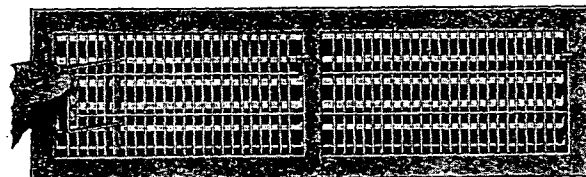


The Independent Register Co.

ESTABLISHED 1898

3747 East 93rd Street, Cleveland 5, Ohio

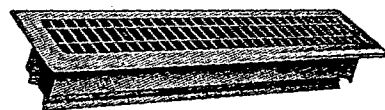
AIR CONDITIONING REGISTERS AND GRILLES



No. 321A-HMV Tandem

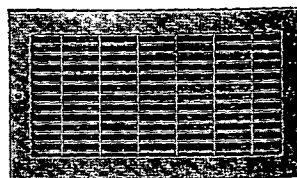
With these grilles, compound deflections of air flows can be obtained with accuracy and certainty. The directional adjustment can be made at the time of installing or after the grille is in position. Each vertical bar on the front may be individually adjusted for air flow right

or left. The HMV valves on the back may be adjusted by the levers in front so as to direct the air flow up or down, or they may be fully closed. If width exceeds 24 in. the valves are made tandem as illustrated above.



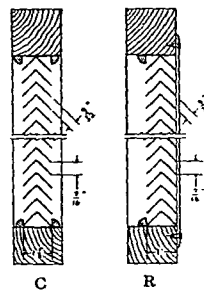
No. 60A

For floor installations. Bars are set to diffuse the air up and out to both sides. Famous "Fabrikated" construction, excelling in rigidity, open area and fine appearance. Size shown 24 x 14. Other sizes are made and comply with code requirements of NWAH and ACA.

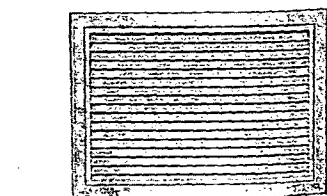


No. 311D-WG Bars Fixed Down

These grilles are designed for commercial installations. Style No. 311-D-WG illustrated has grille bars set permanently at approximately 35 deg. down. Other models available have grille bars set for straight flow.



No. 1312R—With overlapping rim $\frac{5}{8}$ in. wide, on all four sides.
No. 1312C—With grille core only, installed with moulding.



Independent No-Vision Grilles—No. 1312 for Doors, Walls and Partitions. The grille bars are "V" shaped; it is impossible to see through the grille from any viewpoint.

Knowles Mushroom Ventilator Co.

Established 1906 All Patents Protected

Main Office and Factory
Upper Montclair, New Jersey

Nu-Notch

NU-NOTCH Specifications

Furnish and install where indicated on drawings or as hereinafter specified (5 in.) (6 in.) (7 in.) (8 in.) (10 in.) (Dome Top) (Flat Top) Nu-Notch Cast Iron Mushroom Air Diffusers with recessed notches for the permanent adjustment of mushroom caps at any desired opening, together with center locking screw feature.

Cast iron mushroom, successfully serving in over 5,000 buildings in U. S. and abroad. Provides correct draft-free distribution of air to each individual in any size auditorium, orchestra or balcony. Close regulation of air—10 different adjustments for all possible conditions. Easily regulated by part turn of cap, and locked in position by tightening head screw with special key—new feature to prevent tampering. Supplied with dome or flat tops, 5 diameter sizes. Easy, permanent anchorage to wood, concrete or monolithic floors.

PROPER auditorium ventilation is now recognized to be a combination of temperature, air motion and distribution, humidity, dust, bacteria, odors, and carbon dioxide. Air motion and distribution is second only to temperature in importance. The Synthetic Air Chart adopted by the ASHVE takes into account all of these factors and makes it possible to arrive at an average which will show the percentage of ventilation obtained in any given installation.

For nearly a half century KNOWLES has devoted itself to one specialized field—the manufacture of air diffusers for auditoriums.

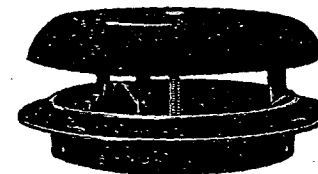
Write for free Guide to Distribution of Air in Auditoriums.

Adaptability of the KNOWLES Mushroom Air Diffuser. In an auditorium seating 2000, requiring 40,000 cfm, it is desired to use 6 in. dia. NU-NOTCH Mushrooms with air velocity of 600 fpm. By referring to the table below, it will be seen that a 6 in. mushroom will exhaust 120 cfm. Dividing 40,000 cfm by 120 indicates 333 units are required.

Size	Dimensions in Inches						Net Wgt. Lbs.	Area Sq Ft.	Cfm at Velocity of								
	A	B	C	D	E	F			200	250	300	350	400	450	500	550	600
5	6	7 1/4	13 1/4	15 1/2	5	8	4	.1364	27.3	34.2	41.0	47.7	54.6	61.2	68.0	74.8	81.6
6	7 1/4	14 1/4	14 1/4	16 1/2	6	8 1/4	4 1/4	.1964	39.3	49.1	59.0	68.7	78.6	88.2	98.0	107.8	117.6
7	8 1/4	14 1/4	21 1/4	14 1/4	7	8 1/4	6 1/4	.2673	53.5	66.8	80.2	93.5	107.0	120.6	134.0	147.4	160.8
8	9 1/4	14 1/4	2	2	8	10 1/4	9	.3491	69.8	87.3	105.0	122.0	140.0	157.0	174.5	192.5	209.4
*10	11 1/4	15 1/4	3	2 1/4	10	11 1/4	14 1/4	.5454	109.0	136.3	163.6	191.0	218.0	245.2	272.5	300.0	327.0

The 10" dia. Nu-Notch is the most economically priced Mushroom to use also affording the greatest exhaust area and least duct connections.

KNOWLES NU-NOTCH MUSHROOM AIR DIFFUSER



For Auditoriums

MODERN practice shows that 8 cu ft of fresh air per minute per person is ample to keep the air in an auditorium free of odors; and to maintain body heat and to balance the outdoor heat of a warm summer's day, about 20 cu ft per minute per person must be introduced. The accurate amount becomes an engineering problem too extended for this outline.

Of the 20 cu ft per minute per person introduced, 12 cu ft may be recirculated, economizing heat in winter and cooling in summer. If too much air is recirculated, odors will result; and when smoking is to be allowed, much more new air must be introduced.

