MicroMetl

Since 1965

Concentric Diffuser
Install Guide

Foremost HVAC Accessory Manufacturer

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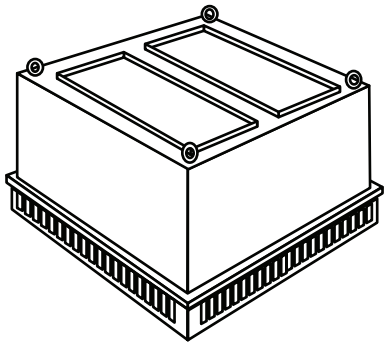
IMPORTANT: Please read all installation instructions and safety precaustions before beginning. These installation instructions are to be used as a general quideline only!

UNPACK & INSPECT

Reference the Product Submittal for your specific part number. Unpack, and inspect your new Concentric Kit or pieces for missing parts or damges. Contract MicroMetl's Customer Service Department immediately with any questions or concerns. All hardware used for these assembly procedures is included with your concentric equipment or kit.

GENERAL

MicroMetl's Concentric Equipment is offered as kits, or individual components.



SAFETY PRECAUTIONS

Improper installation, adjustment(s), alteration(s), service or maintenance can cause property damage, injury or death. Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions such as replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, always observe precautions in the literature, tags and labels attached to the unit, and other safety precautions which may apply!

To avoid any property damage or personal injury, it is the installer's responsibility to be certain that the installation will not impair the function of the curb, or the unit to be installed. Check and disconnect all gas and electrical connections before installing associated HVAC accessories, and/or rooftop unit.

Once the roof curb is installed and roof cuts are made. It's time to install your concentric equipment. Due to the multitudes of ussues and obstacles an installer may encounter below the rooftop, it's important to understand that a wide variety of installation methods exists. It's imperative you hire a skilled contractor to complete the installtion in a safe and proper manner, and in accordance to all engineering specifications, and local codes.

This guide only addresses installation information which directly effects MicroMetl Product and Equipment.

OBSERVE PROPER CLEARANCES AND OBSTRUCTIONS

Before installing Concentric Equipment, carefully check for clearances, and vertical distances required between concentric sections prior to installation. Use only a qualified contractor when confronting obstacles and issues which may obstruct and redirect your installation.

CUTTING AN OPENING IN ROOF

⚠ WARNING

To prevent injuries and rain damage, do not leave roof opening uncovered. If installation is not completed immediately after roof opening is cut and framed, provide an adequate temporary cover for the roof opening.

Always use or consult a qualified contractor, and check all engineering specifications before arbitrarily cutting into your roof deck.

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What is a Concentric Diffuser System?

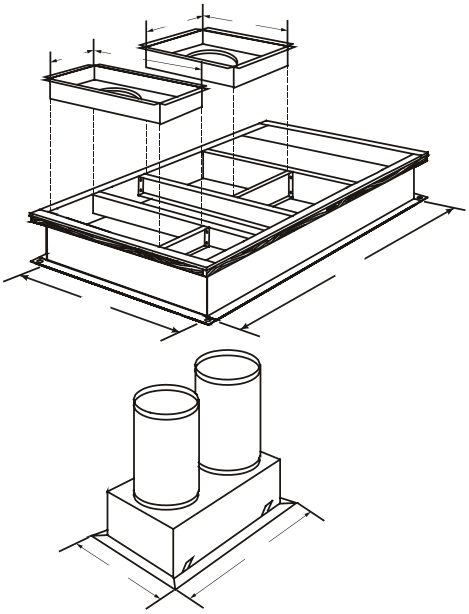
A Concentric Diffuser system is designed to provide a single point air distribution system.

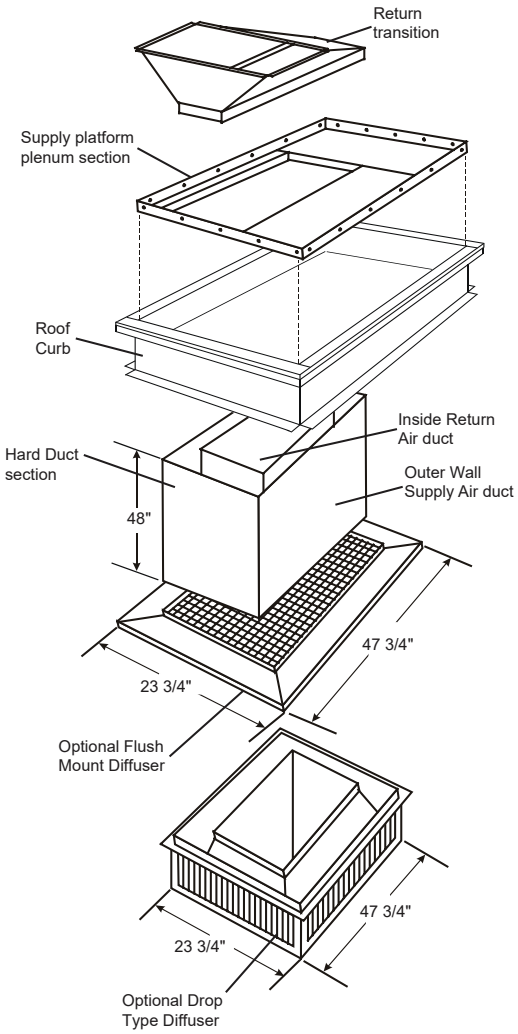
Climate control systems such as heating, ventilation and air-conditioning sometimes utilize ducts within the building to direct air from a climate control unit, to specific locations for further distribution.

Concentric diffusers are useful to provide a single diffuser housing to supply ventilation to a space while also allowing for return air to be returned to the HVAC system.

Concentric Systems are comprised of the following components.

Transition Sections or **Adapter Inserts**. These sheet metal sections install inside a **Roof Curb** and direct the air into hard or flexible duct sections.





SPECIAL NOTES:

Do Not Install Concentric Packages...
- Into Vibration Isolation Type Curbs.
- Into an Adjustable Pitch Curb if using a hard duct plenum

The **Hard Duct** contains two separate pieces of duct, this can be side by side or duct in duct. In the case of duct in duct, the outer walls direct supply air from the rooftop unit down into a diffuser, the inside section collects air from a space via the diffuser, returning it to the HVAC unit. Side by side hard duct uses seperate isolated hard duct sections, one for the suppy and for the return air.

Flexible Duct uses two or more individual pieces of flexible duct to direct the supply air from the rooftop unit to diffuser, and return air from the diffuser to rooftop unit.

The **Diffuser** itself is the means of air distribution within your space. Regardless of the feed type from your rooftop unit, flexible or hard duct, two basic types are available – Drop Type & Flush Mount.

The **Drop Type Diffuser** is designed to disperse the supply air from its perimeter. Additionally, the blades surrounding the perimeter are adjustable both vertically and horizontally to allow optimal control of supply air direction and velocity. The air is returned through the center of the diffuser.

Flush Mount Diffuser also uses the outside of the flush mount section for supply air distribution. All blades are fixed and produce a slightly higher rate of static pressure due to less available supply and return area.

Large Tonnage Micrometl Diffusers Do Not Accompany Accessory Support Such As Curb Inserts And Ducts. Please Note that Large tonnage MicroMetl diffusers are not supported, or available as system kits, and have no supporting accessories. MicroMetl does not provide ductwork, curb transitions, or adapters. Ductwork to and from an air source must be field provided, fabricated, and assembled.

A Roof Curb Is Not Included With Any Concentric Packages and Must Be Purchased Separately. For additional information on MicroMetl curbs, visit our www.micrometl.com, or blog.micrometl.com, for videos and articles on curb types and their uses. There you will discover videos, brochures, installation guides and links to assist you when choosing the specific curb to fit your job requirements.

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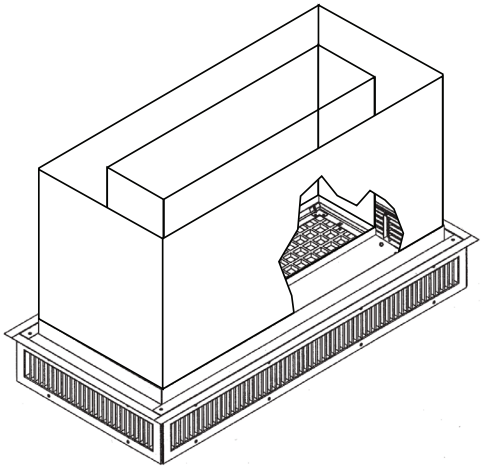
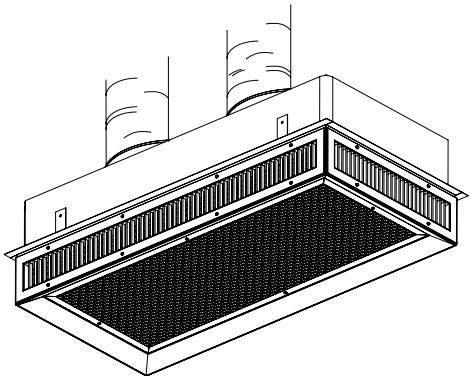
Concentric Diffuser Kit Types

A MICROMETL AIR DIFFUSER IS OFFERED IN FOUR DIFFERENT CONFIGURATIONS…

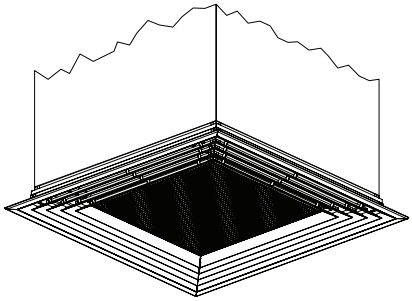
Type I - Drop Type Diffuser with Hard Duct Connection



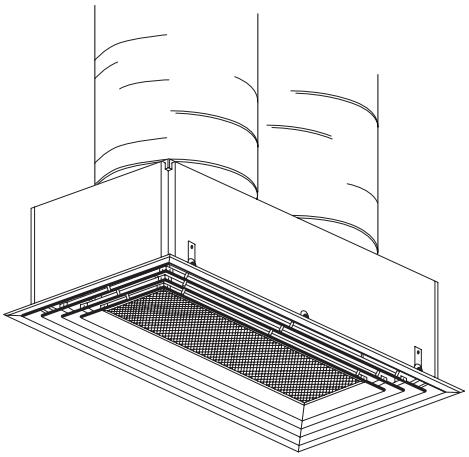
Type II - Drop Type Diffuser with Flexible Duct Connection



Type III – Flush Mount Diffuser with Hard Duct Connection

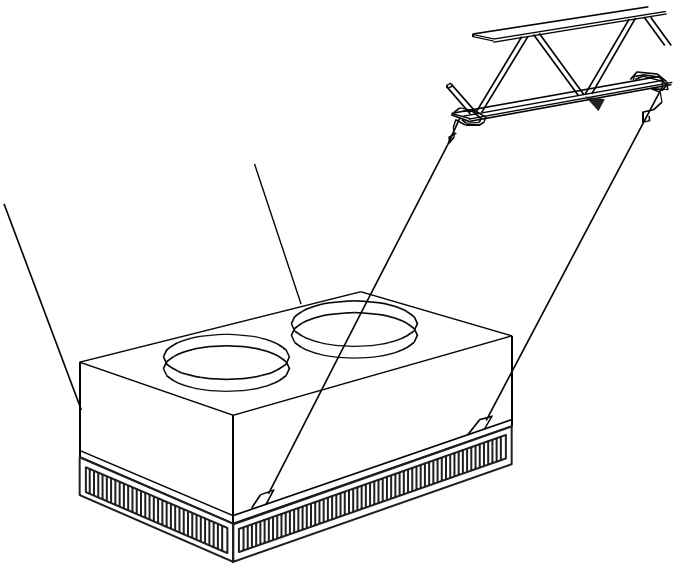


Type IV - Flush Mount Diffuser with Flexible Duct Connection



DIFFUSER INSTALLATION

All Diffuser types must be independently field secured. Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on all diffuser boxes.



Flex Duct Diffuser Drop Type

Drop Type, FLEX DUCT Diffuser Stand-Alone Installation Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box.

When Installing Into a Ceiling Grid, although it is not recommended to be installed in a drop ceiling, if installing into a ceiling grid, push the drop type diffuser box up through grid and lay in place over the ceiling grid and secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box. Support from the flex duct connections, or ceiling grid is not sufficient to support the weight of any diffuser, and should never be a method for securing & supporting diffusers.

Be certain to label and connect the proper ducts to the diffusers. Supply should always feed air to the outside perimeter or edges of the diffuser, and return should always connect to the center of the diffuser.

Slip ends of flexible duct over the collars on the diffuser box. Refer to - FLEX DUCT INFORMATION section, for suggested flex duct installation method.

Hard Duct Diffuser - Drop Type

Drop Type, HARD DUCT Diffuser Stand-Alone Installation - The hard duct connection alone, is not sufficient to support the weight of any diffuser, and should never be a method for securing & supporting diffusers. Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box.

When Installing Into a Ceiling Grid - a full perimeter flange is provided on diffuser to be rested upon the ceiling grid. Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box.

Be certain to label and connect the proper ducts to the diffusers. Supply should always feed air to the outside perimeter or edges of the diffuser, and return should always connect to the center of the diffuser.

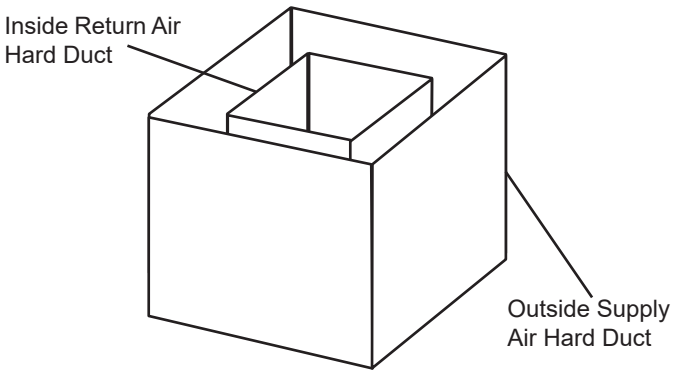
HARD DUCT ASSEMBLY SECTION

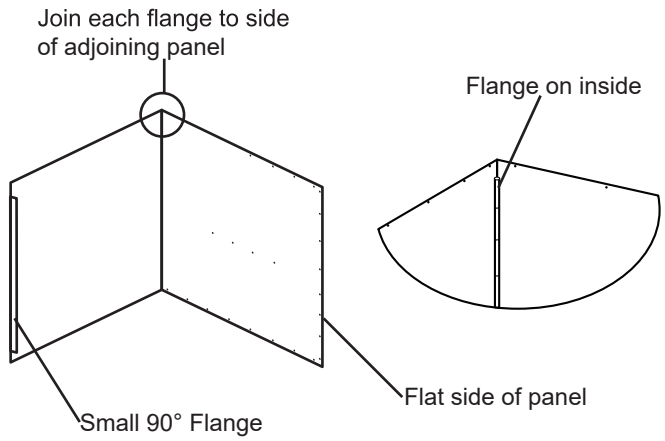
ALL Hard Duct Transitions begin with MicroMetl Part Number 0903.

A standard forty-eight inch Hard Duct connection is offered from MicroMetl to fit between the curb, and diffuser. The Hard Duct contains two separate pieces of duct, one inside the other. The outer walls direct supply air from the rooftop unit down into a diffuser, the inside section collects air from a space via the diffuser, returning it to the HVAC unit. Both ducts should be sealed to prevent air leakage and secured.

Each hard duct panel is shipped separately (eight panels), and must be field assembled. The panels are insulated on the inside and each contains a small ninety degree flange. The flange contains pre-punched holes assuring proper construction and alignment. See Illustration #17. Align the panel flange to the flat area of the adjoining panel. MicroMetl provides self-drilling screws which install from the outside wall. Be certain to keep all flanges on the inside of the hard duct section when assembly is complete.

Construct the return air (inside) hard duct section, set it to the side. Do not assemble the outside supply air panels at this time.





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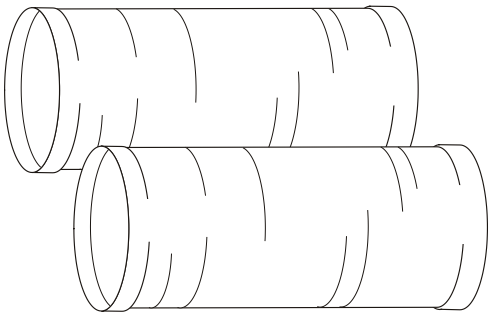
Flex Duct Information

0904-0003 – FLEX DUCT - Consist of Two Insulated Forty-Eight Inch Pieces of Flexible Duct, 16 Inch Diameter, Without Collars.

0904-0004 – FLEX DUCT - Consist of Two Insulated Forty-Eight Inch Pieces of Flexible Duct, 18 Inch Diameter, Without Collars.

0904-0005 – FLEX DUCT - Consist of Two Insulated Forty-Eight Inch Pieces of Flexible Duct, 20 Inch Diameter, Without Collars.



MicroMetl round flex duct is insulated, Underwriters Laboratories (UL) Approved, and constructed of two ply, polyester film using a zinc coated spring steel helix wire without collars.

INSTALLING FLEX DUCT

NOTE: Some flex duct connections are obround and require the installer to secure the flex duct slightly out of its round form. Although MicroMetl provides screws to secure the Flex Duct to the collars, it is recommended you use Panduit type cable ties (not provided).

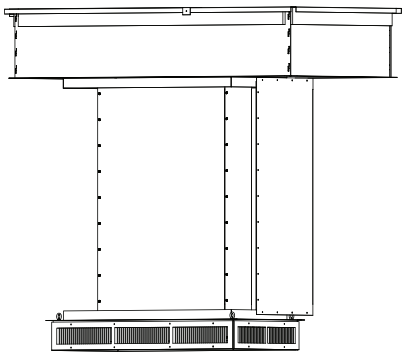
Slightly pull back the insulation, exposing the membrane. Carefully slide the membrane over the collar until it contacts the sheet metal surface. Using a Panduit type cable tie, tightly secure the membrane to the collar. Using duct tape, tape around the perimeter of the duct several times covering the cable tie. Push the insulation down until it meets with the sheet metal covering the membrane. Again, using a cable tie, tightly secure the membrane to the collar. Using duct tape, apply the tape around the perimeter of the duct several times covering the cable tie.

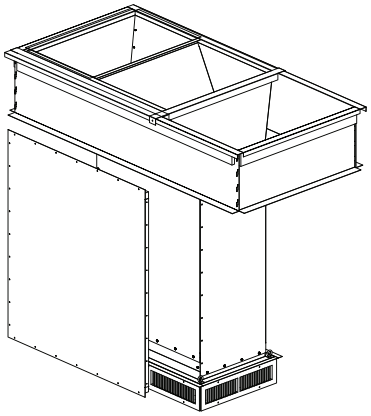
NOTE: Other methods of attaching flexible ductwork exist. Use the one recommended by the Engineering Specification for your job site if requested.

Flex Duct connections hardware mut be field provided.

DIFFUSER HARD DUCT INSTALLATION

If you have followed the installation as shown in Illustration #24. Be certain to secure and seal the return duct section completely before beginning the install of the supply duct, otherwise, you will have no means of sealing and properly securing the return air section to the transition and diffuser. Install the supply panels one at a time. Install, secure, and seal all 4 panels.





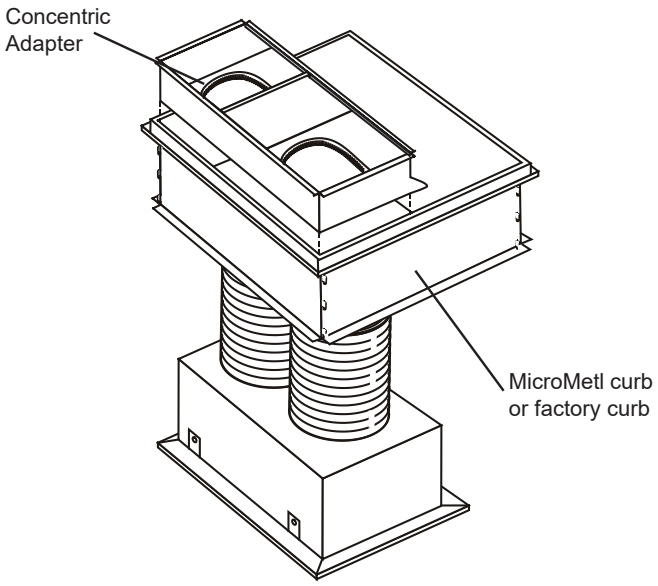
DIFFUSER FLEX DUCT INSTALLATION

Flush Mount

Support from the flex duct connections, a diffuser with flexible duct configuration, or ceiling grid is not sufficient to support the assembly, and should never be the sole method for securing diffusers or concetric assemblies.

Push the flush mount diffuser box up through grid and lay in place. Be certain to label and connect the proper ducts to the diffusers. The supply should always feed air to the outside perimeter or edges of the diffuser, and return should always connect to the center of the diffuser. Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box.

Slip ends of flexible duct over the collars on the diffuser box. Refer to - FLEX DUCT INFORMATION section, for suggested flex duct installation methods.

Drop Type Diffuser with Flexible Duct Connections - The Flex duct connections alone, are not sufficient to support the weight of diffusers, and should never be a method of securing and supporting diffusers. Secure the diffuser box to the ceiling joists or the rafters with hanging wire or the like. Hanging clips are factory provided on the sides of the diffuser box.

Always label and connect the proper ducts to the diffuser opening. Supply should always feed air to the outside perimeter or edges of the diffuser, and return should always connect to the center of the diffuser. Slip ends of flexible duct over the collars on the diffuser box. Refer to - FLEX DUCT INFORMATION section, for suggested flex duct installation methods.