Linear selection of distribution box

Overview

Distribution Box and Selection Guide: Internal Structure, Components. Learn how to choose a distribution box and understand its internal structure, inclu.

Key Takeaways

Selecting a linear plenum or distribution box involves matching airflow requirements, slot configuration, and duct compatibility to ensure even air distribution and optimal HVAC performance.

Understanding Linear Plenum Boxes

A linear plenum box is an air distribution component used with linear slot diffusers to evenly distribute conditioned air from the supply duct to the diffuser slots. These boxes can be made from fiberglass, galvanized steel, or insulated materials and are available in single or multiple slot configurations (1-slot, 2-slot, 3-slot, or 4-slot) to suit different airflow patterns and architectural requirements.

Key Selection Considerations

Airflow Requirements Determine the total air volume required for the space. Divide the total airflow by the active slot length to calculate airflow per meter, which helps in selecting the appropriate plenum size and slot configuration. Slot Configuration and Diffuser TypeFixed-blade diffusers provide a consistent horizontal jet.

Double-slot diffusers offer a wide, flat airflow pattern. Adjustable blade diffusers allow directional control for dynamic spaces. The number of slots and blade type should match the desired air distribution pattern.

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Plenum Size and Shape Plenums are available in rectangular, square, or circular spigots and can have top or side entry connections. Proper sizing ensures low terminal resistance relative to ductwork and prevents uneven airflow. Insulation and Acoustic Considerations Insulated plenums (e.g., fiberglass R-6) reduce heat loss and minimize noise.

Acoustic liners with appropriate density (e.g., 32 kg/m³) can further improve comfort. Compatibility and Installation Ensure the plenum box is compatible with the chosen diffuser brand and duct system. Knock-down or modular plenums simplify installation and allow for flexible entry points (single or dual collars),.

Performance Verification Use manufacturer-provided charts or software to verify throw distance, pressure drop, and noise levels. Adjust slot width, number of slots, and plenum depth to meet design requirements.

Practical Steps for Selection

Calculate the required airflow for the space. Choose the diffuser type based on airflow pattern and aesthetics. Select a plenum box that matches the diffuser length, slot configuration, and duct connection type.

Verify insulation, acoustic, and material requirements. Check pressure drop and noise levels using manufacturer data. Adjust plenum dimensions or slot configuration if necessary to achieve uniform air distribution.

By carefully considering these factors, a linear plenum box can be selected to ensure efficient, quiet, and uniform air delivery in any HVAC application.

Article Content

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A comprehensive understanding of distribution box

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Learn how electrical distribution boxes work, their key components, common types, and how to choose the right enclosure for safe and reliable power distribution.

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