

Automatic Transmissions and Transaxles, 7e


Chapter 12 Dual Clutch Automatic Transmissions/Transaxles










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. Discuss the parts and operation of a dual clutch transmission/transaxle.3. Explain the construction of a GETRAG DCT 450 transaxle.4. Describe the diagnostic and service procedures for a dual clutch transmission/transaxle system.
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 6th Edition Chapter Images found on Jim's web site @ www.jameshalderman.com

DOWNLOAD CHP 12: Chapter Images

ICONS	Ch12 Dual Clutch
	<p>1. SLIDE 1 Dual Clutch Automatic Transmissions/Transaxles</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE IS CONSTANTLY UPDATED</p> <p><u>Videos</u></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 12–1 A dual clutch automatic uses the best features of an automatic transmission without the power loss of a torque converter.</p> <p>3. SLIDE 3 EXPLAIN FIGURE 12–2 Dual clutch automatic transaxles that use two dry clutches. The larger clutch drives the odd number gear ratios (first, third, and fifth) and the smaller clutch drives the even numbered gear ratios (second, fourth, and sixth).</p> <p>DISCUSSION: WHICH PARTS DIFFER BETWEEN DUAL-CLUTCH AUTOMATIC TRANSMISSION & CONVENTIONAL AUTOMATIC TRANSMISSION THEY DISCUSSED EARLIER? CREATE A POWER LOSS COMPARISON BETWEEN A DUAL CLUTCH TRANS AND TORQUE CONVERTER TRANS.</p> <p><u>7-Speed Dual Clutch Transmission (View) (Download)</u> <u>Dual Clutch Transaxle (View) (Download)</u> <u>Dual Clutch Transmission Hydraulic & Electronic Control (View) (Download)</u></p> <p>4. SLIDE 4 EXPLAIN FIGURE 12–3 (a) A concentric (nested) clutch design, the assembly is shorter in length but taller in height. (b) A parallel clutch design is longer but has a smaller diameter drum assembly.</p>

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	<p>DISCUSSION: HAVE STUDENTS TALK ABOUT THE OPERATION OF A DUAL-CLUTCH AUTOMATIC TRANSMISSION. WHAT TYPES OF VEHICLES USE DUAL DRY CLUTCHES? WHAT TYPE OF VEHICLES USE DUAL WET CLUTCHES? _</p>
	<p>DISCUSSION: DISCUSS ADVANTAGES AND DISADVANTAGES OF A DUAL-CLUTCH AUTOMATIC TRANSMISSION. WHICH VEHICLES USE A DUAL CLUTCH AUTOMATIC TRANSMISSION?</p>
	<p>5. SLIDE 5 EXPLAIN FIGURE 12-4 Notice the two concentric input shafts. Each shaft is splined to a clutch</p>
	<p>6. SLIDE 6 EXPLAIN FIGURE 12-5 First gear engaged using clutch 1 (C1) to transmit engine torque.</p>
	<p>7. SLIDE 7 EXPLAIN FIGURE 12-6 Second gear engaged using clutch 2 (C2) to transmit engine torque.</p>
	<p>8. SLIDE 8 EXPLAIN FIGURE 12-7 The shift forks are similar to those used in a manual transmission but are moved using hydraulic pistons.</p>
	<p>EXPLAIN FREQUENTLY ASKED QUESTION: How Does a Dual Clutch Type Transmission Achieve Better Fuel Economy?</p>
	<p>9. SLIDE 9 EXPLAIN FIGURE 12-8 Fork position and shaft speed sensors are used as inputs to the TCM.</p>
	<p>10. SLIDE 10 EXPLAIN FIGURE 12-9 The use of a factory or a factory-level aftermarket scan tool is often needed to diagnose the dual clutch transmission system</p>
 	<p>EXPLAIN CHART 12-1</p>
	<p>HANDS-ON TASK: USE ON-LINE SERVICE INFO TO LOOK UP HOW DUAL-CLUTCH TRANSAXLE OPERATES. DISCUSS WHAT THEY FOUND.</p>
	<p>HANDS-ON TASK: USE ON-LINE SERVICE INFO TO LOOK UP SERVICE PROCEDURES FOR A DUALCLUTCH TRANSMISSION. IS THERE A FILTER TO CHANGE? CAN FLUID BE EASILY CHANGED? DOES IT USE SPECIAL ATF? HAVE THEM LIST SERVICE PROCEDURES THEY FIND.</p>

ICONS	Ch12 Dual Clutch
 	ASE Education MLR TASK DESCRIBE THE OPERATIONAL CHARACTERISTICS OF A HYBRID VEHICLE DRIVE TRAIN.