

COMMON COMPONENTS

'Diamond Flow' Sensor

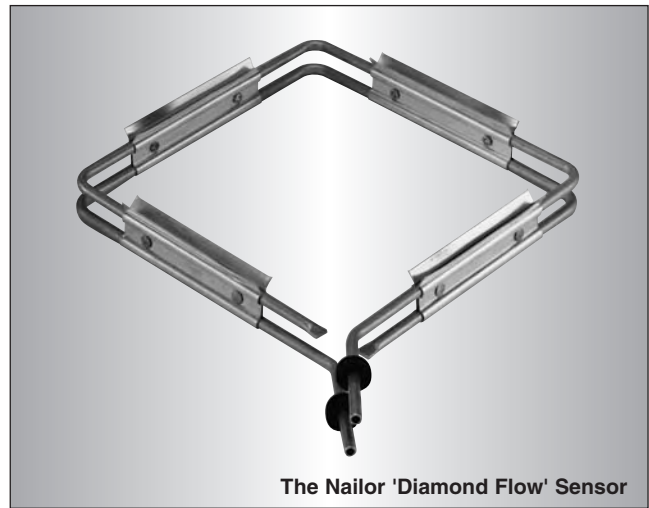
The Nailor 'Diamond Flow' is a multi-point airflow sensor that is designed to provide an averaged and very accurate flow signal for use with pressure independent controls.

The 'Diamond Flow' is constructed of aluminum (stainless steel is optional) to ensure longevity and strength and is therefore not affected by adverse ambient temperature fluctuations before or after installation. It has a minimum of four pick-up points on each side which sample airflow in each quadrant of the inlet and then averages those readings. The 'Diamond Flow' has a maximum error envelope of only $\pm 5\%$ regardless of the inlet configuration, even with a hard 90° elbow. Therefore, flow measurement is always accurate within normal measuring method. Additionally, security is provided against poor or non-ideal installations. A laboratory is about the only place where differences in this sensor and a flow cross design can be measured; therefore, these devices are equivalent.

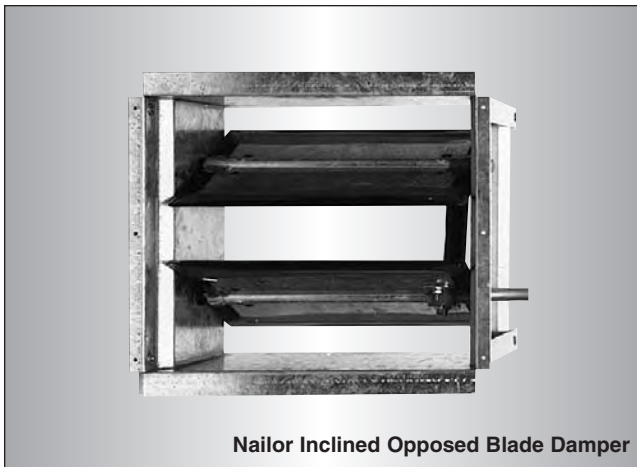
The second advantage of the 'Diamond Flow' is that it amplifies the velocity pressure signal (Δp) sent to the controller by an average factor of about 2.5. Inside pneumatic reset controllers, the static pressure signal is subtracted from the total pressure signal by piping these pressures to opposite sides of a diaphragm. The combined diaphragm and spring assembly have a mass equivalent to about 0.03" w.g. (7.5 Pa). This mass defines the dead band and the minimum Δp setting. By amplifying

the velocity signal, the controller is 'tricked' into a lower minimum capability and a narrower dead band. The same advantage is realized with digital and analog electronic controls utilizing a flow sensor and transducer. Low flow sensitivity is increased and lower settings can be held.

Thirdly, the sleek aluminum sensor design causes minimal disturbance to the airstream. Therefore, compared with other bulkier sensor designs, it produces only a minimal pressure drop increase across the terminal unit damper, reducing the inlet static pressure requirement and increasing energy efficiency, while at the same time producing negligible sensor generated noise.



The Nailor 'Diamond Flow' Sensor



Nailor Inclined Opposed Blade Damper

Opposed Blade Damper

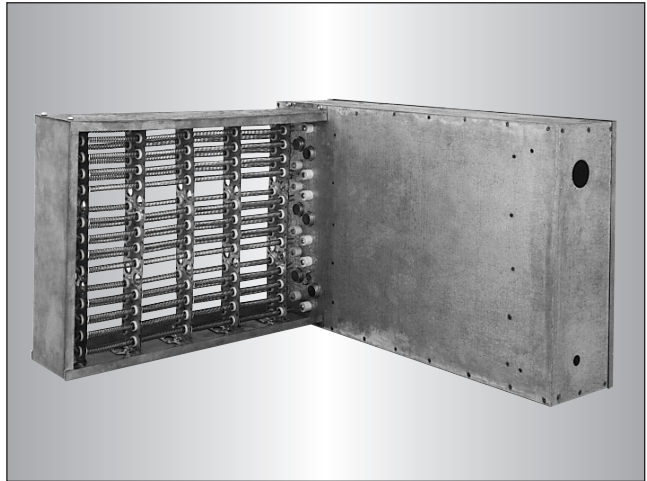
All Nailor single duct and fan powered terminals are equipped with inclined opposed blade dampers that provide premium performance and control accuracy. Blades shut-off at 45° in the direction of airflow. This ensures quiet operation with near linear performance for primary air control. Airflow disturbance and hence the turbulence created over a throttling opposed blade damper is less than that produced when compared with a similarly throttling round 'butterfly' type damper design, therefore generating less noise.

Controlled throttling of the airflow is achieved throughout the complete damper rotation from fully open to fully closed, desirable characteristics not found in round 'butterfly' dampers, thereby providing accurate control under all conditions. Opposed blade dampers ensure Nailor customers of a smooth response as airflow is adjusted in response to changing thermostat demand or the damper adjusts to compensate for varying static pressure conditions.

All Nailor dampers feature a solid plated steel $1/2"$ (13) dia. driveshaft with an indicator mark on the end of the shaft to show damper position.

Electric Heaters

All Nailor terminal units supplied with electric heaters will have heaters manufactured by Nailor Industries. Special orders are not required for specific kW ratings. All units have built-in controls for all options required by the engineer. Controls for the terminal unit will also be in the heater control box. Units are ETL listed for safety with the electric heaters as a component of the terminal unit.



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GENERAL PRODUCT OVERVIEW



Hot Water Coils

Nailor single duct, fan powered and bypass terminal units are available with factory installed hot water coils with up to four rows for reheat and supplementary heating applications. Coils are custom designed specifically for Nailor terminal units. The number of circuits and header/connection size have been selected to optimize performance.

- Tubes are 1/2" (13) O. D. copper.
- Fins are rippled aluminum, 10 fins per inch.
- Connections: 1/2" (13), 7/8" (22) or 1 3/8" (35) O. D. male solder, dependent on size and number of rows.
- Coils are pressure tested to 360 psi (2481 kPa).
- Water coil valves for pneumatic, electric and electronic control are available from Nailor.
- ARI Certified.