

**AXIS™**  
**Underfloor HVAC Systems**



Turn to the Experts.™





Build adaptability — from the floor up. Your heating, ventilation and air conditioning (HVAC) system can now be integrated under the floor. Axis™ underfloor systems by Carrier offer complete air distribution solutions that are easy to reconfigure, reduce operating costs, improve indoor air quality (IAQ) and boost building productivity by giving occupants greater control over their environment and comfort. It can be productive and versatile enough to adapt to workspace rearrangements and expansions at minimal cost to you.

With flexibility to accommodate workplace changes, reduced installation costs, lower operating costs and improved air quality, the Axis underfloor system is ideal for projects where:

- Space is subject to churn or changing needs
- Energy savings are important
- There is new construction or older building retrofit
- There are high-density, highly networked open office areas
- Individual temperature control or IAQ is a concern



45XC Axis™ Fan-Powered Zone Mixing Units  
50 to 6,200 cfm



45UC Axis™ Underfloor Series Fan-Powered Units  
280 to 1,050 cfm



42KC Axis™ Underfloor Perimeter Fan Coil Units  
275 to 2,600 cfm



35BF-R Axis™ Diffusers for Variable Volume Systems  
30 to 120 cfm



35BF-D Axis™ Diffusers for Variable Volume Systems  
50 to 325 cfm

# AXIS™ Underfloor HVAC Systems

## The Utmost in Versatility

### Adaptability

Axis underfloor air distribution systems are ideal for any office space subject to churn (occupant movement/space turnover). Underfloor applications can be used in new construction or older building retrofits or in any application with high-density, highly networked, open office spaces, where meeting individual thermal comfort needs is required. When office relocations are needed, floor diffusers can be easily relocated by moving the appropriate floor panel to maximize air distribution. Raised flooring also provides easy access to telecommunications and data cabling, as well as electrical power.

### Affordability

Axis underfloor systems can reduce primary airflow and lower static pressure, which means smaller fans and ductwork are possible. Since a pressurized plenum is used for air distribution, 80 percent of the typical ductwork used in an overhead layout can be eliminated. Installing the utilities below the floor can significantly reduce the installation time up to 30 percent to 40 percent. Other benefits include faster build-out of tenant spaces and terminal controls that can integrate demand control ventilation (DCV) to meet ventilation requirements without wasting energy.

**Faster Installation Time**

### Axis 45XC



### Improved Air Quality

Axis underfloor air distribution system provides a continual supply of fresh ventilation air directly to the lower zone where people breathe, while warmer/stale air rises out of the occupied area toward the ceiling. The colder air supplied from the central air source down to the zone mixing unit provides better overall space humidity control. Ventilation effectiveness, individual temperature control/thermal comfort and improved energy performance are all key benefits of an underfloor system that can help qualify your building for U.S. Green Building Council LEED® certification.

**STANDARD 55°F AIR SOURCE**

### Sound

The Axis fan-powered mixing units control temperature and low underfloor plenum pressures, while achieving very low acoustical characteristics. Match that with superior air diffuser performance and it means that Axis underfloor systems will operate at space sound levels below traditional high-pressure overhead systems.

### The Right Level of Control

Providing space comfort control can be simple, flexible, accurate and inexpensive with integrated systems from Carrier. Start with a conventional air source, such as a variable air volume (VAV) air handler, rooftop or self-contained floor-by-floor unit and supply conditioned 55°F air. Deliver the air to a fan-powered zone mixing unit that blends the supply with warm return air to provide typical 63°F air to the underfloor plenum. Provide interior space comfort control using swirl diffusers for air distribution through the installed raised-access floor and a manual flow adjustment so individuals can satisfy their own thermal comfort preferences.

The zone controller provides space comfort by accurately controlling both the temperature and pressure in the underfloor plenum serving that space. The zone control provides an input for a ventilation sensor (CO<sub>2</sub>), a value that can be used to modulate the mixed air damper at the air source.

The Axis underfloor zone controller is compatible with Carrier Comfort Network® (CCN) controls for 45XC fan-powered mixing units. The underfloor zone controller can function as either a stand-alone or as part of CCN. User interfaces include the CCN i-Vü®, Touch Pilot™ and System Pilot.

For all your comfort needs, Carrier has the right level of control.

## Selection Guide

Model	Box Size	CFM Range (min-max)	Application
45XC — Fan-Powered Zone Mixing Unit	4	50-3,285	The 45XC draws standard 55°F supply air from the air source and mixes with the warmer return air to deliver 63°F air down into the floor plenum.
	7	145-6,200	
45UC — Underfloor Series Fan-Powered Unit	14	275-1350	The 45UC is designed to fit in the plenum space below a raised floor. It is used to assist with high interior loads, such as conference rooms, by delivering higher airflows.
	16	1000-2,600	
42KC — Underfloor Perimeter Fan Coil Unit	3	280-1,000	The 42KC is used to provide either hot water or electric heat to the perimeter zone. Plenum air is drawn into the unit, heated and then ducted to perimeter floor grilles.
	4	360-1,500	
35BF-R — Swirl Diffuser	—	30-120	These diffusers are used in pressurized access floor distribution systems. They provide a means for individual space temperature adjustments.
35BF-D — Linear Floor Diffuser	—	50-325	These linear floor grilles are designed for use in access floor air distribution systems for use as a ducted supply or return.
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### Benefits at a Glance For Building Owners and Managers

- Reduced floor-to-floor heights
- Reduced time for space modifications
- Enhanced ventilation effectiveness
- Delivers great occupant comfort
- Supports LEED® certification

### For Consulting Engineers

- Versatile cooling/heating performance
- System-integrated controls
- Supports demand control ventilation
- Standard 55°F source air

### For Contractors

- Minimizes cost for changes
- Installation accessibility
- Single-sourced support
- Reduced installation time

### Turn to the Experts

Whatever your HVAC needs, from specifying and purchasing to installation and maintenance, Carrier has the solution. As the world leader in heating, ventilation and air conditioning, Carrier is committed to continually improving the quality of comfort for our customers.

From concept to finished product, your local Carrier sales representatives walk with you every step of the way.

Whether you have one building, multiple sites nationwide or special equipment and facility requirements, Carrier sales representatives will recommend a solution that fits your scope and budget.



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