

Automatic Transmissions and Transaxles, 7e

Chapter 15 Transmission/Transaxle Removal and Disassembly

Opening Your Class

KEY ELEMENT	EXAMPLES
Introduce Content	This course or class covers Automatic Transmissions and Transaxles 7th Edition. It correlates material to task lists specified by ASE and ASE Education (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. Describe automatic transmission repair options.3. Describe the automatic transmission/transaxle inspection process.4. List the steps need to be followed to remove an automatic transmission/transaxle.5. Explain the procedure for disassembling a transmission/transaxle.
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.

NOTE: This lesson plan is based on automatic Transmissions & Transaxle 7th Edition Chapter Images found on Jim's web site @ www.jameshalderman.com
DOWNLOAD CHP 15: Chapter Images

ICONS	Ch15 Removal and Disassembly
	<p>1. SLIDE 1 Transmission/Transaxle Removal and Disassembly</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE IS CONSTANTLY UPDATED</p> <p>Off Vehicle Repair - Automatic Transmission (85 Links)</p> <p>At the beginning of this class, you can download the crossword puzzle & Word Search from http://www.jameshalderman.com/books_a2.html to familiarize your class with the terms in this chapter & then discuss them</p> <p>DOWNLOAD Crossword Puzzle DOWNLOAD Word Search Puzzle</p> <p>2. SLIDE 2 EXPLAIN FIGURE 15–1a This Saturn did not shift correctly and one technician was ready to replace the unit. However another technician thought that the problem could be due to a fault in the valve body. 1b Removing the valve body shows the non-planetary gears used in the Saturn automatic transaxle. 1c The valve body was disassembled and a broken pressure regulator spring was found to be the cause of the customer concern.</p> <p>3. SLIDE 3 EXPLAIN FIGURE 15–2 A transmission identification number on the side of the unit. The information on this tag is needed when ordering parts, as there are often several versions of the same transmission used in similar vehicles and the differences could affect the parts needed.</p> <p>4. SLIDE 4 EXPLAIN FIGURE 15–3 chain and holding fixture being used on this front-wheel-drive vehicle to support the engine when the transaxle is removed.</p> <p>5. SLIDE 5 EXPLAIN FIGURE 15–4 transaxle being supported by a transmission jack prior to removal of the unit from underneath the vehicle.</p>

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        	<p>6. SLIDE 6 EXPLAIN FIGURE 15–5 When the transmission/transaxle is being removed from the vehicle, either remove the torque converter or install a retaining bracket to keep it from falling off the splines.</p> <p>DEMONSTRATION: SHOW THE STUDENTS HOW TO REMOVE A TORQUE CONVERTER. POINT OUT TO THEM HOW TO INSPECT THE PUMP DRIVE TANGS AND ALSO HOW TO INSPECT THE TORQUE CONVERTER BOLT THREADS.</p> <p>ASE Education TASK: INSPECT CONVERTER FLEX (DRIVE) PLATE, CONVERTER ATTACHING BOLTS, CONVERTER PILOT, CONVERTER PUMP DRIVE SURFACES, CONVERTER END PLAY, AND CRANKSHAFT PILOT BORE.</p> <p>7. SLIDE 7 EXPLAIN FIGURE 15–6a A Typical automatic transaxle overhaul kit for a Chrysler 41TE. b The kit includes instructions and diagrams to help identify the unit being overhauled so that the correct parts are used from the kit</p> <p>DISCUSSION: HAVE THE STUDENTS TALK ABOUT ORDER OF DISASSEMBLY OF THE UNIT. WHAT IS BEST WAY TO DETERMINE CORRECT ORDER OF DISASSEMBLY?</p> <p>DISCUSSION: DISCUSS THE MANY SPECIAL TOOLS NEEDED TO REBUILD AN AUTOMATIC TRANSMISSION. LET THEM KNOW THAT SOME ARE TO MAKE JOB POSSIBLE AND OTHERS ARE TO MAKE JOB EASIER. WHICH TOOLS MAKE JOB POSSIBLE?</p> <p>8. SLIDE 8 EXPLAIN FIGURE 15–7 A power washer being used to remove the road grime from the unit before it is disassembled.</p> <p>9. SLIDE 9 EXPLAIN FIGURE 15–8 Using a holding fixture is the preferred method to use when disassembling and assembling automatic transmission/transaxle. It allows the unit to be tilted and rotated as needed to get access to the internal and external components.</p> <p>POINT OUT TO THAT A HOLDING FIXTURE IS A VERY VALUABLE FOR DISASSEMBLY & REASSEMBLY</p>

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	<p>10. SLIDE 10 EXPLAIN FIGURE 15-9 The valve body can be removed after the pan has been removed.</p> <p>11. SLIDE 11 EXPLAIN FIGURE 15-10 The accumulators used in a Chrysler 41TE look the same but use different springs.</p> <p>12. SLIDE 12 EXPLAIN FIGURE 15-11 A round retaining ring being removed after the accumulator piston plate/cover has been compressed using a compressing tool.</p>
	<p>EXPLAIN TECH TIP, Magnetic Trays SEE FIGURE 15-12</p>
	<p>13. SLIDE 13 EXPLAIN FIGURE 15-12 Magnetic trays are an excellent tool to use to help keep fasteners organized so they do not get misplaced. Some technicians use a separate tray for the fasteners from each major component such as the valve body bolts.</p> <p>14. SLIDE 14 EXPLAIN FIGURE 15-13 The most common types of retaining rings are (a) external pin type, (b) internal pin type, (c) plain external, (d) plain internal, and (e) E-clip</p>
	<p>EXPLAIN WARNING: Use caution during servo cover removal because some servos use a strong piston spring. These require a special tool to hold the spring compressed during retainer ring removal and then allow the spring to be safely extended.</p>
	<p>15. SLIDE 15 EXPLAIN FIGURE 15-14 Using a dial indicator to check the end play before the transmission is disassembled.</p> <p>16. SLIDE 16 EXPLAIN FIGURE 15-15a Two slide hammers are used to removed the pump in some transmissions/transaxles. b A special puller being used to remove the pump.</p>
	<p>17. SLIDE 17 EXPLAIN FIGURE 15-16 The master link in this GM 4T65-E is facing upward and is colored black.</p> <p>18. SLIDE 18 EXPLAIN FIGURE 15-17 A snap ring being removed after the clutch piston has been compressed to allow access to the snap ring on this GM 4T65-E transaxle.</p> <p>19. SLIDE 19 EXPLAIN FIGURE 15-18 Witness marks</p>

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        	<p>are sometimes hard to see but there is often wear when two parts operate together, thus should be reinstalled in the same position.</p> <p>EXPLAIN TECH TIP</p> <p>20. SLIDE 20 EXPLAIN FIGURE 15–19 final drive assembly on a GM 4T65-E</p> <p>DEMONSTRATION: DEMO PORTIONS OF DISASSEMBLY OR TAKE A TRANS APART IN FRONT OF STUDENTS AS A DEMO</p> <p>21. SLIDES 21-56 EXPLAIN & WALK THROUGH DISSASSEMBLY</p> <p>HANDS-ON TASK: HAVE THE STUDENTS BEGIN DISASSEMBLY OF AUTOMATIC TRANSMISSION OR TRANSAXLE. GRADE STUDENTS ON THEIR ABILITY TO ORGANIZE PARTS FOR REASSEMBLY AND COMPLETE TASK.</p> <p>ASE Education TASK: DISASSEMBLE, CLEAN, & INSPECT TRANSMISSION OR TRANSAXLE</p> <p>ASE Education TASK: INSPECT SERVO AND ACCUMULATOR BORES, PISTONS, SEALS, PINS, SPRINGS, AND RETAINERS; DETERMINE NECESSARY ACTION</p>