

No.	Condensing Boiler Application Installation And Operation	TRUE	FALSE	No.	Slide
	<b>Name:</b> _____ <b>Boiler License Number:</b> _____				
	<b>PART 1</b>				
1	Carbon dioxide (CO <sub>2</sub> ) + Heat + Moisture = Carbonic Acid?			1	
2	Typically two cubic ft. of water vapor is created for every cubic ft. of completely burned natural gas?			2	
3	Condensing boilers cannot be more than 92% efficient?			3	
4	Typically flue gas condensation occurs when the return water temperature to the boiler is below 130 F.? (Dew point)			4	
5	The cooler the return water is to the boiler the less condensation take place?			5	
6	The acidic range of condensate formed in a condensing boiler is 3-5 on the PH scale?			6	
7	One benefit associated with condensing boilers is lower operating efficiencies?			7	
8	All hot water boilers can condense flue gasses?			8	
9	Condensing boilers emit lower flue gas temperatures than conventional hot water boilers?			9	
10	All listed boilers must bear the I-B-R emblem?			10	
11	Commercial boilers are defined as boilers with a BTU input greater than 400,000 btus?			11	
12	Typically condensing boiler heat exchangers are constructed of NON-Ferrous materials. Stainless, aluminum, copper?			12	
13	Cast iron sectional boilers are also used in condensing hot water boiler applications?			13	
14	The example million btu boiler can have less 5 gallons of water in it?			14	
15	Slant Fin condensing boilers use a stainless steel heat exchanger?			15	
16	Lochinvar condensing boilers use a stainless steel heat exchanger?			16	
17	Aerco's Modulex condensing boilers use an aluminum heat exchanger?			17	
18	AO Smith VF condensing boilers use a copper heat exchanger?			18	
19	Lochinvar XL boilers lose 6% percent of its rated capacity for every 1000 ft installed above sea level?			19	
20	Boiler ratings are confirmed by the hydronics institute division of AHRI?			20	
21	Typically all condensing boilers can be installed outdoors?			21	
22	Foam core PVC piping or stainless steel venting is recommended for use with condensing boilers?			22	
23	Condensing boilers can be installed in closets and alcoves?			23	
24	The Lochinvar XL boiler requires a special vent system designed for pressurized venting?			24	
25	Boilers typically come from the factory set up to burn natural gas or propane & need to be adjusted accordingly?			25	
26	Any type of material can be used for air inlet piping to the boiler if the piping is pressure sealed and unconfined?			26	
27	Boiler gas valves can be adjusted for natural gas or propane?			27	
28	Combustion air and vent piping must terminate near each other? (In the same pressure zone)			28	
29	Condensing boilers that bring in air for combustion from outside can only be side wall vented?			29	
30	Condensing boilers do not need to be installed 18" above the floor in a garage?			30	
31	Lochinvar recommends a minimum of 12 psi static system water pressure?			31	
32	Condensing boilers require a minimum gpm flow through the boiler heat exchanger to prevent short cycling?			32	
33	Pressure drop through all boiler heat exchangers is minimal and not a concern when sizing system pumps?			33	
34	The condensate trap must be filled with water at all times to prevent flue gasses from escaping into the boiler room?			34	

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	<b>Part 2</b>				
35	In regards to Lochinvar boiler electrical connections a low voltage board and a line voltage board is provided?			35	
36	A lochinvar boiler is factory wired to run a system pump, a boiler pump and a domestic potable water pump?			36	
37	A high gas pressure switch and a low gas pressure switch is an option provided on the low voltage connection board?			37	
38	If a boiler outdoor sensor is used it must not be connected to the low voltage board?			38	
39	The minimum system demand must be GREATER than the minimum boiler output?			39	
40	Tank type indirect potable water heaters are a common addition to condensing boiler hot water heating systems?			40	
41	An air separator is used in hot water heating systems to remove air and minimize corrosion & pump issues?			41	
42	The percentage of soluble air in water is based upon the temperature and pressure of the water?			42	
43	In regards to hydronic system static pressure, 1 psi will push water up 2.3 feet. (28")?			43	
44	An air separator removes air that comes out of solution and an automatic fill regulator adds water as required?			44	
45	Reduced pressure type back flow preventors are required for all boilers installed in the State of Oregon?			45	
46	A diaphragm type expansion tank also aids in the removal of air from the boiler and piping?			46	
47	Wet rotor pumps last longer when the motors are installed in the vertical plane?			47	
48	Choose a relief valver with a pressure setting conducive to the static pressure load on the boiler?			48	
49	Based upon where a wet rotor pump is installed it either adds pressure at the discharge or reduces pressure at the inlet?			49	
	<b>Part 3</b>				
50	A benefit of hot water heating is the flexibility to incorporate multiple and various types of heat generators?			50	
51	The Radiant floor heating curve and the ideal comfort heating curve are very similar?			51	
52	In a hydronic system water is used to move heat energy?			52	
53	The human body has to receive heat to feel comfortable?			53	
54	Radiant heat strives to control the heat loss from your body?			54	
55	An alarm bell is one of the control outputs available with a Lochinvar boiler?			55	
56	The low voltage board and smart control offers 17 control inputs?			56	
57	If the flue sensor senses a temperature above 240 degrees F. it will shut down the boiler?			57	
58	Maintenance requires that the boiler area be kept free of combustible materials?			58	
59	Maintenance requires cleaning the condensate trap?			59	
60	Maintenance requires that the water fill pressure be checked?			60	
61	The 2010 ASME edition is the current adopted law in Oregon as of January 2015			61	
62	ASME code rules are not mandatory unless they are adopted into the laws of a government?			62	
63	There are a total of 8 boiler and pressure vessel licenses administered by the State of Oregon BCD?			63	
64	A class 1 license allows installation by welded and non-welded method of attachment?			64	
65	Power boilers are inspected on a 2 year inspection cycle?			65	
66	The definition of "Direct" supervision is one to one supervision of a class 1 trainee by a class 3 license holder?			66	
67	The definition of Supervision does not limit the number of class 6 trainees supervised by a class 5 license holder?			67	
68	All boilers and pressure vessels installed in the State of Oregon must be stamped with an ASME Code Stamp?			68	