

Ask Jon Eakes

Should cold air returns be on the ceiling or on the floor?

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Pham from Hamilton asked why he sees air returns on the ceiling sometimes and on the floor in other houses, and what effect this placement has on air quality in the house. If you are in the far north, or in the Southern US, the answer is simple. In an air conditioning climate the return duct goes near the ceiling to draw off the hot air and cool it down. In a heating climate, the return duct goes near the floor to draw off the cold air and heat it up. The problem comes when you use both heating and air conditioning. Because heating is far more important in Canada than air conditioning, we generally put the return air ducts on the floor of each story of the house. Some sophisticated arrangements will extend the floor returns to the ceiling and include dampers that allow you to close off one of the ducts and open the other so that the system can work to its maximum in each season. Also you should have return air ducts on each story of the house. The basement one should be on the floor, not the ceiling of the basement. In the upper stories of the house, the return air duct openings on each floor should be approximately equal to the sum of the hot air outlets. In the basement, to avoid chimney backdrafting, the return air duct should be only half as large as the sum of the hot air ducts. In general, all of the house hot air outlets should be equal in size to all of the cold air returns, to keep the system balanced and air flowing smoothly. Because we cut the basement return down a bit, we usually make the returns on the highest story a bit larger.

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