

TO: Distributors of Warren Electric Heaters

The recent extreme cold weather has brought to light many HVAC installations that have insufficient (low) quantity of air flow to allow electric heaters to operate properly. Insufficient (low) airflow causes the electric heater to trip on its high temperature safety limit(s) thereby rendering the heater inoperative and resulting in unpleasant “no heat” calls from the end user. **It is the responsibility of the installer to ensure that sufficient heating air flow is present before allowing a system to operate.** The purpose of this bulletin is to provide assistance to correct existing systems and prevent future **low airflow** conditions.

Insufficient airflow is caused by a number of factors such as undersized ductwork, dirty filters, fan speed setting, fan failure, etc. A list of additional possible root causes of insufficient air flow is attached.

This is an industry wide problem that affects all manufactures of equipment and electric heaters in various degrees depending on the many system installation/equipment /application /use variables.

Installers and service personnel should be alerted to this situation and replacement safety limits should be ordered and stocked for use only *after* the low air flow condition has been corrected. Often the air flow cannot be accurately measured in the field. In any event, however, each system should be checked to see, during full heating operation, if the electric heater automatic reset is off-on cycling. If so, air flow must be increased until the cycling stops. A further increase in airflow should be made to allow for filters becoming dirty during operation.

In the interest of protecting against serious equipment damage, and safety, Warren electric heaters provide greater protection against low airflow than other heater manufacturers. Although these provisions may cause earlier warning of unsafe low air flow conditions and often result in rashes of “no heat ” calls during cold weather, Warren believes that it is far better for all concerned to correct low air flow conditions as soon as possible and replace safety limit (fuses) rather than replace seriously damaged equipment at a later time. In the event that it is determined that insufficient airflow cannot be corrected on a specific installation, Warren can assist by providing special heater models that have additional controls which are suitable for uncorrectable low airflow conditions.

In addition to this information and that which is attached, we will be providing updates which we hope will be helpful to assist in this situation.

If you have any questions or comments please contact us.

Regards,
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Causes of Low Airflow in Fan Forced Air Systems

Low (insufficient) airflow in fan forced air systems can cause numerous problem in terms of performance and life of equipment , as well as safety. Electric heaters in particular are critically dependent on the minimum required airflow to function properly and safely . The following , most common factors, are possible causes of low airflow:

1. High static pressure in ductwork is most commonly due to undersized ductwork (common in replacement market and mobile home installations), and blocked outlets (common in all floor outlet installations).
2. Dirty or clogged filters.*
3. High resistance air filters added by home owners after installations *
4. Low fan speed connection on multi-speed AHUs.
5. Low fan cfm setting and/or fan control sequence setting on variable speed AHUs.
6. Fan motor failure**.
7. System controls that may allow heater to operate without fan, eg. "fan on" delay, faulty circuit boards, etc.
8. Erratic airflow caused by removing access panel of AHU during start-up.

Note: *All static pressure readings taken only in the supply ductwork will not reflect the reduced airflow caused by dirty filters, high resistance filters, or any other obstruction in the air flow before entering the AHU. The AHU manufacturers *Static Pressure / CFM* tables cannot be relied upon for true air flow unless differential static pressure readings are taken by measuring the static pressure in the supply air and also by measuring the negative static air pressure due to filters or other obstructions entering the AHU.

Most equipment manufacturers do not have provisions for a positive interlock to prevent the electric heater from operating when there is no air flow. If a fan motor fails, **the system is totally reliant on the electric heater safety limits shut down the heater.