Hart&Cooley
install confidence

S Series (Page 43-47)

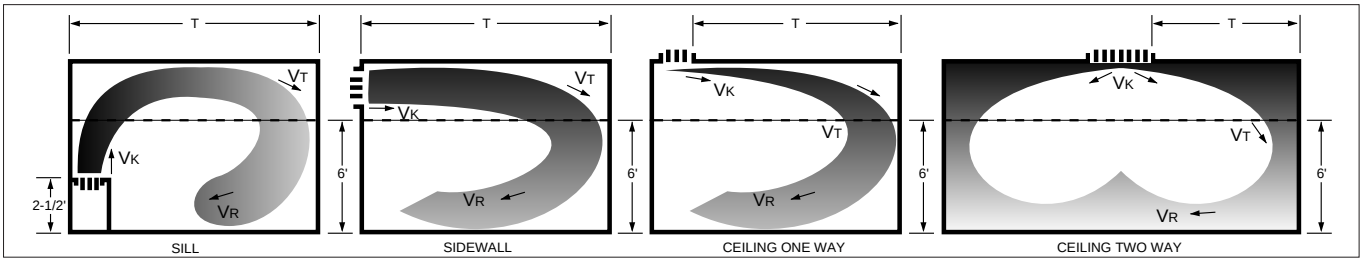


Table 1 - Supply Air

Type 50 (" Slot)

CFM/Ft of total Slot length	Number of Slots	Min. P_s in H_2O	Outlet Velocity (V_k) FPM	Throw (T) in Feet			Minimum Ceiling Height in Feet		
				Ceiling	Sidewall	Sill			
				Min.-Max.	Min.-Max.	Min.-Max.	@ -18F T	@ -25F T	NC
10	1	.02	500	5-7	3-5	1-2	7	9	<20
	2	<.01	335	4-6	2-4	1-2			<20
20	1	.08	1000	10-13	8-11	1-3	8	9	20
	2	.02	670	8-11	6-9	2-3			<20
	3	.01	400	6-9	4-7	1-2			<20
30	1	.08	1500	11-16	10-14	4-6	9	10	25
	2	.05	1000	10-14	8-12	3-4			20
	3	.02	600	8-11	6-9	2-3			<20
	4	.01	430	7-9	5-7	1-2			<20
40	2	.08	1330	13-17	11-15	4-6	9	11	25
	3	.04	800	10-14	8-12	3-5			20
	4	.02	570	9-12	7-10	2-3			20
	5	.01	445	8-11	6-9	2-3			<20
50	3	.06	1000	11-15	9-13	4-6	9	11	25
	4	.03	710	10-14	8-12	3-4			20
	5	.02	560	9-13	7-11	2-4			20
	6	.01	500	8-12	7-10	1-3			<20
60	3	.08	1200	13-17	11-15	5-8	9	12	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			<20
	7	.01	500	9-13	7-11	2-4			<20
70	3	.12	1400	15-20	13-18	6-11	10	12	25
	4	.06	1000	13-18	11-16	5-9			25
	5	.04	780	12-16	10-14	4-7			20
	6	.03	700	11-15	9-13	3-6			20
	7	.02	580	10-15	8-13	2-5			20
80	4	.08	1140	14-20	12-18	6-11	10	12	25
	5	.05	890	13-19	11-17	5-10			25
	6	.04	800	13-18	11-16	5-9			25
	7	.03	670	13-17	11-15	4-8			20
	8	.02	570	12-16	10-14	3-7			20
90	4	.10	1280	17-24	15-21	8-14	11	13	30
	5	.07	1000	16-22	14-20	7-13			25
	6	.05	900	16-21	14-19	7-12			25
	7	.04	750	15-20	13-18	6-11			25
	8	.03	640	14-18	12-16	5-9			20
	9	.02	600	13-17	11-15	5-8			20
100	5	.09	1120	18-25	16-22	9-15	11	13	25
	6	.06	1000	17-24	15-21	8-14			25
	7	.05	830	16-23	14-20	7-13			25
	8	.03	710	14-20	12-18	6-11			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	11	13	30
	7	.07	1000	18-25	16-23	8-15			25
	8	.05	860	17-25	15-22	7-14			25
	9	.04	800	16-24	14-21	6-13			20
	10	.03	705	15-22	13-19	5-11			20
140	7	.10	1170	20-30	18-27	10-19	11	14	25
	8	.06	1000	19-28	17-25	9-17			25
	9	.05	930	18-27	16-24	8-16			20
	10	.04	825	17-25	15-22	7-14			20
160	8	.08	1140	21-32	19-29	10-20	12	15	25
	9	.07	1070	20-30	18-27	9-18			25
	10	.05	940	19-28	17-25	8-17			20
180	8	.10	1280	24-35	21-31	12-22	12	15	30
	9	.08	1200	23-34	20-30	11-21			25
	10	.07	1060	22-32	19-29	10-20			25
200	9	.10	1335	25-39	22-35	-	12	15	30
	10	.08	1175	24-37	21-33	-			25

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

V_r Room Velocity in FPM

V_k Face Velocity in FPM

A_k Outlet Area in Square Feet

A_n Neck Area in Square Feet

P_s Static Pressure in H2O

NC 18dB Room Attenuation

T Throw in Feet: see Note 6.

ΔT Temperature Differential

Recommended Noise Criteria and Face Velocity Ranges are on page 75

S Series (Page 43-47)

Table 1 - Supply Air

Type 75 (" " Slot)

CFM per Foot	Number of Slots	Min. P_s in H_2O	Outlet Velocity (V_k) FPM	Throw (T) in Feet			Minimum Ceiling Height in Feet		NC
				Ceiling	Sidewall	Sill			
				Min.-Max.	Min.-Max.	Min.-Max.	@ -18F T	@ -25F T	
10	1	.01	335	4-6	2-4	1-2	7	9	<20
20	1	.04	670	8-11	6-9	2-3	8	9	20
	2	<.01	400	6-9	4-7	1-2			<20
30	1	.09	1000	10-14	8-12	3-4	9	10	25
	2	.02	600	8-11	6-9	2-3			20
	3	<.01	430	7-9	5-7	1-2			<20
40	1	.16	1340	13-17	11-15	4-6	9	11	30
	2	.04	800	10-14	8-12	3-4			25
	3	.02	575	9-12	7-10	2-3			20
	4	.01	445	8-11	6-9	2-3			<20
50	2	.06	1000	11-15	9-13	4-6	9	11	25
	3	.03	715	10-14	8-12	3-4			20
	4	.02	555	9-13	7-11	2-4			<20
	5	<.01	415	7-12	6-10	2-3			<20
60	2	.09	1200	13-17	11-15	5-8	9	12	30
	3	.04	860	12-16	10-14	4-7			25
	4	.02	665	11-15	9-13	3-6			20
	5	.01	500	9-13	7-11	3-4			<20
70	2	.13	1400	15-20	13-18	6-11	10	12	30
	3	.06	1000	13-18	11-16	5-9			25
	4	.03	775	12-16	10-14	4-7			20
	5	.02	585	10-15	8-13	3-5			<20
	6	.01	500	9-14	7-12	2-5			<20
80	3	.07	1140	14-20	12-18	6-11	10	12	30
	4	.04	885	13-19	11-17	5-10			25
	5	.03	665	13-17	11-15	4-8			20
	6	.02	575	12-16	10-14	3-7			<20
	7	<.01	500	11-15	9-13	3-6			<20
90	3	.09	1290	17-24	15-21	8-14	11	13	30
	4	.05	1000	16-22	14-20	7-13			25
	5	.03	750	15-20	13-18	6-11			20
	6	.02	645	14-18	12-16	5-9			20
	7	.01	560	13-17	11-15	4-8			<20
100	3	.13	1430	19-26	17-23	10-16	11	13	35
	4	.06	1110	18-25	16-22	9-15			30
	5	.04	830	16-23	14-20	7-13			25
	6	.03	715	14-20	12-18	6-11			20
	7	.02	630	13-19	11-17	5-10			<20
120	4	.09	1330	19-27	17-24	10-16	11	13	30
	5	.06	1000	18-26	16-23	8-15			25
	6	.04	860	17-25	15-22	7-14			20
	7	.03	750	16-23	14-20	6-12			20
	8	.02	630	15-20	13-18	5-10			<20
140	5	.08	1170	20-30	18-27	10-19	11	14	30
	6	.06	1000	19-28	17-25	9-17			25
	7	.04	875	18-26	16-23	8-15			25
	8	.03	740	16-24	14-21	6-13			20
	9	.02	665	15-21	13-19	5-11			<20
160	6	.07	1150	21-32	19-29	10-20	12	15	25
	7	.05	1000	20-30	18-27	9-18			25
	8	.04	840	18-27	16-24	8-16			20
	9	.03	760	17-26	15-23	6-14			<20
	10	.02	695	16-25	14-22	5-13			<20
180	6	.09	1290	24-35	21-31	12-22	12	15	30
	7	.07	1130	23-34	20-30	11-21			30
	8	.05	950	20-31	18-28	9-19			25
	9	.04	860	19-30	17-27	8-18			20
	10	.03	780	18-29	16-26	7-17			<20
200	6	.11	1440	26-40	23-36	-	12	15	30
	7	.08	1250	25-38	22-34	-			30
	8	.06	1110	24-36	21-32	-			25
	9	.05	955	22-33	20-30	-			25
	10	.04	870	21-31	19-28	-			20
250	8	.10	1315	26-46	23-41	-	13	15	35
	9	.07	1190	25-42	22-38	-			30
	10	.06	1085	24-39	21-35	-			25

Recommended Noise Criteria and Face Velocity Ranges are on page 75

S Series (Page 43-47)

Table 1 - Supply Air

Type 10 (1" Slot)

CFM per Foot	Number of Slots	Min. P_s in H_2O	Outlet Velocity (V_k) FPM	Throw (T) in Feet			Minimum Ceiling Height in Feet		NC
				Ceiling	Sidewall	Sill			
				Min.-Max.	Min.-Max.	Min.-Max.	@ -18F T	@ -25F T	
20	1	.02	500	6-8	4-7	1-2	8	9	20
30	1	.03	750	9-13	7-10	2-3	9	10	20
	2	.02	500	7-9	5-7	1-2			20
40	1	.06	1000	10-14	9-14	4-6	9	11	25
	2	.03	670	8-10	6-9	2-3			20
50	1	.09	1250	12-15	10-14	3-5	9	11	30
	2	.04	835	10-14	8-12	3-4			20
	3	.02	555	9-11	7-10	2-3			20
60	2	.06	1000	13-15	9-13	4-6	9	12	30
	3	.03	665	10-13	7-11	2-4			20
	4	.02	500	8-11	6-9	2-3			20
70	2	.09	1165	13-17	11-15	5-8	10	12	30
	3	.04	780	11-16	9-14	4-6			25
	4	.02	585	10-14	7-11	3-4			20
80	2	.11	1335	15-19	14-17	6-10	10	12	35
	3	.05	890	12-17	10-14	4-7			25
	4	.03	665	10-14	8-12	3-5			20
	5	.02	533	9-13	7-11	2-4			20
90	3	.06	1000	14-19	11-17	5-10	11	13	30
	4	.04	750	13-18	11-15	4-8			20
	5	.02	600	12-16	10-14	3-7			20
	6	.02	500	11-15	9-13	3-6			20
100	3	.08	1110	16-21	14-20	7-12	11	13	30
	4	.04	835	15-20	13-28	6-11			25
	5	.03	665	14-18	12-16	5-9			20
	6	.02	555	13-17	11-15	4-8			20
120	3	.11	1335	18-25	16-22	8-13	11	13	35
	4	.06	1000	17-24	15-20	7-13			30
	5	.04	800	16-23	14-21	6-12			25
	6	.03	665	15-21	13-19	5-11			20
	7	.02	570	14-20	12-17	4-10			20
140	4	.09	1165	18-25	16-21	8-15	11	14	30
	5	.05	935	18-26	16-22	8-14			30
	6	.04	780	17-25	15-22	7-14			25
	7	.03	665	16-23	14-20	6-12			20
	8	.02	585	15-20	13-20	5-10			20
160	4	.11	1335	19-27	17-24	10-16	12	15	35
	5	.07	1065	18-26	16-23	8-15			30
	6	.05	890	17-25	15-22	7-14			25
	7	.04	760	16-23	14-20	6-12			25
	8	.03	665	15-20	13-18	5-10			20
	9	.02	590	14-19	12-17	4-9			20
180	5	.09	1200	20-30	18-27	10-19	12	15	35
	6	.06	1000	19-28	17-25	9-17			30
	7	.05	850	18-26	16-23	8-15			25
	8	.04	750	16-24	14-21	6-13			20
	9	.03	665	15-21	13-19	5-11			20
	10	.02	600	14-19	12-18	4-10			20
200	5	.11	1335	23-33	20-30	12-21	12	15	35
	6	.08	1110	21-32	19-29	10-20			30
	7	.06	950	20-31	18-27	9-18			30
	8	.04	835	18-27	16-24	8-16			25
	9	.03	740	17-26	15-23	6-14			20
	10	.03	665	16-25	14-22	5-10			20
250	6	.12	1390	24-35	21-31	-	13	15	35
	7	.09	1190	23-34	20-30	-			35
	8	.07	1040	21-32	19-28	-			30
	9	.05	925	20-31	18-27	-			25
	10	.04	833	19-30	17-26	-			25
300	7	.13	1430	25-40	23-35	-	13	16	35
	8	.10	1250	24-36	22-32	-			35
	9	.08	1110	23-34	20-30	-			30
	10	.06	1000	22-32	19-28	-			30
350	8	.13	1460	27-47	24-43	-	14	16	40
	9	.11	1300	26-45	23-41	-			35
	10	.09	1165	25-42	22-39	-			30

Recommended Noise Criteria and Face Velocity Ranges are on page 75

S Series (Page 43-47)

NOTES:

1. Table 1 based on 4-foot diffuser length. For longer lengths, correct throw and NC per Table 2.
2. For 2-way ceiling throw, proportion cfm and number of slots in each direction of T and select from 1-way data, Table 1.
3. When using continuous diffuser lengths with alternate active and inactive sections, a reduction in throw can be obtained by omitting the factors contained in Table 2.
4. P_S constant for horizontal 1-way, 2-way and vertical pattern adjustment.
5. Supply air temperature effect on horizontal throw is shown in Table 3. Vertical throw at varying supply air temperatures is shown in Table 4.
6. 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.

Table 2 - Continuous Diffuser Length Factors

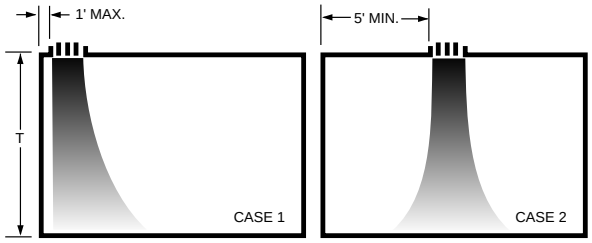
Modify **Table 1** by listed values for diffuser lengths above 4 feet.				
Diffuser Length in Feet	**Throw (T)**			
	Ceiling Min.-Max.	**Sidewall Min.-Max.**	**Sill Min.-Max.**	**NC**
4-6	No change			+ 0
7-20	T x 1.10			+ 5
21-100	T x 1.15			+ 10

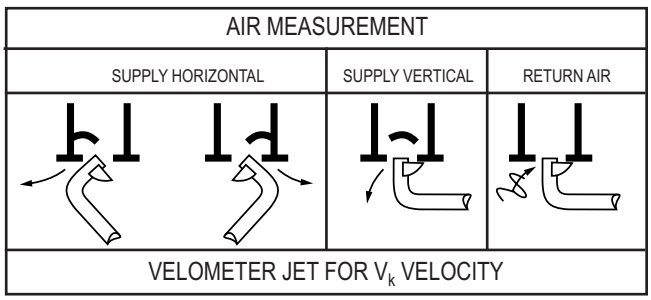
Table 3 - Supply Air Temperature Factors

Multiply Throw in Table 1 (or factor in Table 2 if used) by listed value.			
Ceiling Sidewall Sill	@-20F T	@ 0F T	@+25F T
	T x 1.00	T x 1.10	T x 1.20

Table 4 - Vertical Down-Throw and Supply Air Temperature Factors

Multiply Throw-Sidewall in Table 1 (or factor in Table 2 if used) by listed value.			
Case	@-20F T Cooling	@ 0F T Ventilating	@+25F T Heating
Case 1	T x 1.00	T x .90	T x .60
Case 2	T x .70	T x .60	T x .40





Type 50 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

Type 75 Supply Diffuser Areas per Foot of Length

	No. of Slots									
	1	2	3	4	5	6	7	8	9	10
A_k Area	.03	.05	.07	.09	.12	.14	.16	.19	.21	.23
A_n Area	.12	.24	.36	.48	.60	.72	.84	.96	1.10	1.20

Type 10 Supply Diffuser Areas per Foot of Length

	No. of Slots									
	1	2	3	4	5	6	7	8	9	10
A_k Area	.04	.06	.09	.12	.15	.18	.21	.24	.27	.30
A_n Area	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67

A_k constant for horizontal 1-way, 2-way, and vertical pattern.
CFM = A_k x length in feet x V_k

Type 50 Return Air CFM per Foot of Length*

No. of Slots	A_k Area	NC 20-25 Application Nonducted		NC 30 Application Ducted		NC 35-40 Application Ducted	
		-.02" P_s CFM	-.03" P_s CFM	-.08" P_s CFM	-.10" P_s CFM	-.15" P_s CFM	-.20" P_s 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

Type 75 Return Air CFM per Foot of Length*

No. of Slots	A_k Area	NC 20-25 Application Nonducted		NC 30 Application Ducted		NC 35-40 Application Ducted	
		-.02" P_s CFM	-.03" P_s CFM	-.08" P_s CFM	-.10" P_s CFM	-.15" P_s CFM	-.20" P_s CFM
1	.04	25	35	50	65	75	90
2	.08	50	60	100	110	135	160
3	.12	80	100	160	180	220	250
4	.16	100	120	200	225	275	320
5	.20	130	160	260	295	360	420
6	.24	160	195	320	360	440	510
7	.28	175	215	350	390	475	550
8	.32	200	245	400	445	545	630
9	.36	235	290	470	525	640	740
10	.40	260	320	520	580	710	820

Type 10 Return Air CFM per Foot of Length*

No. of Slots	A_k Area	NC 20-25 Application Nonducted		NC 30 Application Ducted		NC 35-40 Application Ducted	
		-.02" P_s CFM	-.03" P_s CFM	-.08" P_s CFM	-.10" P_s CFM	-.15" P_s CFM	-.20" P_s CFM
1	.06	35	43	70	80	95	110
2	.11	70	85	140	155	190	220
3	.17	105	130	210	235	285	330
4	.23	140	170	280	310	380	440
5	.28	175	215	350	390	475	550
6	.33	210	255	420	465	570	660
7	.39	245	300	490	545	665	770
8	.44	280	340	560	620	760	880
9	.50	315	385	630	700	855	990
10	.55	350	425	700	775	950	1100

* Capacity based on diffuser without pattern controller. When pattern controller is used, CFM capacities are reduced by 65% at listed P_s, NC, and A_k.

Recommended Noise Criteria and Face Velocity Ranges are on page 75