

# Automatic Transmissions and Transaxles, 6e

## Chapter 12 Dual Clutch Automatic Transmissions

### 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 "A" (General Transmission and Transaxle Diagnosis).</li><li>2. Discuss the parts and operation of a dual clutch transmission/transaxle.</li><li>3. Explain the construction of a GETRAG DCT 450 transaxle.</li><li>4. Describe the diagnostic and service procedures for a dual clutch transmission/transaxle system.</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



## Ch12 Dual Clutch Automatic Transmissions

1. SLIDE 1 DUAL CLUTCH AUTOMATIC TRANSMISSIONS

2. SLIDES 2-3 EXPLAIN OBJECTIVES

Check for **ADDITIONAL VIDEOS & ANIMATIONS**  
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4. SLIDES 4-7 EXPLAIN Dual Clutch Transmission/Transaxle

8. SLIDE 8 EXPLAIN FIGURE 12-1 A dual clutch automatic uses the best features of an automatic transmission without the power loss of a torque converter.

9. SLIDE 9 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).

**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.**










10. SLIDE 10 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.

[Dual Clutch Transaxle](#)

[Dual Clutch Transmission Hydraulic & Electronic Control](#)  
[7-SPEED DUAL CLUTCH TRANSMISSION](#)

11. SLIDES 11-13 EXPLAIN GETRAG DCT 450 Transaxle

14. SLIDE 14 EXPLAIN FIGURE 12-7 **shift forks** are similar to those used in a manual transmission but are moved using hydraulic pistons.

ICONS	Ch12 Dual Clutch Automatic Transmissions
	<p>15. SLIDES 15-16 EXPLAIN Dual Clutch Transmission/Transaxle System</p>
	<p><b>DISCUSSION:</b> 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><b>DISCUSSION:</b> DISCUSS ADVANTAGES AND DISADVANTAGES OF A DUAL-CLUTCH AUTOMATIC TRANSMISSION. WHICH VEHICLES USE A DUAL CLUTCH AUTOMATIC TRANSMISSION?</p>
	<p>17. SLIDE 17 EXPLAIN FIGURE 12-9 The use of a factory or a factory-level aftermarket <b>scan tool</b> is often needed to diagnose the dual clutch transmission system</p>
	<p><b>HANDS-ON TASK:</b> USE ON-LINE SERVICE INFO TO LOOK UP HOW DUAL-CLUTCH TRANSAXLE OPERATES. DISCUSS WHAT THEY FOUND.</p>
	<p><b>HANDS-ON TASK:</b> USE ON-LINE SERVICE INFO TO LOOK UP SERVICE PROCEDURES FOR A DUAL-CLUTCH TRANSMISSION. IS THERE A FILTER TO CHANGE? CAN THE FLUID BE EASILY CHANGED? DOES IT USE SPECIAL ATF? HAVE THEM LIST SERVICE PROCEDURES THEY FIND.</p>
	<p><b>DISCUSSION:</b> DISCUSS HOW MANY ENGINE COMPUTER INPUTS ARE USED BY TRANSMISSION. LET THEM KNOW THAT ENGINE DRIVEABILITY ISSUES CAN AFFECT TRANSMISSION OPERATION. WHAT IS THE PURPOSE OF THE TCM?</p>
	<p><b>NATEF MLR TASK</b> DESCRIBE THE OPERATIONAL CHARACTERISTICS OF A HYBRID VEHICLE DRIVE TRAIN.</p>
	<p>18. SLIDES 18-19 EXPLAIN Summary</p>