



**Correlation of**  
**Modern Refrigeration and Air Conditioning, by Althouse, Turnquist, Bracciano**  
**(Goodheart-Willcox Publisher ©2021)**  
**to**  
**AHRI Curriculum Guide: V. Piping and Piping Practices**

The following chart correlates the *Modern Refrigeration and Air Conditioning* textbook (©2021) to a section of the Curriculum Guide developed by Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and used for PAHRA accreditation.

The chart lists the Curriculum Guide’s knowledge and task competency objectives and the corresponding chapter numbers from *Modern Refrigeration and Air Conditioning*.

For more information on the Partnership for Air-Conditioning, Heating, Refrigeration Accreditation (PAHRA) and related accreditation, please visit: [www.pahrahvacr.org](http://www.pahrahvacr.org)



<b>V.A. Pipe Sizing and Troubleshooting</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify types of pipe and tubing used in refrigeration work.	Chapters 8, 32, 33, 52
2. Identify various types of fittings.	Chapters 8, 32, 33, 52
3. Describe methods of insulating pipe and tubing.	Chapters 8, 32, 33, 52
4. Identify soldering and brazing alloys used in HVACR.	Chapters 8, 52
5. Explain applications of soldering and brazing alloys.	Chapters 8, 52
6. Describe heat sink methods.	Chapters 8, 52
7. Describe heat exchange techniques.	Chapters 8, 52
8. Describe the applications and installation of vibration eliminators.	Chapters 20, 52
9. Identify types of torches.	Chapters 8, 52

**Correlation of *Modern Refrigeration and Air Conditioning* to AHRI Curriculum Guide:  
V. Piping and Piping Practices—page 2**

<b>V.A. Pipe Sizing and Troubleshooting (continued)</b>	
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Flare copper tubing.	Chapter 8
2. Swage copper tubing.	Chapter 8
3. Bend copper tubing.	Chapter 8
4. Solder and braze copper tubing.	Chapter 8
5. Cut and thread steel/iron pipe.	Chapter 8
6. Solder aluminum tubing.	Chapter 8
<b>V.B. Pipe Sizing and Troubleshooting</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain capacities of refrigerant lines.	Chapters 8, 50, 51, 52, 53, 55
2. Explain effects of refrigerant velocity in lines.	Chapters 8, 50, 51, 52, 53, 55
3. Explain equivalent lengths of piping for fittings.	Chapters 8, 50, 51, 52, 53, 55
4. Explain use of traps in vapor risers.	Chapters 8, 39, 50, 51, 52, 53, 55
5. Explain the effects of pressure drop in the refrigeration system.	Chapters 8, 50, 51, 52, 53, 54, 55
6. Explain gas piping.	Chapters 8, 41
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Calculate total effective length of pipe runs.	Chapters 8, 50, 51, 52
2. Calculate amount of refrigerant in lines.	Chapters 8, 50, 51, 52
3. Size piping using manufacturers' installation instructions.	Chapters 8, 32, 33, 50, 51, 52
4. Calculate pressure drop in liquid line risers.	Chapters 8, 50, 51, 52
5. Size liquid and vapor lines.	Chapters 8, 50, 51, 52
6. Calculate gas piping sizes to multiple units, fed from a single meter.	Chapters 8, 41
<b>V.C. Sheetmetal</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain use of bending tools.	Chapters 29, 30
2. Explain use of cutting tools.	Chapters 29, 30
3. Explain the types of ductwork and fittings.	Chapters 29, 30
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Demonstrate the use of tin snips left, right, and straight.	Chapters 7, 29
2. Identify the different pressures of ductwork.	Chapters 29, 30
3. Identify the different types of connections.	Chapter 29