



















# Automotive Heating and Air Conditioning, 7e

## Chapter 14 Refrigerant Recovery, Recycling, & Recharging

### Opening Your Class

KEY ELEMENT	EXAMPLES
<b>Introduce Content</b>	This course or class covers operation and service of <b>Automotive Heating and Air Conditioning, 7e</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 the ASE Heating and Air Conditioning (A7) certification test content area "A" (A/C System Service, Diagnosis and Repair).</li><li>2. Explain the steps involved in the service and repair of A/C systems.</li><li>3. Discuss the procedure for identifying refrigerants in an A/C system.</li><li>4. Explain the procedure for refrigerant recovery in A/C systems.</li><li>5. Explain the procedure for recycling refrigerant in A/C systems.</li><li>6. Discuss the purpose of flushing an A/C 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	Ch14 Refrigerant Recovery, Recycling, & Recharging
	<p>1. SLIDE 1 REFRIGERANT RECOVERY, RECYCLING, &amp; RECHARGING</p> <p>2. SLIDES 2-4 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>5. SLIDES 5-6 EXPLAIN Steps Involved in Service and Repair of A/C Systems</p>
	<p>7. SLIDES 7-8 EXPLAIN Procedure for Identifying Refrigerants in an A/C System</p>
	<p><b><u>DEMONSTRATION: SHOW TESTER FOR IDENTIFYING REFRIGERANT GASES</u></b></p>
	<p><b><u>DISCUSSION: ASK STUDENTS TO TALK ABOUT THE TYPES OF REFRIGERANTS THAT HAVE BEEN USED IN AUTOMOTIVE SYSTEMS AND IN RESIDENTIAL HOME AC SYSTEMS. HOW DO THESE REFRIGERANTS WORK? WHY IS CFC-12 NO LONGER USED?</u></b></p>
	<p>9. SLIDES 9-13 EXPLAIN Procedure for Refrigerant Recovery in A/C Systems</p>
	<p>14. SLIDE 14 EXPLAIN Purpose of Flushing A/C System</p> <p><u>REFRIGERANT SERVICE, RECOVERY</u></p>
	<p>15. SLIDES 15-20 EXPLAIN Procedure for Evacuating an A/C System</p>
	<p><u>REFRIGERANT SERVICE, EVACUATION</u></p>

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       	<p data-bbox="587 302 1182 336"><u>REFRIGERANT SERVICE, CHARGE</u></p> <p data-bbox="623 443 1321 512">21. SLIDES 21-26 EXPLAIN How to Retrofit a R-12 System to a R-134a System</p> <p data-bbox="623 579 1403 613">27. SLIDE 27 EXPLAIN Purpose of Sealants &amp; Stop Leaks</p> <p data-bbox="587 709 1386 863"><u>NATEF MAST TASK A7E1: PERFORM CORRECT USE AND MAINTENANCE OF REFRIGERANT HANDLING EQUIPMENT ACCORDING TO EQUIPMENT MANUFACTURER'S STANDARDS. P1</u></p> <p data-bbox="587 869 1305 947"><u>NATEF MAST TASK A7E2: IDENTIFY AND RECOVER A/C SYSTEM REFRIGERANT P1</u></p> <p data-bbox="587 1016 1419 1094"><u>NATEF MAST TASK A7E3: RECYCLE, LABEL, AND STORE REFRIGERANT P1</u></p> <p data-bbox="587 1163 1386 1268"><u>NATEF MAST TASK A7E4: EVACUATE AND CHARGE A/C SYSTEM; ADD REFRIGERANT OIL AS REQUIRED.P1</u></p> <p data-bbox="623 1304 1175 1337">28. SLIDES 28-30 EXPLAIN Summary</p>