

Heating and Cooling Appliances in Attached Garages

2021 International Residential Code (IRC) excerpts

R302.5.2 Duct penetration.

Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage (0.48 mm) sheet steel or other approved material and shall not have openings into the garage.

R302.11 Fireblocking

Fireblocking shall be provided in wood-framed construction in the following locations:

- 4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E 136 requirements.*

Ducts can be made airtight relatively simply, as can openings around ducts where they pass through walls or ceilings. It is practically impossible to make heating and cooling appliances, with their associated filters, controls, vibration isolators and other equipment, airtight so that they “shall not have openings into the garage.” Any openings, especially on the return air side, can pull in carbon monoxide, smoke, products of combustion and other noxious fumes, and pump them into every room of the home, including sleeping rooms.

IRC Section G2408 discusses fuel-gas equipment and appliances in garages, including provisions for enclosed mechanical rooms inside the garage, elevation requirements and protection against vehicular impact.

The Larimer County Building Division has determined that **ducted heating and cooling appliances and equipment in attached garages MUST be located within an enclosed mechanical room with a self-closing firedoor**, behind the required fire separation between the garage and dwelling, and must meet all code requirements including adequate combustion air, clearance, elevation and access. Boilers and water heaters may be located in the garage space so long as they meet elevation, vehicle impact, clearance and penetration protection requirements. All appliances must be installed in accordance with their manufacturer’s installation instructions, which may be stricter.

If it is impossible to construct such a mechanical room, and there is no other place for the heating and cooling appliances and equipment, the Building Official may consider code modifications, which will require installation of fire dampers for the main supply and return ducts where they penetrate the fire separation.

“Approved” material means approved by the Building Official, which **requires the use of firecaulking around penetrations up to 2” in diameter, and approved, listed fire collars for penetrations exceeding 2”.**