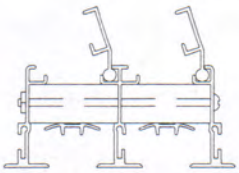
9400 SLOT DIFFUSERS

PRODUCT DESCRIPTION

Reliable Slot Diffusers are designed for ceiling, sidewall or sill installation. Direction changes up to 180° are possible by lateral adjustments of the extruded aluminum black-coated pattern controller to meet changing requirements without changing NC level, static pressure resistance (Ps) effective outlet area (Ak) or face appearance of the diffusers. Its reliable performance assures confident use of cooling temperature differentials up to 25° F at predicted low air motion (35 fpm) in the zone of occupancy. Reliable Slot Diffusers perform efficiently with air loadings of 1 to 3 cfm per square foot of floor area or 6 to 18 air changes per hour (based on 10-foot ceiling height) at a sound level range of NC 25 to 35.



9400 SLOT

Fabricated of high quality anodized aluminum extrusions, Reliable Linear Slot Diffusers are also available in white baked enamel finish. Structural components are mechanically interlocked and bolted together, with keyway and splines to form continuous lengths. Spring loaded volume dampers are furnished in each slot; accessible through the slot opening, they may be used to adjust and equalize air flow along the diffuser or to internally blank-off dummy sections in continuous lengths. One-piece mitered corner sections are available.

Reliable Slot Diffusers can be specified for surface mounting using face screw mounting holes in the outer frame borders, or by utilizing a concealed mounting system of leveling screws and mounting brackets which fit in a hemmed duct collar or a subframe. When mounting brackets are used, pattern controllers and dampers are shortened to give access to leveling screws through the diffuser face, with adjustable cover strips provided to preserve the one-piece appearance of the pattern controllers. Two auxiliary subframes are available for flush, plaster or tile ceiling applications. The pattern controller and damper are omitted from return air or exhaust diffusers to provide maximum air capacity.

Continuous runs are available in virtually any length; however, the maximum length of an individual unit is limited to 72". Unless otherwise specified, the factory reserves the right to determine individual unit lengths comprising a continuous run installation.

HOW TO MEASURE:

Surface mount (SM) units should be specified by the standard nominal (neck) dimension. For TeeBar Lay-in (TB) or Concealed Spline (CS) applications, specify the ceiling module size. Continuous runs (other than straight lengths) must always include a sketch showing configuration of units, mitered corners with degree of miter, end caps, etc.

TABLE 2 CONTINUOUS DIFFUSER LENGTH FACTORS

Modify Table 1 by factors for diffuser lengths above 4 feet.

Diffuser Length	THROW (T)			NC
	Ceiling Min.-Max.	Sidewall Min.-Max.	Sill Min.-Max.	
4′-6′	No change			+ 0
7′-20′	T x 1.10			+ 5
21′-100′	T x 1.15			+ 10

TABLE 3 SUPPLY AIR TEMPERATURE FACTORS

Multiply Throw in Table 1 (or factor in Table 2 if used) by listed value.

	@ −20F ΔT	@ −0F ΔT	@ +25F ΔT
Sidewall Ceiling Sill	T x 1.0	T x 1.1	T x 1.2

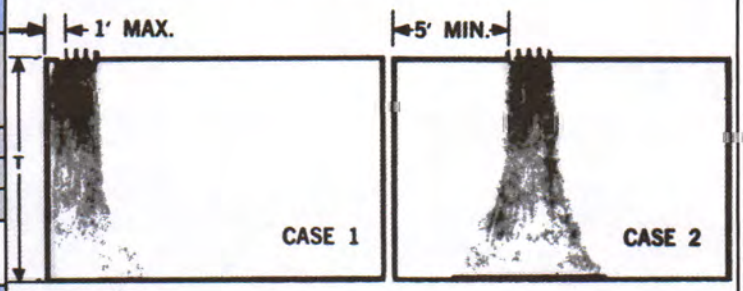
TABLE 4 SUPPLY DIFFUSER AREAS Per Foot of Length

	No. of Slots									
	1	2	3	4	5	6	7	8	9	10
A_K Area	.02	.03	.05	.07	.09	.10	.12	.14	.15	.17
A_N Area	.08	.17	.25	.33	.42	.50	.58	.67	.75	.84

A_K constant for horizontal 1-way, 2-way and vertical pattern.

CFM = A_K x length in feet x V_K

TABLE 5 VERTICAL DOWN-THROW and Supply Temperature Factors



Multiply Throw-Sidewall in Table 1 (or factor in Table 2 if used) by listed value.

	@ −20F ΔT Cooling	@ −0F ΔT Ventilating	@ +25F ΔT Heating
Case 1	T x 1.0	T x .90	T x .60
Case 2	T x .70	T x .60	T x .40

SYMBOLS

V_K	Outlet Velocity in FPM	NC	re 10db Room Attenuation
A_K	Outlet Area in Sq. Ft.	T	Throw in Feet
A_N	Neck Area in Sq. Ft.	ΔT	Temperature Differential

TABLE 6 RETURN AIR CFM Per Foot of Length

No. of Slots	AK Area	NC 20-25 Application Non-Ducted		NC 30 Application Ducted		NC 35-40 Application Ducted	
		−.02″ Ps	−.03″ Ps	−.08″ Ps	−.10″ Ps	−.15″ Ps	−.20″ Ps
		CFM	CFM	CFM	CFM	CFM	CFM
1	.03	15	20	30	35	40	45
2	.06	35	45	70	80	95	110
3	.08	55	70	110	125	150	175
4	.11	70	85	140	155	190	220
5	.14	90	110	180	200	245	285
6	.16	110	135	220	245	300	345
7	.20	130	160	260	290	355	410
8	.22	140	170	280	310	385	440
9	.25	165	200	330	370	450	520
10	.28	185	225	370	415	505	585

Capacity based on diffuser without pattern controller. When pattern controller is used, cfm capacities are reduced by 65% at listed Ps, NC, and AK.

NOTES:

a. Table 1 based on 4-foot diffuser length. For longer lengths, correct throw and NC per Table 2.

b. For 2-way ceiling throw, proportion cfm and number of slots in each direction of T and select from 1-way data, Table 1.

c. When using continuous diffuser lengths with alternating active and inactive sections, a reduction in throw can be obtained by omitting the factors contained in Table 2.

d. Ps constant for horizontal 1-way, 2-way, and vertical pattern adjustment.

e. Supply air temperature effect on horizontal throw is shown in Table 3. Vertical throw at varying supply air temperatures is shown in Table 5.

f. Terminal velocities (V_T) at the minimum and maximum throw (T) positions are rated at 150 fpm and 100 fpm respectively with corresponding room velocities (V_R) of 50 fpm and 35 fpm.

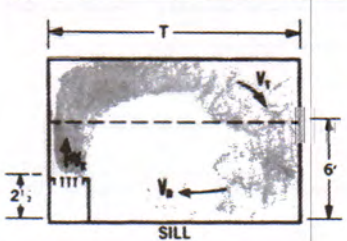
RELIABLE PRODUCTS

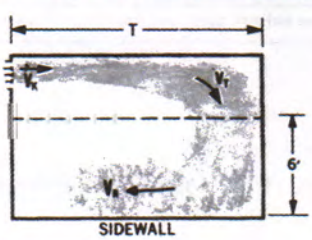
9400 SLOT ENGINEERING PERFORMANCE DATA

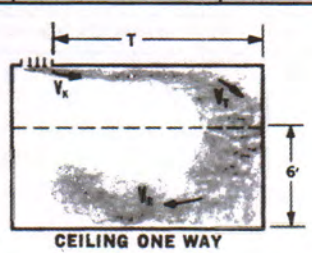
1/2

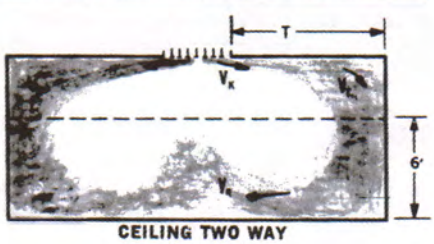
TABLE 1 SUPPLY AIR

CFM Per Foot In Direction of T	No. of Slots	Min. Ps In H_2O	Outlet Velocity (V_K) FPM	Throw (T) in Feet			Minimum Ceiling Height in Feet		NC
				Ceiling	Sidewall	Sill	@ −18F ΔT	@ −25F ΔT	
				Min.-Max.	Min.-Max.	Min.-Max.			
10	1	.02	500	5-7	3-5	1-2	7½	9	<20
	2	.01	335	4-6	2-4	1-2			<20
20	1	.08	1000	10-13	8-11	1-3			20
	2	.02	670	8-11	6-9	2-3	8	9	20
	3	<.01	400	6-9	4-7	1-2			<20
30	1	.18	1500	11-16	10-14	4-6			25
	2	.05	1000	10-14	8-12	3-4			20
	3	.02	600	8-11	6-9	2-3	9	10	<20
	4	.01	430	7-9	5-7	1-2			<20
40	2	.08	1330	13-17	11-15	4-6			25
	3	.04	800	10-14	8-12	3-5			20
	4	.02	570	9-12	7-10	2-3	9	11	<20
	5	.01	445	8-11	6-9	2-3			<20
50	3	.06	1000	11-15	9-13	4-6			25
	4	.03	710	10-14	8-12	3-4			20
	5	.02	560	9-13	7-11	2-4	9½	11	<20
	6	.01	500	8-12	7-10	1-3			<20
60	3	.08	1200	13-17	11-15	5-8			25
	4	.05	855	12-16	10-14	4-7			25
	5	.03	670	11-15	9-13	3-6			20
	6	.02	600	10-14	8-12	3-5	9½	12	<20
	7	.01	500	9-13	7-11	2-4			<20
70	3	.12	1400	15-20	13-18	6-11			25
	4	.06	1000	13-18	11-16	5-9			20
	5	.04	780	12-16	10-14	4-7			20
	6	.03	700	11-15	9-13	3-6	10	12	<20
	7	.02	580	10-15	8-13	2-5			<20
80	4	.08	1140	14-20	12-18	6-11			25
	5	.05	890	13-19	11-17	5-10			25
	6	.04	800	13-18	11-16	5-9			20
	7	.03	670	13-17	11-15	4-8	10½	12½	20
	8	.02	570	12-16	10-14	3-7			<20
90	4	.10	1280	17-24	15-21	8-14			30
	5	.07	1000	16-22	14-20	7-13			25
	6	.05	900	16-21	14-19	7-12	11	13	20
	7	.04	750	15-20	13-18	6-11			20
	8	.03	640	14-18	12-16	5-9			<20
	9	.02	600	13-17	11-15	4-8			<20
100	5	.09	1120	18-25	16-22	9-15			25
	6	.06	1000	17-24	15-21	8-14			25
	7	.05	830	16-23	14-20	7-13			20
	8	.03	710	14-20	12-18	6-11	11	13	20
	9	.03	670	13-19	11-17	5-10			<20
	10	.02	590	12-18	10-16	5-10			<20
120	6	.09	1200	19-27	17-24	10-16			30
	7	.07	1000	18-26	16-23	8-15			25
	8	.05	860	17-25	15-22	7-14			20
	9	.04	800	16-24	14-21	6-13	11½	13	20
	10	.03	705	15-22	13-19	5-11			<20
140	7	.10	1170	20-30	18-27	10-19			30
	8	.06	1000	19-28	17-25	9-17			25
	9	.05	930	18-27	16-24	8-16	11½	14	20
	10	.04	825	17-25	15-22	7-14			20
160	8	.08	1140	21-32	19-29	10-20			30
	9	.07	1070	20-30	18-27	9-18	12	15	30
	10	.05	940	19-28	17-25	8-17			25
180	8	.10	1280	24-35	21-31	12-22			30
	9	.08	1200	23-34	20-30	11-21	12	15	30
	10	.07	1060	22-32	19-29	10-20			25
200	9	.10	1335	25-39	22-35	—			35
	10	.08	1175	24-37	21-33	—	12	15	30









Outlet Velocity (V_K) FPM										
500	600	700	800	900	1000	1200	1400	1600	1800	2000
Total Pressure (P_T) Inches H_2O										
.02	.02	.03	.04	.05	.06	.09	.12	.16	.20	.25

SYMBOLS

V_T	Terminal Velocity in FPM	Ps	Static Pressure in H_2O
V_R	Room Velocity in FPM	NC	re 10 db Room Attenuation
V_K	Outlet Velocity in FPM	T	Throw in Feet
A_K	Outlet Area in Sq. Ft.	ΔT	Temperature Differential
A_N	Neck Area in Sq. Ft.		