
























Automatic Transmissions and Transaxles, 6e



Chapter 17 Transmission/Transaxle Assembly and Installation









Opening Your Class

KEY ELEMENT	EXAMPLES
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. Identify the different methods of component cleaning.3. Explain bushing, bearing, and thrust washer service.4. Discuss friction material service.5. Explain internal seal and ring service.6. Describe the procedure for performing case and pump service.7. Explain the procedure for clutch assembly and disassembly.8. Discuss gear set service and air testing.9. Explain the procedure to perform a final transmission assembly.10. List the steps involved in installing 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.

ICONS	Ch17 Trans Assembly and Installation
	<p>1. SLIDE 1 TRANSMISSION/TRANSAXLE ASSEMBLY & INSTALLATION</p>
	<p>2. SLIDES 2-4 EXPLAIN OBJECTIVES</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE IS CONSTANTLY UPDATED</p>
	<p>5. SLIDE 5 EXPLAIN Component Cleaning</p>
	<p><u>NATEF TASK: ASSEMBLE TRANSMISSION/TRANSAXLE.</u></p>
	<p><u>DISCUSSION: HAVE THE STUDENTS DISCUSS BEST METHODS FOR CLEANING VARIOUS TRANSMISSION PARTS. WHAT WILL HAPPEN IF WATER IS ALLOWED TO REMAIN IN AN AUTOMATIC TRANSMISSION OR TRANSAXLE?</u></p>
	<p><u>DISCUSSION: HAVE THE STUDENTS TALK ABOUT INSPECTING VALVE BODY. CAN A WORN VALVE BODY BE REPAIRED? CAN PROBLEMS THAT WERE ENGINEERED INTO THE VALVE BODY BE CORRECTED?</u></p>
	<p>6. SLIDE 6 EXPLAIN Bushing, Bearing and Thrust Washer Service</p>
	<p>7. SLIDE 7 EXPLAIN Friction Material Service</p>
	<p><u>HANDS-ON TASK: HAVE THE STUDENTS DISASSEMBLE CLUTCH PACKS OF UNIT THEY ARE WORKING ON. HAVE THEM NOTE CONDITION OF CLUTCH DISCS AND WHETHER THEY NEED TO BE REPLACED. CAN STEELS BE REUSED?</u></p>

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 	<p>HANDS-ON TASK: HAVE STUDENTS REMOVE CLUTCH PISTON, USING SPECIAL TOOLS IF NEEDED. POINT OUT THAT COMPRESSED AIR CAN BE USED TO REMOVE PISTON ONCE SNAP RING IS REMOVED, BUT HANDS AND FINGERS NEED TO BE KEPT CLEAR TO AVOID INJURY.</p>
	<p>8. SLIDES 8-9 EXPLAIN Internal Ring and Seal Service</p>
	<p>HANDS-ON TASK: INSPECT PISTON RETURN SPRINGS, PISTONS, AND SEALS. ASK THEM TO NOTE ANY PROBLEMS THEY SEE. THEN HAVE STUDENTS INSPECT HARD PARTS SUCH AS DRUMS, HUBS, SHELLS, AND PLANETARY ASSEMBLIES. REMIND THEM TO USE FACTORY SPECIFICATIONS TO MEASURE AND INSPECT PARTS.</p>
 	<p>ON-VEHICLE NATEF TASK (A2-C-4) INSPECT SERVO PISTON BORE, PISTON AND SEALS; DETERMINE NECESSARY ACTION. (P-3) PAGE 441</p>
	<p>10. SLIDES 10-11 EXPLAIN Case Service</p>
 	<p>NATEF TASK: INSPECT OIL DELIVERY CIRCUITS, INCLUDING SEAL RINGS, RING GROOVES, AND SEALING SURFACE AREAS, FEED PIPES, ORIFICES, AND CHECK VALVES/BALLS.</p>
 	<p>NATEF TASK: INSPECT BUSHINGS; DETERMINE NECESSARY ACTION</p>
 	<p>NATEF TASK: INSPECT CASE BORES, PASSAGES, BUSHINGS, VENTS, AND MATING SURFACES; DETERMINE NECESSARY ACTION.</p>
	<p>12. SLIDES 12-14 EXPLAIN Pump Service</p>

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	HANDS-ON TASK: DISASSEMBLE FRONT PUMP ASSEMBLY. HAVE THEM MEASURE PUMP FOR WEAR AND COMPARE THESE MEASUREMENTS TO SPECIFICATION. IS THE PUMP GOOD?
 	NATEF TASK: INSPECT, MEASURE, AND RESEAL OIL PUMP ASSEMBLY AND COMPONENTS.
	15. SLIDES 15-19 EXPLAIN Clutch Assembly and Disassembly
 	NATEF TASK: INSPECT CLUTCH DRUM, PISTON, CHECK-BALLS, SPRINGS, RETAINERS, SEALS, AND FRICTION AND PRESSURE PLATES, BANDS AND DRUMS; DETERMINE NECESSARY ACTION.
 	NATEF TASK: MEASURE CLUTCH PACK CLEARANCE; DETERMINE NECESSARY ACTION.
	20. SLIDES 20-21 EXPLAIN Gear Set Service and Air Testing
 	NATEF TASK: AIR TEST OPERATION OF CLUTCH AND SERVO ASSEMBLIES.
	22. SLIDES 22-25 EXPLAIN Final Transmission Assembly
 	NATEF TASK: MEASURE TRANSMISSION/TRANSAXLE END PLAY OR PRELOAD; DETERMINE NECESSARY ACTION.
 	NATEF TASK: INSPECT, MEASURE, AND REPLACE THRUST WASHERS AND BEARINGS.
 	NATEF TASK: INSPECT ROLLER AND SPRAG CLUTCH, RACES, ROLLERS, SPRAGS, SPRINGS, CAGES, RETAINERS; DETERMINE NECESSARY ACTION.

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 	<p><u>NATEF TASK:</u> INSPECT AND MEASURE PLANETARY GEAR ASSEMBLY COMPONENTS; DETERMINE NECESSARY ACTION.</p>
 	<p><u>NATEF TASK:</u> DIAGNOSE AND INSPECT TRANSAXLE DRIVE, LINK CHAINS, SPROCKETS, GEARS, BEARINGS, AND BUSHINGS; PERFORM NECESSARY ACTION</p>
 	<p><u>NATEF TASK:</u> INSPECT, MEASURE, REPAIR, ADJUST OR REPLACE TRANSAXLE FINAL DRIVE COMPONENTS.</p>
	<p>26. SLIDES 26-28 EXPLAIN Installing a Transmission</p>
	<p>29. SLIDES 29-32 EXPLAIN Summary</p>