

## Rinnai Heat Pumps Accreditation Programme (High Wall Split)

### Module 5a: Installation & Handover

#### Self Check # 2 answers

#	Question	Your score
1	<p>On the <u>interior</u> wall what is the diameter of the hole that is to be drilled?</p> <p>46 mm 55 mm 65 mm <b>70 mm</b></p>	
2	<p>The hole drilled in the <u>exterior</u> wall must be:</p> <ul style="list-style-type: none"> <li>Slightly angled down to the inside</li> <li><b>Slightly angled down to the outside</b></li> <li>Level</li> </ul>	
3	<p>When taping together the tubing, drainage hose and connecting cable together prior to lifting the indoor unit into place, which of the three must be on the low side of the bundle?</p> <p><b>Condensate drainage hose</b> Electrical cable Tubing</p>	
4	<p>Never use flexible drainage hose inside existing walls because it could become kinked creating a blockage and resulting in leakage within the wall cavity</p> <p><b>True</b> False</p>	
5	<p>If the ODU is being fixed to a concrete pad and the pad is at least 50 mm thick, proprietary mounting rails are not needed.</p> <p>True <b>False</b></p>	

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6	<p>Pipe lengths and elevations are specified in the installation manual.</p> <p>What is the maximum vertical height for the 7 kW Q Series?</p> <p>12 m 16 m <b>20 m</b> 25 m</p>	
7	<p>What is the maximum pipe run between the IDU and ODU for a 5.2 kW model?</p> <p>20 m <b>30 m</b> 40 m</p>	
8	<p>When connecting flare joints, it is good practice to hand tighten first, then after ensuring the pipes will fit neatly into trunking, tighten connections with a Torque spanner.</p> <p><b>True</b> False</p>	
9	<p>What is the torque wrench setting when connecting the gas pipe to the <u>outdoor</u> unit on the <u>5.2 kW</u> unit?</p> <p>18 Nm 42 Nm 55 Nm <b>75 Nm</b></p>	
10	<p>It is good practice (and a Rinnai requirement) to perform a dry nitrogen positive pressure holding test (PPHT) after completion of pipework installation.</p> <p>Is the pressure test performed using the R32 refrigerant in the system?</p> <p>Yes <b>No</b></p>	
11	<p>When performing the dry nitrogen positive pressure holding test (PPHT), what is the <u>minimum</u> pressure pipework must be charged to?</p> <ul style="list-style-type: none"> <li>• 250 psi</li> <li>• <b>400 psi</b></li> <li>• 475 psi</li> <li>• 500 psi</li> </ul>	

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12	<p>There are two parts to the PPHT.</p> <p>(1) Testing for leaks (2) A timed pressure drop test</p> <p>What are the success criteria for this pressure drop test?</p> <ul style="list-style-type: none"> <li>• Hold for 3 minutes / &lt;10% drop</li> <li>• Hold for 3 minutes / no pressure drop</li> <li>• Hold for 5 minutes / &lt;10% drop</li> <li>• <b>Hold for 5 minutes / no pressure drop</b></li> <li>• Hold for 10 minutes / &lt;10% drop</li> <li>• Hold for 10 minutes / no pressure drop</li> </ul>	
13	<p>It is essential the system is evacuated to remove air, moisture and any nitrogen remaining from pressure testing.</p> <p>Any air, moisture or foreign matter remaining in the system may cause: (select the four (4) correct responses)</p> <ul style="list-style-type: none"> <li>• <b>the pressure in the system to rise, resulting in compressor malfunction</b></li> <li>• the pressure in the system to drop, resulting in loss of performance</li> <li>• <b>the operating current to rise, resulting in performance loss</b></li> <li>• the operating current to drop, resulting in compressor malfunction</li> <li>• <b>oil sludge build-up</b></li> <li>• <b>production of acid, leading to corrosion of parts of the system.</b></li> </ul>	
14	<p>Why is it <u>not recommended</u> to use bourdon type gauges for the evacuation process?</p> <ul style="list-style-type: none"> <li>• <b>Because they are not accurate enough</b></li> <li>• Because if the glass covers on the gauges breaks it will leak oil</li> <li>• The gauges cannot be accurately calibrated every 2 years that the standard requires</li> </ul>	
15	<p>When evacuating the system, where <u>must the gauges be positioned</u>?</p> <ul style="list-style-type: none"> <li>• Below the pump</li> <li>• Level with the service valve</li> <li>• <b>As high as possible above the service valve</b></li> <li>• It doesn't matter where they are positioned</li> </ul>	

#	Question	Your score
16	<p>What is the <u>minimum</u> vacuum that must be reached?</p> <ul style="list-style-type: none"><li>• 500 microns, but closer to 300 microns is better</li><li>• 400 microns, but closer to 200 microns is better</li><li>• 300 microns, but closer to 100 microns is better</li><li>• 200 microns, but closer to 400 microns is better</li></ul>	
17	<p>After charging the system with refrigerant, the brass caps must be put back onto the vapour and liquid valves and the service valve and tightened.</p> <p>Is it necessary to <u>twice check</u> that refrigerant is not leaking?</p> <ul style="list-style-type: none"><li>• Yes</li><li>• No</li></ul>	