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A2L HVAC System Installation Checklist – International Mechanical Code (IMC-2024), Uniform Mechanical Code (UMC-2024)[1,2]

Notes	Description	Comments
	Engineering System Design	
3	Is system design per requirements of ASHRAE 15 and selected mechanical code?	
	Leak Detection: Integral Refrigerant Detection System (RDS) / Non-Integral Refrigerant Leak Detection	
4	Is integral RDS required to be installed? (see manufacturer's installation instructions)	
	Is the correct part number RDS installed? (RDS may be shipped separately)	
5	Are sensors in correct location? (may change based on air handler orientation)	
6	Is RDS wiring connected per manufacturer's wiring diagram and design?	
	Does design require refrigerant leak detection in the occupied space, non-occupied spaces, or piping shaft?	
	Room Size / Effective Dispersal Volume Charge (EDVC) / Charge Limits	
4,7,8,9	Is the effective volume into which refrigerant may leak or be dispersed adequate for the releasable charge in each space based on the minimum room size requirements of the product certification and/or the EDVC calculation per the design?	
	Internal Sources of Ignition	
	Field installed auxiliary electric heaters – Is heater kit model identified on nameplate?	
	All electrical components inside enclosure shown on manufacturer's wiring diagram?	
	Duct-mounted Sources of Ignition	
	Identified by equipment manufacturer's instructions? (e.g., electrostatic air cleaners, UV-C devices)	
10	No open flames or unclassified electrical devices in ductwork?	
10	No hot surfaces exceeding 1290°F unless interlocked with airflow with minimum 200 ft/min. face velocity?	
	Additional Mitigation Controls	
11	Does the manufacturer and design specify installation of Safety Shutoff Valves?	
	Does the manufacturer and design specify installation of pumpdown controllers?	
	Does the design specify mechanical ventilation?	
	Additional Installation and Inspection Considerations	
12	Pressure-limiting devices/Relief Valves/Discharge Piping per manufacturer's instructions and design? Clearances maintained from pressure relief discharge to building openings and intakes?	
13	Stop Valves per manufacturer's instructions and design?	
14	Code-specific requirements for equipment not in a machinery room: IMC only: Do rooms containing more than 6.6 pounds of refrigerant, meet restrictions on hot surfaces and open flames? UMC only: Do rooms containing condensing units meet ventilation requirements?	
15	Maintenance and inspection plan in place for critical systems?	
	Refrigerant Piping	
16	Piping materials, joints, and connections as specified? Press-connect fittings certified for use with A2L refrigerants?	
17	Piping not in prohibited locations? Piping and penetrations protected as specified?	
18	Shaft enclosures and ventilation as specified?	
19	Piping pressure and vacuum tested as specified?	
20	Pipe identification: "WARNING – Risk of Fire. Flammable Refrigerant"?	
	Markings, Instructions, and Signage	
21	Refrigerant type, field adjusted charge, lubricant and field test pressure recorded on unit signage?	
21	Name and address for responsible company that installed system?	
	Installation instructions, service manuals and product literature available for inspection?	

Notes

1. This checklist covers typical HVAC applications. It does not include machinery rooms, ITE applications or refrigeration This checklist is not intended to be a substitute for the manufacturer's installation instructions, engineering design documents or the locally adopted codes. The intent of these checklists is to be used as educational tools and assist installers and inspectors in navigating the detailed information found in those official documents.
2. The International Mechanical Code (IMC-2024) 1101.2 and Uniform Mechanical Code (UMC-2024) 1104.6.2.2 require HVAC appliances containing A2L refrigerants be certified in accordance with UL 60335-2-40 and installed in accordance with the manufacturer's installation instructions. This checklist is based on the most typical instructions required by UL 60335-2-40. Always refer to the instructions provided with the system. These mechanical codes also specify installation per the locally adopted electrical and fuel gas codes.
3. IMC 1101.1.1 and UMC 1102.1 require system design per ASHRAE 15-2022 as modified and supplemented by the adopted mechanical code.
4. RDS and minimum room sizes are typically required for HVAC appliances with over an approximate 2-pound charge for nonfixed factory-sealed equipment, or an approximate 4-pound charge for other types of equipment.
5. A2L refrigerants are heavier than air. Sensors will typically be located near the bottom of the enclosure below the evaporator coil.
6. ASHRAE 15 7.6.2.5 and UMC 1104.6.2.4 specify mitigation actions upon leak detection by RDS.
7. IMC Section 1104, UMC Section 1104, ASHRAE 15 Section 7, see Figure 7-1
8. ASHRAE 15 EDVC calculations are based on occupancy classification (e.g., commercial, institutional), system location (e.g., outdoors, in public corridors and lobbies) and system configuration and mitigations. If the EDVC exceeds the releasable charge for the Effective Dispersal Volume, the system charge is not in compliance and additional mitigation, or a machinery room may be required.
9. Minimum room size markings per product certification to UL 60335-2-40 provide requirements for basic installations using conservative assumptions. Engineering design using EDVC calculations per ASHRAE 15 can account for more complex installations and actual site conditions. In some cases (e.g., charges 6.6. lbs. or less) ASHRAE 15 does not apply restrictions, but in these cases requirements of the product certification still apply.
10. ASHRAE 15 7.6.3 and UMC 1104.6.3. Duct Heaters certified to UL 1996 with hot spot temperatures less than 1290°F shall be so marked.
11. ASHRAE 15 7.3.4.3, 7.3.4.4. Most typical for units with multiple indoor evaporator coils. Installation may be optional to reduce releasable charge and minimum room size requirements.
12. UMC Sections 1111-1112, ASHRAE 15 9.4-9.9 If pressure relief devices are provided as part of certified systems, they correlate with the pressure coordination requirements of ASHRAE 15 9.9.1.
13. IMC 1109.6, UMC Section 1110, ASHRAE 15 9.10, 9.11
14. IMC 1104.3.4, UMC 1105.5
15. IMC Section 1111, UMC Section 1118, ASHRAE 15 10.5, International Fire Code (IFC-2024) Section 608, NFPA 1-2024 Fire Code Chapter 53.
16. IMC Sections 1107-1108, UMC Section 1109, ASHRAE 15 9.12.5
17. IMC Section 1109, UMC Section 1109, ASHRAE 15 9.12
18. 18) IMC 1109.2.5, 1109.3.2, UMC 1109.3, ASHRAE 15 9.12.1.5
19. IMC Section 1110, UMC Section 1116, ASHRAE 15 9.13. Certificate of test required over 55 lbs.
20. IMC 1109.2.7, ASHRAE 15 9.12.1.8
21. ASHRAE 15 10.1.1

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