












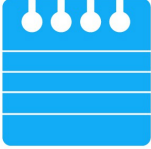




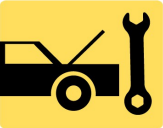



Automotive Maintenance and Light Repair, 1ST Edition









Chapter 10 Power Tools and Shop Equipment


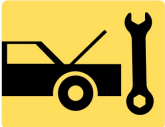







Opening Your Class

KEY ELEMENT	EXAMPLES
Introduce Content	This course or class covers Automotive Maintenance and Light Repair . 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. <ul style="list-style-type: none">• Identify commonly used power tools.• Identify commonly used shop equipment.• Discuss the proper use of power tools and shop equipment.• Describe the safety procedures that should be followed when working with power tools and shop equipment.
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	Ch10 Power Tools & Shop Equipment
   	<p>1. SLIDE 1 Ch10 Power Tools & Shop Equipment</p> <p>2. SLIDE 2 EXPLAIN OBJECTIVES</p> <p>Check for ADDITIONAL VIDEOS & ANIMATIONS @ http://www.jameshalderman.com/ WEB SITE REGULARLY UPDATED</p> <p>3. SLIDES 3-4 EXPLAIN Air Compressor</p>
	<p>5. SLIDE 5 EXPLAIN FIGURE 10-1 typical shop compressor. It is usually placed out of the way, yet accessible to provide for maintenance to the unit.</p> <p>6. SLIDE 6 EXPLAIN FIGURE 10-2 Always use an air nozzle that is OSHA approved. Openings in side used to allow air to escape if nozzle tip were to become clogged.</p>
	<p>SHOW VIDEO ON SHOP AIR</p> <p>1 MINUTE WWW.MYAUTOMOTIVELAB.COM</p> <p><small>HTTP://MEDIA.PEARSONCMG.COM/PH/CHET/CHET_MYLIBS/AKAMAI/TEMPLATE/VIDEO0640X480.PHP?TITLE=COMPRESSED%20AIR&CLIP=PANDC/CHET/2012/AUTOMOTIVE/AUTO_SHOP_SAFETY/CLIP25COMPAIR1.MOV&CAPTION=CHET/CHET_MYLIBS/AKAMAI/2012/AUTOMOTIVE/AUTO_SHOP_SAFETY/XML/CLIP25COMPAIR1.XML</small></p>
	<p>DEMONSTRATION: SHOW SHOP'S AIR COMPRESSOR & DISCUSS HOW IT WORKS. WHAT TYPES OF POWER TOOLS CAN BE USED WITH THE AIR COMPRESSOR? WHAT ARE SOME OTHER APPLICATIONS?</p>
 	<p>SAFETY REVIEW SAFETY PROCEDURES FOR USING AN AIR COMPRESSOR & POWER TOOLS ASSOCIATED WITH IT. AIR TOOLS ARE POWERFUL & CAN CAUSE INJURY IF NOT USED PROPERLY</p>
 	<p>SAFETY NEVER POINT AN AIR BLOW GUN AT YOURSELF OR ANYONE ELSE.</p>

ICONS	Ch10 Power Tools & Shop Equipment
 	<p>NEVER USE COMPRESSED AIR TO SPIN A BEARING OR A GEAR TO MAKE A WHISTLING SOUND</p>
	<p>7. SLIDE 7 EXPLAIN Air and Electrically Operated Tools</p> <p>8. SLIDE 8 EXPLAIN FIGURE 10-3 typical 1/2 in. drive impact wrench</p> <p>9. SLIDE 9 EXPLAIN FIGURE 10-4 This impact wrench features a variable torque setting using a rotary knob. The direction of rotation can be changed by pressing the button at the bottom.</p> <p>10. SLIDE 10 EXPLAIN FIGURE 10-5 A typical battery-powered 3/8 in. drive impact wrench.</p> <p>11. SLIDE 11 EXPLAIN FIGURE 10-6 black impact socket. Always use impact-type sockets whenever using an impact wrench to avoid the possibility of shattering the socket, which can cause personal injury.</p>
	<p>12. SLIDE 12 EXPLAIN FIGURE 10-7 air ratchet is a very useful tool that allows fast removal and installation of fasteners, especially in areas that are difficult to reach or do not have room enough to move a hand ratchet wrench.</p>
	<p>DEMONSTRATION: SHOW STUDENTS HOW TO USE AN IMPACT WRENCH, AND DISCUSS ITS APPLICATIONS.</p>
	<p>HANDS-ON TASK: HAVE STUDENTS USE AN IMPACT WRENCH AND IMPACT SOCKETS TO REMOVE AND REPLACE A CAR'S TIRES.</p>
	<p>SAFETY REMIND STUDENTS THEY SHOULD ALWAYS WEAR EYE PROTECTION WHEN USING POWER TOOLS AND OTHER SHOP EQUIPMENT.</p>
	
	<p>13. SLIDE 13 EXPLAIN FIGURE 10-8 This typical die grinder surface preparation kit includes the air-operated die grinder, as well as a variety of sanding discs for smoothing surfaces or removing rust.</p> <p>14. SLIDE 14 EXPLAIN Air and Electrically Operated Tools</p>

ICONS	Ch10 Power Tools & Shop Equipment
	<p>15. SLIDE 15 EXPLAIN Trouble Lights</p>
	<p>16. SLIDE 16 EXPLAIN FIGURE 10-9 fluorescent trouble light operates cooler and is safer to use in the shop because it is protected against accidental breakage where gasoline or other flammable liquids would happen to come in contact with the light.</p> <p>DISCUSSION: HAVE STUDENTS TALK ABOUT TYPES OF TROUBLE LIGHTS FOUND IN SHOP. WHY ARE FLUORESCENT LIGHTS SAFER THAN INCANDESCENT LIGHTS? WHAT ARE APPLICATIONS OF VARIOUS TYPES OF TROUBLE LIGHTS?</p>
	<p>17. SLIDE 17 EXPLAIN Bench/Pedestal Grinder</p>
	<p>18. SLIDE 18 EXPLAIN FIGURE 10-10 typical pedestal grinder with a wire wheel on left side and stone wheel on the right side. Even though this machine is equipped with guards, safety glasses or a face shield should always be worn when using a grinder or wire wheel</p> <p>HANDS-ON TASK: HAVE STUDENTS USE BENCH- OR PEDESTAL MOUNTED GRINDER TO CLEAN BOLT THREADS OR SHARPEN A CHISEL. WARN STUDENTS THAT THEY MUST WEAR A FACE SHIELD WHEN WORKING WITH A GRINDER.</p>
	<p>19. SLIDE 19 EXPLAIN Bench Vise</p>
	<p>20. SLIDE 20 EXPLAIN FIGURE 10-11 typical vise mounted to a workbench</p> <p>DISCUSSION: ASK STUDENTS TO DISCUSS HOW A BENCH VISE WORKS. WHAT ARE ITS VARIOUS USES IN AN AUTOMOTIVE SHOP? FIGURE 10-11</p>
	<p>21. SLIDE 21 EXPLAIN Hydraulic Presses</p>
	<p>22. SLIDE 22 EXPLAIN FIGURE 10-12 hydraulic press is usually used to press bearings on and off on rear axles and transmissions</p> <p>SHOW VIDEO ON HYDRAULIC PRESS 1 MINUTE</p> <p>http://media.pearsoncmg.com/ph/chet/chet_mylibs/akamai/template/video640x480.php?title=Hydraulic%20Press&clip=pandc/chet/2012/automotive/Auto_Shop_Safety/Clip40HydrPress1.mov&caption=chet/chet_mylibs/akamai/2012/automotive/Auto_Shop_Safety/xml/Clip40HydrPress1.xml</p>

ICONS	Ch10 Power Tools & Shop Equipment
        	<p>DEMONSTRATION: SHOW HOW TO USE A HYDRAULIC PRESS, HAVE THEM PRESS BEARINGS ON/OFF USING BEARING SPLITTER <u>FIGURE 10-12</u></p> <p>HANDS-ON TASK: AFTER SHOWING STUDENTS HOW TO USE A HYDRAULIC PRESS, HAVE THEM PRESS BEARINGS ON & OFF BY USING A BEARING SPLITTER <u>FIGURE 10-12</u></p> <p><u>SAFETY</u> BE SURE THE REST AND THE SAFETY SHIELD ARE PROPERLY ADJUSTED BEFORE USING THE BEARING SPLITTER</p> <p>COVER BEARINGS WITH A TOWEL OR SHOP RAG WHEN PRESSING THEM TO PREVENT PIECES FROM SCATTERING IF BEARING BINDS OR EXPLODES</p> <p>23. SLIDE 23 EXPLAIN Portable Crane and Chain Hoist</p> <p>24. SLIDE 24 EXPLAIN <u>FIGURE 10-13</u> typical portable crane used to lift and move heavy assemblies, such as engines and transmissions</p> <p>25. SLIDE 25 EXPLAIN Engine Stands</p> <p>26. SLIDE 26 EXPLAIN <u>FIGURE 10-14</u> Two engines on engine stands. The plastic bags over engines help keep dirt from getting onto these engines and engine parts.</p> <p>27. SLIDE 27 EXPLAIN <u>FIGURE 10-15</u> An engine stand that grasps engine from the sides rather than end</p> <p>28. SLIDE 28 EXPLAIN Care and Maintenance of Shop Equipment</p> <p>A CLEAN SHOP IS A SAFER SHOP AND MAY ALSO ATTRACT MORE CUSTOMERS.</p> <p>29. SLIDES 29-40 SETUP/LIGHTING TORCH</p>

ICONS	Ch10 Power Tools & Shop Equipment
	<p>41. SLIDE 41-46 HEATING METAL</p>
	<p>47. SLIDE 47-52 CUTTING METAL</p>
	<p><u>NATEF MLR TASK SUPP B3 DEMONSTRATE SAFE HANDLING AND USE OF APPROPRIATE TOOLS.</u></p>
	<p><u>NATEF MLR TASK SUPP B4 DEMONSTRATE PROPER CLEANING, STORAGE, AND MAINTENANCE OF TOOLS AND EQUIPMENT.</u></p>