALL SAFETY PROCEDURES. HAVE THE STUDENTS INSPECT THE AUTOMATIC TRANSMISSION OR TRANSAXLE FOR ANY FLUID LEAKS. HAVE THEM REPORT THEIR FINDINGS, ALONG WITH RECOMMENDED SERVICE.</p>
	<p><b>DEMONSTRATION:</b> SHOW HOW TO ADD DYE TO TRANSMISSION &amp; USE A BLACK LIGHT TO DIAGNOSE A FLUID LEAK. WARN STUDENTS THAT ENGINE COOLANT WILL OFTEN GLOW LIKE DYE, WHICH COULD RESULT IN MISDIAGNOSIS.</p>
	<p>11. SLIDE 11 EXPLAIN Seal Replacement</p>
	<p>12. SLIDE 12 EXPLAIN FIGURE 14-6 The lip of the seal around the garter spring is packed with assembly lube to help keep the spring from falling out when it is driven into the transmission housing.</p>
	<p>13. SLIDE 13 EXPLAIN FIGURE 14-7 Using a plug helps prevent fluid loss when the driveshaft is removed.</p>
	<p><b>NATEF TASK:</b> INSPECT FOR LEAKAGE AT EXTERNAL SEALS, GASKETS, AND BUSHINGS.</p>
	<p>14. SLIDES 14-17 EXPLAIN Manual Linkage Checks 18. SLIDE 18 EXPLAIN FIGURE 14-8 position for pointer ("PRNDL" display) on Dodge truck is adjustable.</p>
	<p><b>DISCUSSION:</b> DISCUSS WITH STUDENTS WHAT PROBLEMS COULD ARISE IF THE LINKAGE ADJUSTMENT IS NOT CORRECT. WHAT WOULD HAPPEN IF TRANSMISSION DID NOT GO ALL THE WAY INTO PARK?</p>

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	<p>19. <b>SLIDE 19 EXPLAIN FIGURE 14-9</b> manual shift lever is in park. Linkage is being tightened to lock adjustment in after making sure that transmission is in park.</p>
 	<p>20. <b>SLIDE 20 EXPLAIN FIGURE 14-10</b> This shift lock mechanism includes a solenoid that can mechanically hold the shift lock plate. Note the shift lock override button that can be used to release the shift lock.</p>
	<p><b><u>NATEF TASK: INSPECT, ADJUST, AND REPLACE EXTERNAL MANUAL VALVE SHIFT LINKAGE, TRANSMISSION RANGE SENSOR/SWITCH, AND PARK/NEUTRAL POSITION SWITCH.</u></b></p>
	<p>21. <b>SLIDE 21 EXPLAIN</b> Replacing Powertrain Mounts</p>
 	<p>22. <b>SLIDE 22 EXPLAIN FIGURE 14-11</b> enlarged views of the inner CV joints show that the engine and transaxle are misaligned; they should be moved toward the right.</p>
 	<p><b><u>NATEF TASK: INSPECT REPLACE AND ALIGN POWER TRAIN MOUNTS.</u></b></p>
	<p>23. <b>SLIDE 23 EXPLAIN</b> Band Adjustments</p>
	<p>24. <b>SLIDE 24 EXPLAIN FIGURE 14-13</b> Adjusting the intermediate band on a Ford A4LD transmission</p>
	<p><b><u>HANDS-ON TASK: HAVE THE STUDENTS RAISE VEHICLE ON A LIFT USING PROPER SAFETY PROCEDURES. ASK THEM TO DETERMINE WHETHER THE <u>BANDS</u> CAN BE ADJUSTED WITH THE TRANSMISSION IN VEHICLE.</u></b></p>
	<p>25. <b>SLIDES 25-26 EXPLAIN</b> Summary</p>