YOUR AC SYSTEM DUCTING & GRILLES

Ducting is a very important part of the installation of your system.

- The ducting should be as straight, smooth and taut as possible.
- 90° bends are to be avoided (as little as two tight bends can reduce airflow by as much as 25%).

Ducting sizes are as follows:	
RE06	5″ duct
RA/RE08	5″ duct
RA/RE12	6″ duct
RA/RE16	6″ duct
RA/RE18	6″ duct
RA/RA24	6″ x 2 duct
RA/RE24S	8″ duct
RA/RE32	6″ x 2 duct

- Ducting should be attached to the mounting ring by pulling outer insulation back to expose inner Mylar.
- Slip the Mylar over ring until it bottoms out.
- Wrap a tie wrap around and tighten.
- Put a single screw through tie wrap and into ring to secure.
- Pull insulation and outer skin over ring and secure with duct tape.
- The Mylar can also be sealed with duct tape.

We design our air handlers with air velocity and frictional pressure drop low on the supply side air. Dropping the blower ring size on the air handler is not normally recommended due to noise problems created by the higher air velocities.

Higher air velocities also increase pressure drop, which is not desirable.

On excessively long duct runs, or ones with too many 90° bends (over 3), or in situations where a transition box is located at the outlet of a blower, it is highly recommended that you increase the duct size by one inch over our recommended sizes listed above.

DUCTING CHECKLIST

1. Sized correctly taking into account 90° bends, length, transition boxes, etc.
2. Must be fastened properly to avoid sagging.
3. DO NOT FLATTEN OR KINK.
4. Run as smoothly and taut as possible.
5. Remove excess ducting before connecting.
6. Higher ‘R’ value insulation is required when ducting in any space not air-conditioned.

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Grille Sizing		
Air Handler Size	**Minimum Return Grille (Free Return Airflow)**	**Minimum Supply Grille**
RE06	80 sq. in.	50 sq. in.
RA/RE08	80 sq. in.	50 sq. in.
RA/RE12	100 sq. in.	60 sq. in.
RA/RE16	120 sq. in.	80 sq. in.
RA/RE18	120 sq. in.	80 sq. in.
RA/RE24	240 sq. in.	120 sq. in. (2 x 60)
RA/RE24S	240 sq. in.	120 sq. in.
RA/RE32	240 sq. in.	160 sq. in. (2 x 80)

If using the linear diffusers for the supply air and 'toe-kicks' for the return air, the total area of the holes and/or slots must equal the minimum sizes listed above. On the return air using toe-kicks, the accumulative airflow must be unrestricted as it passes through lockers and cavities. Linear diffusers for the supply air should be tapered to create an even pressure drop and air disbursement along its entire length.

When insulating plenums and diffusers, it is preferred that the outside rather than inside be insulated. This prevents restricting the internal volume, which can constrict airflow. If the inside must be insulated then the plenum or diffuser should be increased in size to accommodate the required volume of air after the insulation has been installed.

Ducting the Return Air

We do not recommend ducting the return air side of the air handler. The air handler requires 100% free air return for maximum performance. Adding ducting to the return air creates static pressure, which affects the airflow and capacity. If it is necessary to install a return plenum or duct, use the following guidelines. Return plenums must be the same dimensions or greater of the coil surface area (Return Air Grille Size). Ducted returns create larger static pressure drops therefore; large ducts are required for optimum performance. On 24k and 32k air handlers, dual return ducts could be used connecting to a common plenum. The following chart will give the suggested return air sizes for the air handlers. Return duct runs should be short. For return ducts exceeding 5 feet, the next higher size should be used.

If unsure as to which size return duct to use, contact Technicold for sizing assistance.

Air Handler Size	**Return Plenum Size Minimum Square Duct** (Low Static, Return Airflow)	**Return Duct Size Minimum Round Duct** (Low Static, Return Airflow)
RE06	80 sq. in.	(1) 9 inch
RA/RE08	80 sq. in.	(1) 9 inch
RA/RE12	100 sq. in.	(1) 12 inch
RA/RE16	120 sq. in.	(1) 12 inch
RA/RE18	120 sq. in.	(1) 12 inch
RA/RE24	240 sq. in.	(1) 16 inch or (2) 12 inch
RA/RE24S	240 sq. in.	(1) 16 inch
RA/RE32	240 sq. in.	(1) 16 inch or (2) 12 inch

NORTHERN LIGHTS
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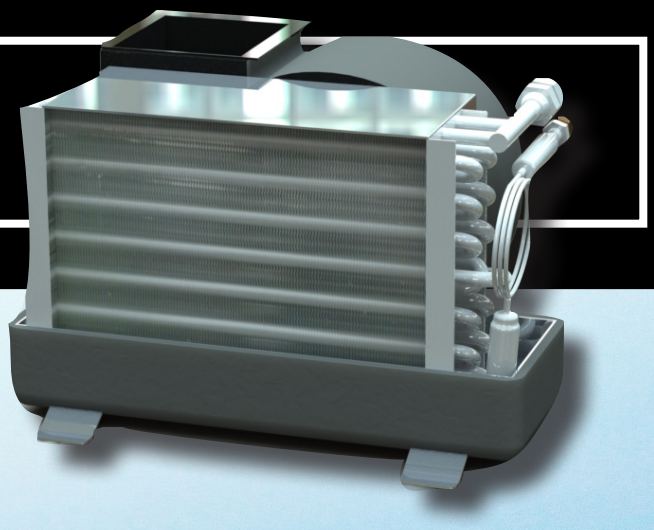
AIR HANDLERS



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TECHNICOLD	COMPETITOR
• **316L Stainless steel** (16GA) used in construction of the pan and shroud, as well as fasteners and hardware. The stainless steel is dressed with a swirl pattern for aesthetics, and is also available in a mirror finish.	• **Light gauge** galvanized and stainless steel construction.
• All air handlers are designed to a **maximum height of 12"**. This allows them to be installed in restrictively tight quarters.	• **High height** profile that can make installation of ducting difficult.
• Larger capacity units are equipped with a **dual-blower** configuration. This allows us to maintain our low profile while adding a second duct.	• Larger capacity units have **single blowers**, which makes running multiple ducts difficult and requires additional parts.
• Technicold blowers are **ultra-quiet**, eliminating motor, air velocity and vane tip noise while providing maximum capacity airflow at the rated capacity. The heavy metal mass of unit resists vibration caused by dust build up. No additional vibration mounts are required.	• Single, large blowers create **air turbulence, velocity and vane tip noise** when run at high speeds. Vibration mounts are required to prevent noise transfer from the unit.
• Technicold draw-through blowers are **slip ring mounted**. This allows the blowers to be rotated by hand prior to or after installation without the use of tools.	• All air handlers have to be **disassembled with power tools** to rotate the blowers prior to installation. Once they are installed, any blower adjustment requires the removal of the entire unit.
• Technicold coils are **rated fully or higher** for their specified capacity, which provides maximum cooling or heating in all ambient conditions.	• Coil capacity inconsistent on older models.
• Technicold **drain pans** are two inches deep to prevent sloshing and spillage, even in rough seas. Dual drain connections are welded at the bottom of each drain pan. This allows for complete drainage and eliminates algae buildup.	• Drain fitting for hose barb connections welded toward the bottom of the drip pan. The lip on the fitting **retains water** in the pan, which can form algae over time.
• The **water valve motor** is located away from the air handler's water piping. This eliminates the possibility of motor failure caused by condensate dripping from the pipes onto the motor.	• Water valve motor is **located under water pipes**, allowing condensate to drip onto the motor, which can lead to corrosion and possible motor failure.
• Add an optional **UVC bulb** to kill mold and other contaminants. Our bulbs are ozone-free and are installed in the air handler to eliminate contaminants in the air flow and in the fan coil.	• UV bulbs are **installed in ducting**, meaning that contaminants are only affected when they are blowing past.