AIRFLOW & ZONE CONTROLS

HCG

Humidity-Controlled Grilles

PRODUCT SPECIFICATIONS & TECHNICAL DATA

DESCRIPTION

Model HCG humidity-controlled grille is a variable airflow exhaust terminal that automatically adjusts the airflow rate according to the relative humidity of the space. Designed for mechanical exhaust systems in residential and institutional applications, this grille provides airflow directly proportionate to the presence of and activity level of occupants in the space.

This control of the airflow rate permits ventilation when and where it is necessary, responds to the health and comfort requirements of the occupants, reduces moisture damage, and reduces energy costs by avoiding unnecessary ventilation.

Fresh air in a complete humidity-controlled ventilation system is provided in each main living space, bedroom offices, etc., by fresh air inlets, or a separate supply ventilation system. Transfer grilles permit air circulation from the main living areas to the rooms with specific pollutants (bathrooms, kitchens, laundry rooms, etc.).

Stale air is exhausted from rooms with specific pollutants through the exhaust grilles (HCG) by means of a central exhaust fan. **NOTE:** Special consideration should be given when installing HCG grilles in rooms heated and cooled by a central forced-air system, since the humidity level in the specific room, e.g., bathroom, would be lowered to the general level of the main living areas, and the specific pollutants would be recirculated back to the main living area, rather than exhausted to the outdoors.

APPLICATIONS

The use of humidity-controlled exhaust grilles is limited to buildings where the relative humidity is a representative indicator of the physical occupancy of the individual rooms, primarily institutional and apartment/condominium living units. As part of a complete mechanical-exhaust system, the HCG is particularly adapted to:

- Dormitories
- Retirement centers
- Nursing homes
- Hotels and motels
- Shower and locker rooms in schools, office buildings, exercise rooms, etc.

ADVANTAGES

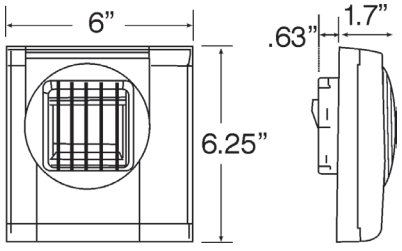
- Energy conservation by demand-controlled ventilation
- Comfort and quality of air
- Reduced moisture and condensation damage to the building
- Extremely low sound levels
- Simple maintenance because all functioning parts are easily removed and designed to permit cleaning in a dishwasher
- Large pressure range for the design airflow rates: from 0.3-0.6 in. wg. (70-150 Pa)

COMPONENTS

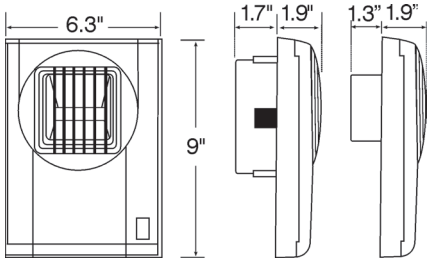
The HCG is composed of:

- Face cover in white ABS plastic
- White grille (yellow, dark gray, red, and green available by special order)
- Duct connection (for 3" or 5" duct), with a brush gasket to provide a tight seal
- Humidity-sensitive activator, in nylon ribbon, that expands and contracts in response to the relative humidity of the space
- Damper mechanism(s) connected to the nylon elements by a mechanical linkage, so as to operate the dampers in direct proportion to the humidity level of the space
- Motorized actuator for timer models (requires 9V battery) opens the damper for 30 minutes of higher airflow. (Timer models require a separate momentary contact switch.)
- All mechanical control elements are located behind the face plate of the HCG.

HCG Dimensions



Models HCG and HCGM



Models HCG+ and HCGM+

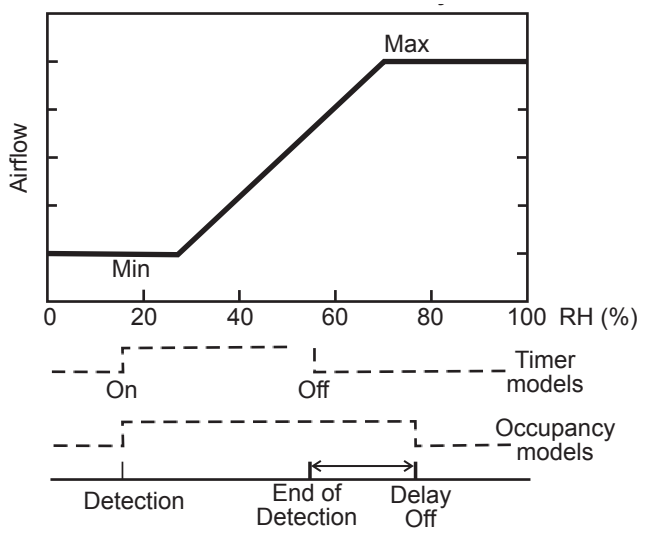
Airflow Characteristics & System Design Considerations

Ducting, sizing and fan selection must be appropriate to provide a duct pressure behind the grille of 70 to 150 Pascals (0.3 to 0.6 in. wg). Rated airflows are based on 0.4" wg. (100 Pa) At 70 Pa, the airflow is 14% lower than rated. At 150 Pa, the airflow is 22% higher than rated. As a matter of effectiveness in removing humidity, a lower flow will cause the unit to remain open longer; at higher pressures, the humidity will be controlled earlier, and the damper will close sooner. On small systems, this may be achieved economically using fans with a flat pressure/airflow characteristic curve, and variable-speed motors or dampers adjusted for constant static pressure on large systems.

The duct system and fan must be selected to permit the maximum airflow likely to be obtained in actual use. This design airflow condition occurs in summer, the season in which the fresh outdoor air admitted to the building contains the highest level of absolute humidity, on the order of 60% to 65%, depending on climatic zone. This consideration is necessary so as to obtain the required duct pressures at the grilles when all are open to the maximum setting.

The HCG may be installed in a ceiling assembly, suspended ceiling, or on a partition wall. It may be connected to rigid duct or flexible duct with a metal sleeve in 3" (75 mm) or 5" (125 mm) diameter, depending on the model. Model HCG+ (P/N: 17 373) has a 5" round duct connector with a brush seal. All other models must be secured by screws to the mounting surface. A gasket provides a tight seal.

AIRFLOW VS. RELATIVE HUMIDITY



ACOUSTIC DATA

The levels of acoustic power (L_w) emitted by an exhaust grille at 65% relative humidity are shown in the table below. In the average airflow range in actual use, with lower humidity levels, these acoustic power levels are diminished by 3 dB(A).

HCG					
P in Pa	70	90	110	130	150
L_w in dB(A)	24	27	30	31	35
L_w w/acoustic ring in dB(A)	28	30	31	32	34
HCG M+					
L_w in dB(A)	27	29	32	34	35
L_w w/acoustic ring in dB(A)	29	31	34	36	37

Note: The acoustic ring provides attenuation of duct-borne noise. As the table indicates, it slightly increases the self noise generated by the grille. It should only be used when the fan/duct-borne noise is too high and needs attenuation.

ORDERING INFORMATION

PART NUMBER	DESCRIPTION	OPERATING RH %	AIRFLOW RANGE (CFM) @ 0.4 w.g.	BOOST AIRFLOW (CFM)	TIMER DURATION
15 349	HCG (Automatic Control)	22-69	3-25	--	N/A
15 352	HCGM (Battery Operated)	22-69	3-30	20	20 min.
17 373	HCG+ (Automatic Control)	30-75	12-90	--	N/A
15 376	HCG M+ (Battery Operated)	36-76	6-30	80	25 min.

ACCESSORIES	
15 275	12 VAC plug-in circuit board to convert 9V DC powered units (6 VA requirement, transformer provided by electrician)
15 018	Flush-Mount Gasket for use when round collars are not used
15 274	4" Duct Collar for round duct attachment
15 017	5" Duct Collar for round duct attachment
15 276	Retrofit Adapter Plate
19 429	Sound Absorbing Ring Insert

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