Active Thermal Management

The trusted name in thermal protection

Parts list – before proceeding, check that you have received all of the following:

(1) System 1 fan unit, in-line or EXT

(1) 6" hot air collector

(1) 8' length flexible tubing

(2) 4" spring clamps

System 1 and System 1 EXT Installation Instructions

The System 1 is comprised of a centrifugal fan, (either the in-line version for use indoors, or the weatherproof EXT model), a hot air collector (a funnel-shaped adapter that is installed on the enclosure from which heated air is being removed), and an 8' length of acoustically-insulated interconnecting tubing. Many accessories are available to complete the installation, such as thermal switches, variable speed controls, and others.

To install the fan and connect it to an enclosure --

1. Determine the best location to extract the hot air from the enclosure and mount the hot air collector there.

2. Determine the best location for the fan (preferably within 8' of the enclosure) and mount it there.

3. Connect the adapter and fan with 4" tubing secured with clamps. Arrange for power control of the fan via any of the Active Thermal Management devices available for systems integration; the adjustable thermal switch, remote digital thermal switch, or the multi-input thermal switch (which can sense temperature rise in up to 3 locations)

It isn't difficult or complicated – the first time's the hardest! (And you can call us at (661) 294-7999 for assistance.)

Step-by-step:

1. The most important consideration is choosing the location of the hot air exit:

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As the air handler pulls the heated air out of the enclosure, replacement room air should flow past the heat source on its way to the exit. *This cools the heat source, and keeps the entire enclosure cool.*

Ideally, hot air should be removed at the point in the enclosure where the temperature rise is greatest, typically near the top, and a room temperature air return opening (to allow air to flow from the room into the cabinet to replace the air pulled out by the air handler) provided near the bottom.

Note: Extra exhaust holes can be cut to allow coupling the air handler to each, one at a time, judging which provides the most satisfactory overall results (of course, the unused holes must always be blocked; it helps to be on friendly terms with your cabinet maker!)

The air inlet must be large enough to allow air to enter freely and slowly; too small an opening will force the air to move fast enough that air sounds, or even whistling, may be heard. Again, it should be located so that the path of air is from the inlet, past the main heat-producing equipment, and out the exhaust opening. Any additional openings can "short-circuit" this desired cooling path, if they allow air to flow without passing the heat-producing equipment.

After locating the position, cut the largest hole that the tubing adapter will cover where the tubing is to connect (typically 4 ½" in diameter), then fasten the adapter over the hole using appropriate fasteners. (It is necessary to drill holes for the fasteners in each corner of the adapter.) If the cabinet surface is rough or warped, a bead of sealant such as RTV ("bathtub caulk") will ensure a tight seal.

2. When choosing the location for the fan,

- consider the availability of AC power
- minimize the distance from the enclosure (and the number of tubing bends)
- consider its position in relation to system users
- decide where the exhausted air can be "dumped" (for the in-line version)

If necessary, long runs of essentially straight tubing are acceptable, but sharp bends and twists add to the static resistance the fan has to pull against, and reduce the number of cubic feet of air exhausted per minute. The hot air, which has been "diluted" with the room air pulled in by the fan, can be exhausted into the same room, an adjacent equipment room, crawl space, attic, basement, air conditioning return duct or the great outdoors, as if it were coming from a clothes dryer.

While the fan can be used to supply chilled air from an air conditioning duct to the equipment enclosure, bear in mind that these ducts frequently become heating ducts in Winter! Another caution – don't bring outside or crawl space air in for cooling without considering the dust, dirt, smell, moisture, noise & bugs that may also be drawn in……

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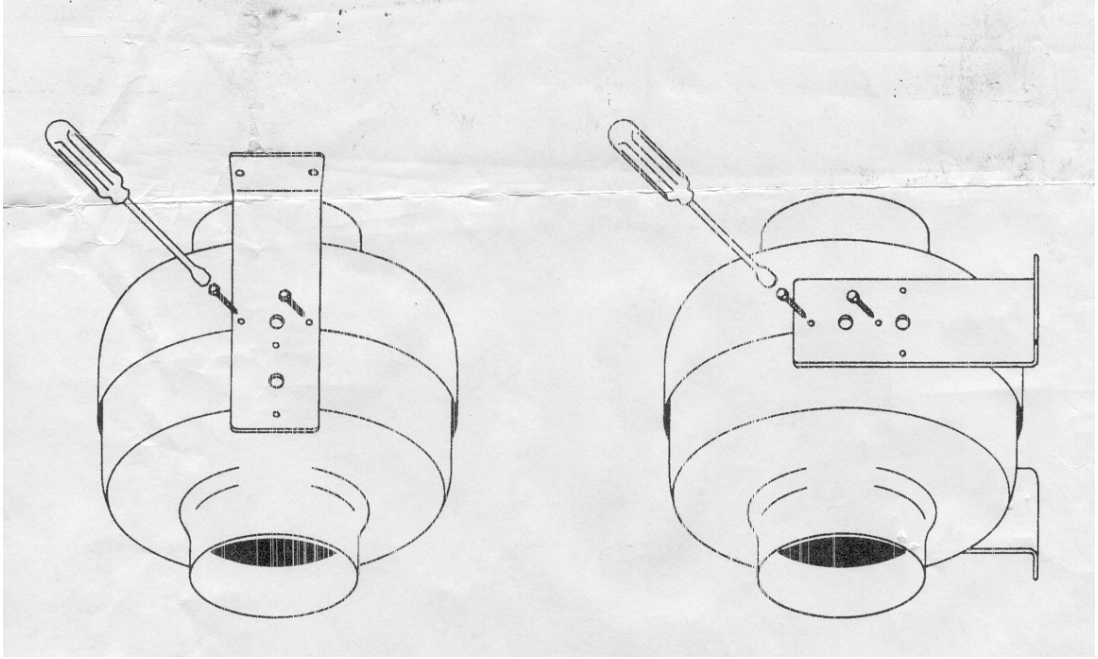

The mounting brackets supplied may be fastened to the in-line fan in either of 2 positions, as illustrated below; use them to mount the fan where most convenient for the particular installation. It may be desirable to use a thin rubber sheet between the bracket and the mounting surface if the surface is a panel which may resonate.

Another method (especially useful for attic or crawl space mounting) for mounting the in-line fan is to install a large screw eye above the desired mounting location. Procure two good quality 36"-48" bungee cords and place all 4 hook ends in the screw eye. Suspend the fan by placing the input & output ports in the loops formed by the bungee cords. Note that the fan will slip out if tubing (or a "stop" of some sort) isn't in place on both the input and exhaust ports.

EXT fan ONLY:
Refer to the picture below. The tubing is brought through the wall, leaving enough slack to allow easy connection to the fan's air outlet tube. A 5" – 5 ½' hole through the wall will allow the insulated tubing to pass though after squeezing it down. When it expands, it will seal the hole against drafts.

- Loosen the 2 philips head screws on the bottom to remove the white cover.

- Power wiring is brought in through either of the larger holes in the top corners, using a 3/8" romex connector as a strain relief. Note the label next to the 4-screw terminal strip***. Be certain that the ground wire in the power cord coming into the fan (green) connects to the yellow/green wire on the terminal strip.*** A label next to the terminal strip shows where the Line (black), Neutral (white) and ground (green) wires connect. **We recommend this wiring be done by a licensed electrician familiar with local codes governing**

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wires passing through walls, etc.

- Use the screw holes located near each corner to mount the fan subpanel securely to the mounting surface.
- Replace the white weatherproof cover.

In-line fan ONLY:
Run the tubing between the enclosure and the fan, clamping it at both ends. If tubing is to be used at the outlet side of the fan, install it now. ***If possible, use a 2' length of tubing on the exhaust side of the fan, as it acts as an effective "air noise" muffler.***
Both versions:
Before applying power for the first time, be certain nothing is near the inlet opening in the enclosure (pieces of paper, etc.,) which will be drawn into the tubing and possibly clog the system. Apply power to the fan, and check the system for correct operation. Make any adjustments that may be necessary. Air sounds coming from the air inlet can be minimized or eliminated by enlarging the opening and/or rounding any sharp edges.

EXT version ONLY:
Be certain that the air flow opens the spring-loaded door at the bottom of the housing, ***and that the door closes freely when the air flow stops.***

Both versions:
If the air flow is greater than desired, both air flow and noise can be reduced by using a System 1 variable speed control (part number 03-102-01), available from your Active Thermal Management distributor.

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