LHK

ALHK/DLHK

APPLICATION GUIDE

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This Application Guide has been developed to introduce the LHK access floor fan powered terminal. In this Guide you will find a description of the LHK and a suggested specification. This Guide will also cover applications related to the use of the LHK in an access floor air distribution system.

Please put this Application Guide in your Application Guide Binder for future reference.

Introduction

The interest in access floor air distribution has increased significantly in the last year. There is currently several million square feet of access floor air distribution systems being designed across the country. In 1997 TITUS introduced the TAF-R diffuser and the TAF-G grommet, which were installed in the Owens Corning World Headquarters. While working closely with the facility management at Owens Corning, we continued to learn about access floor systems. We identified zones, such as the perimeter and conference rooms, that required innovative solutions.

The perimeter of the Owens Corning headquarters is glass and the building is located on the bank of the Maumee River. At Owens Corning, fan powered terminals with reheat coils supplied air to the perimeter from the floor below. CT linear bar grilles mounted in sills around the perimeter directed air to the glass.

The conference rooms needed a device to increase airflow as the load increased. For Owens Corning, we provided the TAF-V. The TAF-V is comprised of a CT linear bar grille mounted on a plenum with a variable volume damper controlled by an electronic proportional actuator. As the thermostat senses an increase in room temperature, the damper on the TAF-V opens to allow more supply air into the room.

Although these solutions provided sufficient comfort, there were disadvantages. Supplying the perimeter air from the ceiling plenum of the floor below required additional space in the ceilings to mount the terminals. The TAF-V worked well, but at decreased underfloor pressure, the effectiveness of the TAF-V in the conference rooms also decreased.

The LHK fan powered terminal was designed to meet the requirements of both perimeter applications and conference rooms. The LHK can be used to supply air from under the access floor to the perimeter. It is available with optional electric or hot water reheat coils. The LHK can also be placed under the floor of a conference room. When the temperature sensor senses increased room temperatures, such as when a group of people enter the room, the fan turns on and provides additional air to the zone.

Description

The LHK was specifically designed to fit under the access floor and between the pedestals of the access floor system. The LHK is only 10 ½" in height and will fit under a floor raised as little as 12" off the concrete slab. Since pedestals are typically placed on a 24"x 24" grid, the LHK is only 21" wide and the control enclosures are placed between the pedestals. The LHK can be installed by removing as few as two floor panels. The LHK has three removable top access panels. One panel allows access to the inlets and damper, one panel allows access to the motor / blower assembly, and a narrow "door" allows access to the optional filter. Like a standard fan powered terminal, the LHK has a manual SCR to allow adjustment of the fan speed. An optional remote controlled SCR is available for remote fan speed setting and/or resetting.

The LHK will be available with analog, digital, or pneumatic controls. With the space limitations of the underfloor plenum, the LHK has a specially designed control enclosure measuring 16"x 8"x 6½", therefore a limited number of controls will fit in the control enclosure.

Controller Actuator	OEM Code	FMA Code
Johnson VMA-1420-0 Controller/Actuator	DT07	JN60
Johnson AS-VAV-111 ATP-2040-212	DT06 DT02	JN25
Johnson FA-VAV-111 ATP-2040-212	DT10 DT02	
Honeywell W7751F ML6161	DT05 DT01	HW72
Honeywell W7751H Controller/Actuator	DT11	HW80

If you require any other digital controls to be mounted, contact TITUS Technical Support to verify that the controller / actuator will fit in the enclosure.

The LHK size 3 will provide from 300 to 1000 cfm. This allows one unit be used in a small or large conference room. Since the key to access floor air distribution is flexibility, the LHK was designed so that the building's facility staff can easily and quickly install and remove an LHK as the office layout changes. They would not need to determine what size unit they needed. One size fits all.

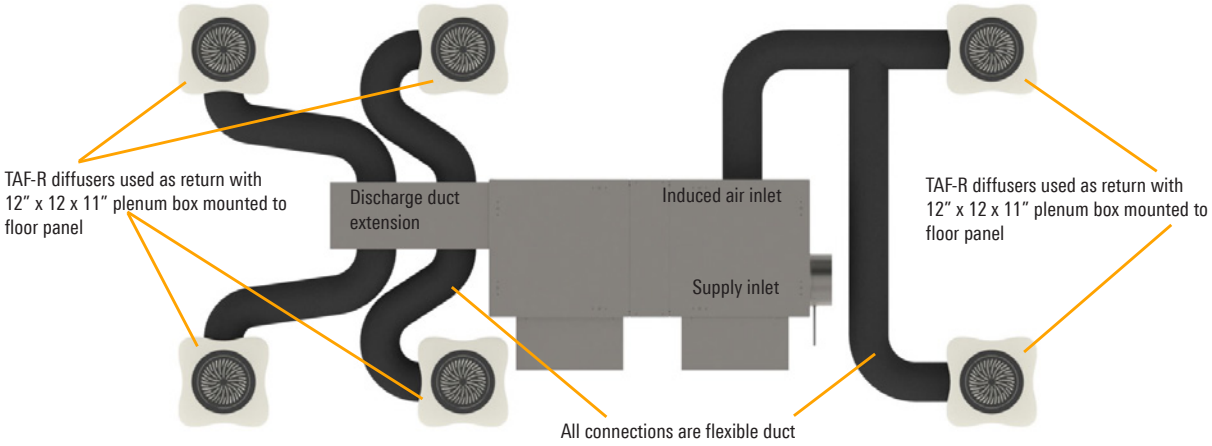
In summary the features and benefits are:

Features	Benefits
10 ½" height	The LHK will fit under a floor raised as little as 12" off the concrete slab.
21" wide with the control enclosures are placed around the pedestals.	The LHK will fit within the grid system.
Three removable top access panels. • One panel allows access to the inlets and damper • One panel allows access to the motor / blower assembly • A narrow "door" allows access to the optional filter.	The LHK can be serviced by removing a single floor panel.

Applications

With the exception of its unique dimensions, the LHK is like any other series fan powered terminal. The LHK has a supply inlet with a damper modulated by a controller and actuator. The LHK has an induced air inlet which pulls air from the underfloor plenum or from the room depending on how the LHK is applied.

You can use the LHK in a pressurized or neutral plenum. In a pressurized plenum, the supply can be open to the plenum with the induced air inlet ducted to the room as the return. The discharge would then be flex ducted to TAF-R's in the room.



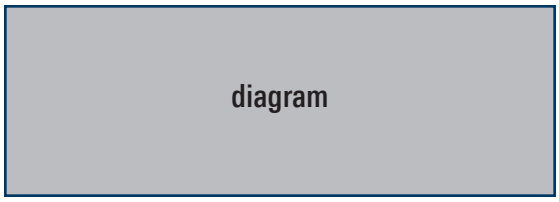
Note: Number of TAF-R(-FR) diffusers required depends on the airflow of the LHK

In a neutral plenum, the supply can be ducted with the induced air inlet open to the plenum. Once again, the discharge would be flex ducted to TAF-R's. Both of these layouts can be used in a conference room to boost the air supplied.

diagram

Applications (continued)

In a neutral plenum, the supply can be ducted with the induced air inlet open to the plenum. Once again, the discharge would be flex ducted to TAF-R's. Both of these layouts can be used in a conference room to boost the air supplied.



Specifications

Constant Volume (Series) Fan Powered Terminals LHK Basic Unit, Access Floor Model

1. Furnish and install TITUS Model (P)(A)(D)LHK constant volume series fan powered terminals of the sizes and capacities shown on the plans. Unit size limitations shall be as follows to ensure that all terminals will fit the available space. The terminal including all control enclosures shall be designed to fit in the plenum space below a raised floor. The height shall not exceed 10½" and the width shall not exceed 21". The unit shall fit within a 24"x 24" pedestal grid system without modifications to the grid. Units wider than 21" are acceptable when bridge supports are supplied by the floor manufacturer. Cost of the bridge supports to be borne by the terminal manufacturer.

2. Terminals should be certified under the ARI Standard 880-94 Certification Program and carry the ARI Seal. Non-certified terminals may be submitted after testing at an independent testing laboratory under conditions selected by the engineer in full compliance with ARI Standard 880-94. These tests must be witnessed by the engineering consultant with all costs to be borne by the terminal manufacturer. Testing does not insure acceptance.

3. The terminal shall be designed, built, and tested as a single unit including motor and fan assembly, primary air damper assembly, water or electric heating coils, and accessories as shipped. Unit shall ship as a complete assembly requiring no field assembly (including accessories). Field assembly of the unit is acceptable with the costs borne by the terminal manufacturer. All electrical components shall be UL listed and installed in accordance with UL Standard 1995. Electrical connection shall be single point. All electrical components, including low voltage controls, shall be mounted in sheet metal control enclosures. The entire terminal shall be ETL or UL listed as a complete assembly.

4. The terminal casing shall be minimum 20 gauge galvanized steel, internally lined with dual density glass fiber insulation which complies with UL 181 and NFPA 90A. Any exposed insulation edges shall be coated with NFPA 90A approved sealant to prevent entertainment of fibers in the airstream. The terminal shall have a round duct collar for the primary air and return air connections.

5. The terminal casing shall have top access panels with cam latches which allow removal of fan and servicing of terminal without disturbing duct connections.

6. The fan shall be constructed of steel and have a forward curved, dynamically balanced wheel with direct drive motor. The motor shall be suitable for (120) (208) (240) (277) volt, 60 cycle, single phase power. The motor shall be of energy efficient design, permanent split capacitor type, with integral thermal overload protection and permanently lubricated bearings, and be specifically designed for use with an SCR for fan speed adjustment. Fan assembly shall include an anti-backward rotation device, torsion-flex tuned spring steel suspension, and isolation between motor and fan housing.

7. The terminals shall utilize a manual (remote) SCR, which allows continuously adjustable fan speed from maximum to minimum, as a means of setting fan airflow. Setting fan airflow with any device that raises the pressure across the fan to reduce airflow is not acceptable. The speed control shall incorporate a minimum voltage stop to ensure that the motor cannot operate in a stall mode.

8. The primary air damper assembly shall be heavy gauge steel with shaft rotating in Delrin or bronze oilite self-lubricating bearings. Nylon bearings are not acceptable. Shaft shall be permanently marked on the end to indicate damper position. Stickers or other removable markings are not acceptable. The damper shall incorporate a mechanical stop to prevent overstroking, and a synthetic seal to limit close-off leakage to the maximum values shown in Table B.

Inlet Size	Damper Leakage, cfm		
	1.5" ΔPs	3.0" ΔPs	6.0" ΔPs
9	4	5	7

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