

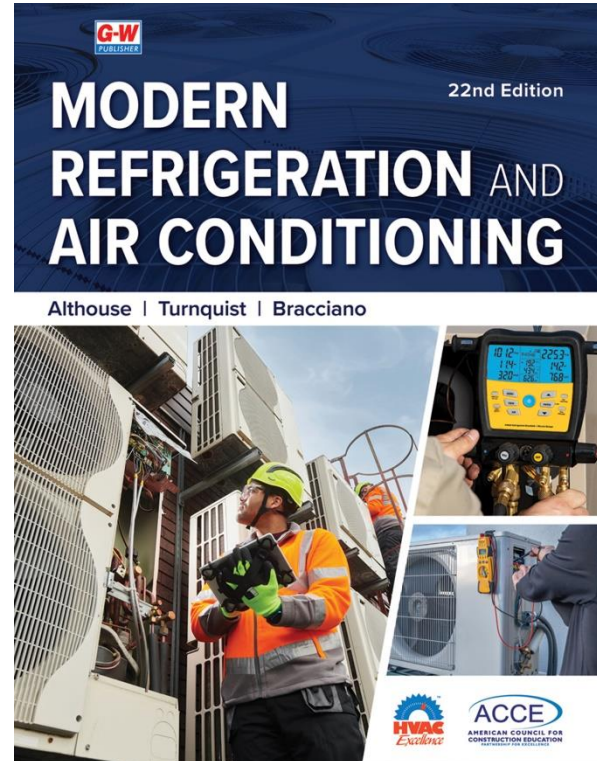


**Correlation of**  
**Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano**  
**(Goodheart-Willcox Publisher ©2025)**  
 to  
**AHRI Curriculum Guide X. Refrigerant System Components**

Goodheart-Willcox is pleased to partner with the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the American Council for Construction Education (ACCE) by correlating *Modern Refrigeration and Air Conditioning* to the AHRI Curriculum Guide. The following chart correlates *Modern Refrigeration and Air Conditioning* to a section of the Curriculum Guide developed by AHRI used for ACCE (formerly PAHRA) accreditation.

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

For more information on the American Council for Construction Education (ACCE) and related accreditation, please visit: [www.acce-hq.org](http://www.acce-hq.org)



<b>X.A. Metering Devices</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Define types of metering devices:	
a. capillary tubes	Chapters 8, 9, 36, 45
b. thermal expansion valve	Chapters 8, 9, 36, 44, 45, 46
c. automatic expansion valve	Chapters 8, 9, 45
d. low side float	Chapters 8, 9, 45
e. high side float	Chapters 8, 9, 45
f. hand expansion valve	Chapters 8, 9, 45
g. restrictor orifices	Chapters 8, 9, 36, 45

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<b>X.A. Metering Devices (continued)</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
h. electronic expansion valve	Chapters 8, 9, 44, 45, 46
i. solid-state expansion valve	Chapters 8, 44, 45
2. Evaluate system performance when using different types of flow control devices.	Chapters 8, 9, 22, 23, 25, 44, 45, 48, 49, 50
3. Explain how to size expansion valves.	Chapters 8, 44, 45, 47, 51, 52
4. Explain how to size a thermal expansion valve.	Chapters 8, 44, 45, 47, 51, 52
5. Explain how to size an automatic expansion valve.	Chapters 8, 44, 45, 47, 51, 52
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Adjust and size metering devices when and where appropriate.	Chapters 44, 45, 47, 48, 49, 50, 51, 52
2. Check and adjust superheat and/or subcooling to manufacturers' specifications.	Chapters 44, 45, 47, 48, 49, 50, 51, 52
3. Install capillary tube.	Chapters 4, 5, 11, 12, 45, 47, 51, 52
<b>X.B. Evaporators</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Explain capacities of refrigerant lines.	
a. bare-tube	Chapters 44, 46, 52
b. finned (internal and external)	Chapters 44, 46, 52
c. plate	Chapters 44, 52
d. unit coolers	Chapters 44, 52
e. chillers	Chapters 25, 27, 52
2. Determine the mean effective temperature difference (METD).	Chapter 52
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Adjust for proper coil air flow.	Chapters 30, 31, 32, 44, 51, 52
2. Check coil performance.	Chapters 30, 31, 32, 44, 51, 52
3. Select and size evaporator based on compressor capacities.	Chapters 30, 31, 32, 44, 51, 52

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<b>X.C. Compressors</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify types of compressors:	
a. hermetic	Chapters 9, 43
b. semi-hermetic	Chapters 9, 43
c. open type	Chapters 9, 43
2. Identify methods of compression:	
a. centrifugal	Chapter 43
b. rotary	Chapter 9
c. screw	Chapter 43
d. scroll	Chapter 9
e. reciprocating	Chapters 9, 43
3. Explain the methods of compression.	Chapters 8, 9, 43
4. Explain methods of capacity control:	
a. cylinder unloading	Chapters 25, 43
b. multiple compressors	Chapter 43
c. hot gas bypass	Chapters 43, 44, 46
d. variable speed compressors	Chapters 16, 22, 23, 25, 40, 43, 49
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Select the compressor based on cooling load.	Chapters 32, 43, 51, 52
2. Determine the system balance based on the selected components.	Chapters 32, 43, 51, 52
<b>X.D. Condensers</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Define the types of condensers:	
a. air-cooled	Chapters 9, 44
b. water-cooled	Chapters 25, 44
c. evaporative-cooled	Chapters 25, 44
2. Determine proper air and water flow.	Chapters 23, 25, 28, 44, 47, 48, 49, 50, 51, 52
3. Describe maintenance of a condenser and a cooling tower.	Chapters 21, 23, 25, 44, 48, 49, 50
4. Explain the operation and performance of a condenser.	Chapters 8, 23, 25, 44, 48, 49, 50
5. Explain the terms <i>range</i> and <i>approach</i> related to cooling towers.	Chapters 17, 18, 25, 50

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<b>X.D. Condensers (continued)</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
6. Explain the purpose of heat reclaim.	Chapter 44
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Adjust the airflow for proper temperature difference.	Chapters 28, 44, 49, 51, 52
2. Adjust water flow for proper gallons per minute (GPM) and temperature difference.	Chapters 25, 44, 49, 51, 52
3. Size a cooling tower.	Chapter 25
4. Select and size an air-cooled condenser.	Chapters 28, 32, 51, 52
<b>X.E. Accessories</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Define the types of condensers:	
a. accumulators	Chapters 36, 43
b. crankcase heaters	Chapters 43, 49
c. crankcase pressure regulating valves	Chapters 43, 35
d. defrost timers	Chapters 20, 44
e. driers/filters	Chapters 8, 9, 21, 45, 47, 50
f. evaporator pressure regulating valves	Chapters 44, 45, 49
g. head pressure controls	Chapters 44, 45, 48, 49
h. heat exchangers	Chapters 20, 33, 34, 38, 40, 44
i. hot gas bypass	Chapters 20, 44, 45, 46, 49, 51, 52
j. low pressure controls	Chapters 17, 48
k. low ambient controls	Chapters 44, 45, 48
l. mufflers	Chapter 43
m. oil separators	Chapter 43
n. receivers	Chapters 9, 12, 48, 49, 50, 52
o. solenoid valves	Chapters 15, 20, 33, 34, 36, 37, 38, 41, 45, 46, 47, 49, 50
p. suction filters	Chapters 45, 48, 49
q. unloaders	Chapters 25, 43
r. vibration eliminators	Chapters 43, 47
s. check valves	Chapters 5, 36, 45, 46, 49

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<b>X.E. Accessories (continued)</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
t. water regulating valve	Chapters 25, 50
u. liquid sight valve-refrigerant and oil	Chapters 12, 45, 47, 48, 49
v. relief valve	Chapters 11, 12, 38, 45
2. Determine appropriate accessories for systems application.	Chapters 23, 25, 32, 43, 44, 45, 46, 47, 51, 52
3. Explain the operation of the above-listed accessories (Item #1).	Chapters 5, 8, 11, 12, 15, 20, 21, 25, 33, 34, 36, 37, 38, 40, 41, 43, 44, 45, 46, 47, 48, 49, 51, 52
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Replace a drier/filter.	Chapters 4, 8, 9, 10, 11, 12, 21, 45, 47, 48, 49, 50
2. Adjust a crankcase pressure regulating valve.	Chapters 4, 10, 11, 12, 43, 47, 49, 50
<b>X.F. Access Valves</b>	
<b>Knowledge</b>	<b>Textbook Chapter(s)</b>
1. Identify front and back seat valves in the:	
a. Operation and use of the suction and discharge service valves that service the compressor.	Chapters 11, 12, 21, 45, 48, 49, 50
b. Application and operation of the king valve at the outlet of the receiver.	Chapters 11, 12, 21, 45, 48, 49, 50
c. Application and operation of the queen valve where present, near the receiver.	Chapters 11, 12, 21, 45, 48, 49, 50
d. Small system high side and low side service ports.	Chapters 11, 12, 21, 45, 48, 49, 50
e. Front seating and Schrader valves, OEM and field installed.	Chapters 11, 12, 21, 45, 48, 49, 50
<b>Tasks</b>	<b>Textbook Chapter(s)</b>
1. Identify Schrader Type OEM and field installed in the:	
a. Installation and use of clamp on valves	Chapters 11, 12, 21
b. Installation and use of solder (in) or (on) stem valves	Chapters 4, 5, 11, 12, 21
c. Use of A/C front seating/Schrader OEM service valves.	Chapters 4, 5, 11, 12, 21, 48, 49, 50
d. Use of quick disconnects with Schrader-based valves.	Chapters 4, 5, 11, 12, 21, 48, 49, 50