

AIR CONDITIONING AND VENTILATION OF GARAGES

by

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Introduction

According to the Florida Building Code 2001 – Mechanical, (FBC) Table 403.3, 100 CFM of outside air must be provided for each car in the garage of a single-family residence. This makes air conditioning garages difficult. The amount of required ventilation will bring in an excessive amount of moisture, and standard equipment is not designed to handle it. In addition, introducing 100 CFM of outdoor air continuously would be expensive, adding over \$500/year per car to electric bills.

Moisture in Ventilation Air

The heat gain for 100 CFM of 91°F DB/ 78°F WB is 2089 BTUH sensible, 4466 BTUH latent. Ordinary air conditioning equipment can handle a sensible to latent ratio of about 75%:25%. In a two-car garage, the sensible to latent ratio would be closer to 50%:50%.

Solution

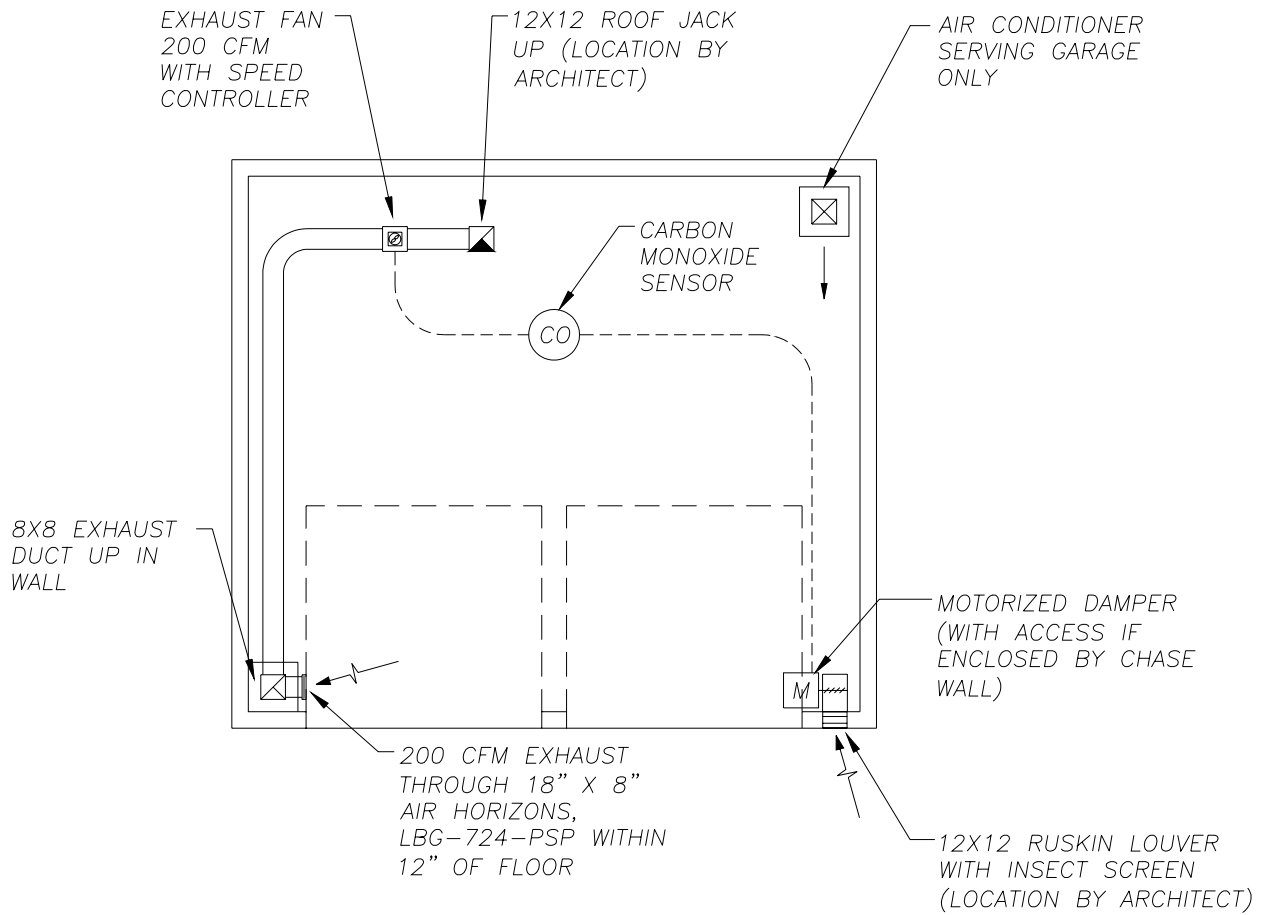
Since standard equipment cannot handle the moisture load of the required ventilation air for the garages, alternative engineering practices should be used. According to FBC, Section 403.4, mechanical ventilation systems having a carbon monoxide sensor that activates an exhaust fan upon elevated carbon monoxide levels may be used.

Because exhaust air is heavier than air, it should be pulled from within 12 inches of the floor. This can be accomplished by routing exhaust duct down a furred out portion of the wall to a wall grille. An intake louver should be installed on an exterior wall to allow outdoor air in while the exhaust fan is in operation. In a residence, outdoor air may not be taken in from the roof. The louver should have a motorized damper installed. When the exhaust system is off, the damper should be closed. When the exhaust system is activated, the damper should open.

Specifications of Equipment

Specifications for the equipment necessary for the exhaust system are based on a two-car garage. The following are examples of what is necessary:

1. Exhaust grille, Air Horizons LBG-724-PSF, 18"W x 8"H, low in wall within 12 inches of the floor.
2. A portion of the wall to be boxed out to accommodate the exhaust ductwork, approximately 75 square inches.
3. Location for a 12" x 12" intake louver 10 feet away from the exhaust louver. Louver to be a Ruskin ELF6375DX.
4. A 200 CFM exhaust fan with electrical and access as required by code.
5. A 12" x 12" exhaust louver to be 10 feet away from the intake louver or any operable door or window. Or an exhaust roof cap.



AIR CONDITIONED, 2-CAR GARAGE