SoftDucts, LLC.

AIR FLOW

OPTIMIZERS

By DTI

WE

DESIGN

MANUFACTURE

MAINTAIN

About Us

Founded in 2017, SoftDucts is a company consisting of a group of dedicated and enthusiastic people constantly designing and innovating fabric air dispersion systems.

At SoftDucts, we are confident that the best way for us to reach an ideal future is by building long-term relationships with our customers providing excellent quality and service.

OUR MISSION

The help our clients fulfill their commitments through excellence in the design, manufacturing and maintenance of fabric ducts.

OUR VISION

To be the first-choice brand for fabric ductwork and diffusion projects worldwide offering cost effective and innovative solutions.

OUR VALUES

On Time
Complete
Correctly Done

We promise to deliver, we deliver what we promise and we are committed on getting it right.

SoftDucts, LLC.
AIR FLOW
OPTIMIZERS
By DTI

SoftDucts, LLC.
AIR FLOW OPTIMIZERS
By DTI

Material recommendation options based on the type of application.

|	Non-Permeable Fabric	Permeable Fabric	Suspension System	Special Application	Design Notes
Antimicrobial Applications					
Laboratories Food Industries Medical		Benelux Premium Poly 4 G1	Stainless Steel Cables PVC, Rail, Glide Rail	Antimicrobial Coating	You can request to add the antimicrobial coating on all of our permeable materials.
Chemical Applications					
Natatoriums Indoor Pools		Benelux Premium Poly 4 G1	Stainless Steel Cables PVC Rail, Glide Rail		Make sure to direct airflow towards the windows to avoid condensation.
Community Applications					
Commercial Retail Grosery		Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable, Glide Rail	Keep the Shape	For an additional cost, we can add logos to the duct systems.
Educational Gyms Lunch Rooms Library Classroom		Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable, Glide Rail	Keep the Shape	See materials spec sheet to find the color to best suit the architectural design.
Auditorium Sports Arena Convention Center Conference Halls		Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable, Glide Rail	Keep the Shape	Determine the dispersion method base on the height of installation or the throw you wish to accomplish.
Office		Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable, Glide Rail	Keep the Shape	Prevent directing the air downwards to avoid occupant discomfort.
Data Center Applications					
Telecommunication Industries		Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable	Static Free	Metal hooks will be placed in the straps of the duct to connect to cable.
Agriculture Applications					
Farms Greenhouses	AeroFlex 10 oz	Benelux Premium Poly 4 G1	Stainless Steel Cable, Galvanized Cable, Gilde Rail		AeroFlex is easy to clean and highly resistante.

SoftDucts, LLC

2
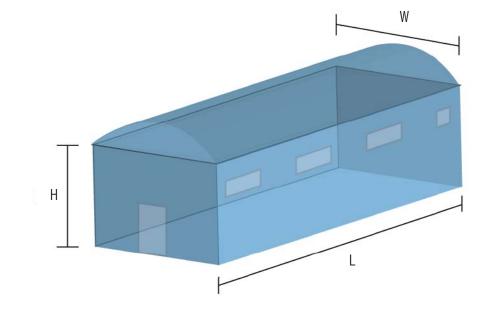
You will need to gather the following information to be able to start working on your fabric duct design.
• Dimensions of the room.
• Height at which the duct will be installed or the distance at which the air needs to reach.
• Suppy temperature .
• Room temperature.
• Design Pressure .
• Airflow (CFM).
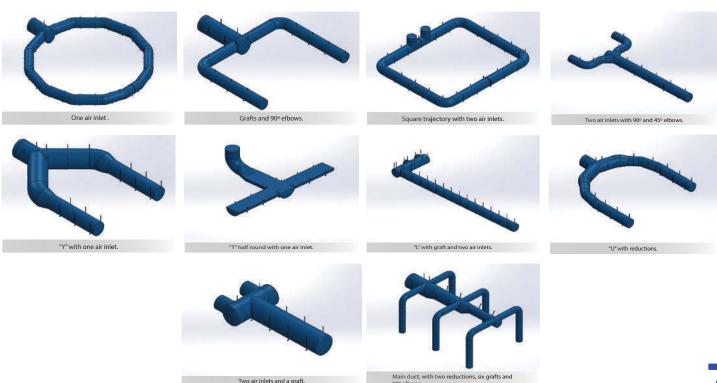
Define the Trajectory

Every project developed by SoftDuct is custom designed and fabricated to meet the necessities and requirements in accordance with the type of industry, hygrothermic conditions, geometries and HVAC systems.
Always in search of the desired comfort, backed up by an engineering analysis.
It's better to use simple straight runs, designing with fittings will increase:
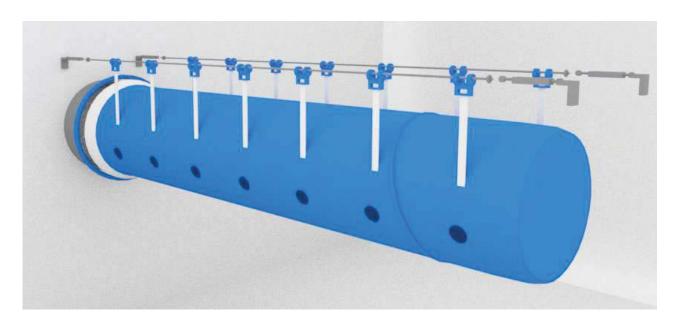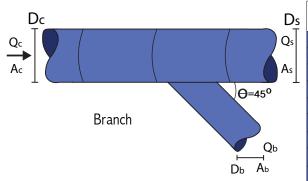
•Pressure loss
•Difficulty & cost of installation

One air inlet .

Grafts and 90º elbows.

Square trajectory with two air inlets.

Two air inlets with 90º and 45º elbows.

"Y" with one air inlet.

"T" half round with one air inlet.

"L" with graft and two air inlets.

"U" with reductions.

Two air inlets and a graft.

Main duct, with two reductions, six grafts and 90º elbows.

Branch 45˚

D_c
Q_c
A_c

Branch

D_s
Q_s
A_s

$\Theta = 45°$

Q_b
D_b A_b

Values for the branch coefficient

Ab/Ac	Qb / Qc								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.1	0.38	0.39	0.48						
0.2	2.25	0.38	0.31	0.39	0.46	0.48	0.45		
0.3	6.29	1.02	0.38	0.3	0.33	0.39	0.44	0.48	0.48
0.4	12.41	2.25	0.74	0.38	0.3	0.31	0.35	0.39	0.43
0.5	20.58	4.01	1.37	0.62	0.38	0.3	0.3	0.32	0.36
0.6	30.78	6.29	2.25	1.02	0.56	0.38	0.31	0.3	0.31
0.7	43.02	9.1	3.36	1.57	0.85	0.52	0.38	0.31	0.3
0.8	57.29	12.41	4.71	2.25	1.22	0.74	0.5	0.38	0.32
0.9	73.59	16.24	6.29	3.06	1.69	1.02	0.67	0.48	0.38

Values for the coefficient of continuation of the straight section

As/Ac	Qs / Qc								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.1	0.13	0.16							
0.2	0.2	0.13	0.15	0.16	0.28				
0.3	0.9	0.13	0.13	0.14	0.15	0.16	0.2		
0.4	2.88	0.2	0.14	0.13	0.14	0.15	0.15	0.16	0.34
0.5	6.25	0.37	0.17	0.14	0.13	0.14	0.14	0.15	0.15
0.6	11.88	0.9	0.2	0.13	0.14	0.13	0.14	0.14	0.15
0.7	18.62	1.71	0.33	0.18	0.16	0.14	0.13	0.15	0.14
0.8	26.88	2.88	0.5	0.2	0.15	0.14	0.13	0.13	0.14
0.9	36.45	4.46	0.9	0.3	0.19	0.16	0.15	0.14	0.13

p = Loss Charge (in.wg)
C = Coefficient of loss
V = Velocity (fpm)

$$\triangle p = \left\{ 9.63\, c\, \left[\frac{V}{196.85} \right] \right\} \frac{0.004026}{16}$$

Qc = Inlet air flow (cfm)
Qb = Branch air flow (cfm)
Qs = After Branch air flow (cfm)
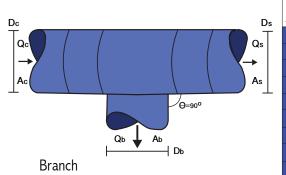
Dc = Inlet Diameter (Ft)
Db = Branch Diameter (Ft)
Ds = Diameter After Branch (Ft)

Ac = Inlet Area (Ft^2)
Ab = Branch Area (Ft^2)
As = Area After Branch (Ft^2)

Designing a SoftDuct

Branch 90°

Branch

Θ=90°

Ab/Ac	Values for the branch coefficient								
	Qb / Qc								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.1	1.2	0.62	0.8	1.28	1.99	2.92	4.07	5.44	7.02
0.2	4.1	1.2	0.72	0.62	0.66	0.8	1.01	1.28	1.6
0.3	8.99	2.4	1.2	0.81	0.66	0.62	0.64	0.7	0.8
0.4	15.89	4.1	1.94	1.2	0.88	0.72	0.64	0.62	0.63
0.5	24.8	6.29	2.91	1.74	1.2	0.92	0.77	0.68	0.63
0.6	35.73	8.99	4.1	2.4	1.62	1.2	0.96	0.81	0.72
0.7	48.67	12.19	5.51	3.19	2.12	1.55	1.2	0.99	0.85
0.8	63.63	15.89	7.14	4.1	2.7	1.94	1.49	1.2	1.01
0.9	80.6	20.1	8.99	5.13	3.36	2.4	1.83	1.49	1.2

As/Ac	Values for the coefficient of continuation of the straight section								
	Qs / Qc								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.1	0.13	0.16							
0.2	0.2	0.13	0.15	0.16	0.28				
0.3	0.9	0.13	0.13	0.14	0.15	0.16	0.2		
0.4	2.88	0.2	0.14	0.13	0.14	0.15	0.15	0.16	0.34
0.5	6.25	0.37	0.17	0.14	0.13	0.14	0.14	0.15	0.15
0.6	11.88	0.9	0.2	0.13	0.14	0.13	0.14	0.14	0.15
0.7	18.62	1.71	0.33	0.18	0.16	0.14	0.13	0.15	0.14
0.8	26.88	2.88	0.5	0.2	0.15	0.14	0.13	0.13	0.14
0.9	36.45	4.46	0.9	0.3	0.19	0.16	0.15	0.14	0.13

p = Loss Charge (in.wg)
C = Coefficient of loss
V = Velocity (fpm)

$$\triangle p = \{ 9.63\ c\ [\tfrac{V}{196.85}] \} \frac{0.004026}{16}$$

Qc = Inlet air flow (cfm) Dc = Inlet Diameter (Ft) Ac = Inlet Area (Ft^2)
Qb = Branch air flow (cfm) Db = Branch Diameter (Ft) Ab = Branch Area (Ft)
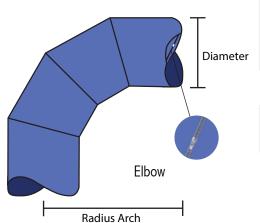Qs = After Branch air flow (cfm) Ds = Diameter After Branch (Ft) As = Area After Branch (Ft)

Diameter

Elbow

Radius Arch

Elbow	Co				
	Radius Arch / Diameter				
	0.5	0.75	1	1.5	2
Made of 4 parts	0.9	0.5	0.37	0.27	0.24

Θ	45°	90°
kΘ	0.6	1

$$\triangle p = \{ 9.63\ c\ [\tfrac{V}{196.85}] \} \frac{0.004026}{16}$$

△p = Loss Charge (in.wg)
C = Coefficient of loss
V = Velocity (fpm)

Reduction/Transition

Reduction

Ai/Af	θ								
	10	15	20	30	45	60	90	120	150
0.06	0.21	0.29	0.38	0.6	0.84	0.88	0.88	0.88	0.88
0.1	0.21	0.28	0.38	0.59	0.76	0.8	0.83	0.84	0.83
0.25	0.16	0.22	0.3	0.46	0.61	0.68	0.64	0.63	0.62
0.5	0.11	0.13	0.19	0.32	0.33	0.33	0.32	0.31	0.3
1	0	0	0	0	0	0	0	0	0
2	0.2	0.2	0.2	0.2	0.22	0.24	0.48	0.72	0.96
4	0.8	0.64	0.64	0.64	0.88	1.12	2.72	4.32	5.6
6	1.8	1.44	1.44	1.44	1.98	2.52	6.48	10.1	13
10	5	5	5	5	6.5	8	19	29	37

p = Loss Charge (in.wg)
C = Coefficient of loss
V = Velocity (fpm)

$$\triangle p = \{\ 9.63\ c\ [\tfrac{v}{196.85}]\ \}\ 0.004026$$
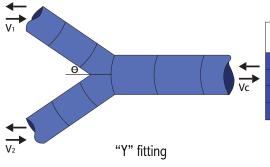
Ai = Inicial Area (ft^2)
Af = Final Area (ft^2)
Di = Inicial Diameter (ft)
Df = Final Diameter (ft)

$$A_i = \frac{D_i^2}{4} \qquad A_f = \frac{D_f^2}{4}$$

Y Fitting

"Y" fitting

θ	Exit Speed / Entry Speed												
	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8	2
15	0.81	0.65	0.51	0.38	0.28	0.2	0.11	0.06	0.14	0.3	0.51	0.76	1
30	0.84	0.69	0.56	0.44	0.34	0.26	0.19	0.15	0.15	0.3	0.51	0.76	1
45	0.87	0.74	0.63	0.54	0.45	0.38	0.29	0.24	0.23	0.3	0.51	0.76	1
60	0.9	0.82	0.79	0.66	0.59	0.53	0.43	0.36	0.33	0.39	0.51	0.76	1

$\triangle$p = Loss Charge (in.wg)
C = Coefficient of loss
V = Velocity (fpm)
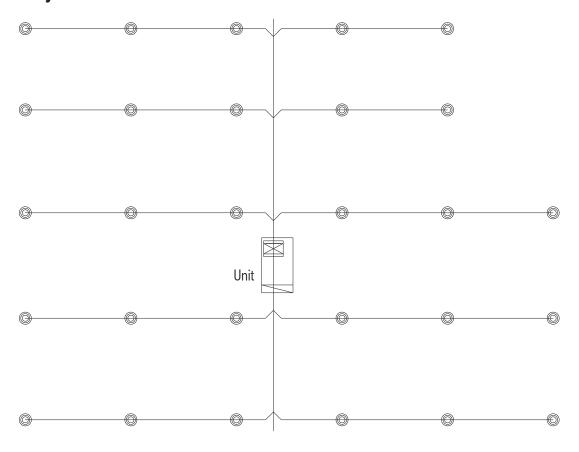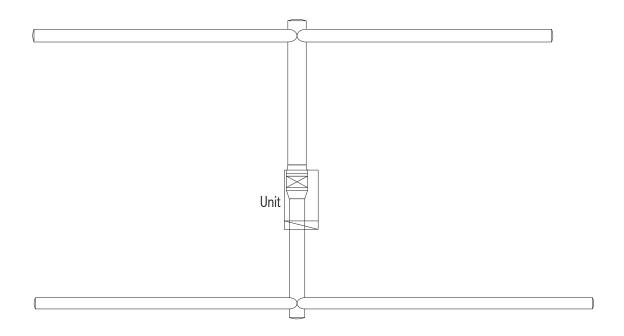
$$\triangle p = \{\ 9.63\ c\ [\tfrac{v}{196.85}]\ \}\ 0.004026$$

Traditional Metal Layout

Fabric Layout
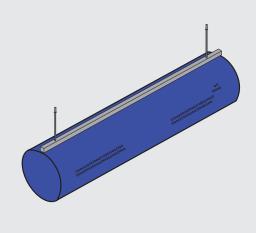
Choosing your diameter

The optimal shape to transport a fluid is circular, since it has the largest area of conduction and the smallest surface friction.
However, for aesthetic cases or problems with limited space, different shapes can be used such as: Circular, Half-Round, Quarter-Round and Elliptical duct.
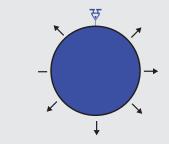
Diameters are determined by

- Inlet Velocity
- Noise Requirements
- Space Requirements

Diameter		Inlet Velocity							
		1000 fpm	5.1 m/s	1400 fpm	7.1 m/s	1600 fpm	8.1 m/s	2000 fpm	10.2 m/s
		Air Flow							
in	mm	CFM	L/sec	CFM	L/sec	CFM	L/sec	CFM	L/sec
8	203	349	165	489	231	559	264	698	329
10	254	545	257	764	360	873	412	1991	515
12	305	785	371	1100	519	1257	593	1571	741
14	356	1069	505	1497	706	1710	807	2138	1009
16	406	1396	659	1955	923	2234	1054	2793	1318
18	457	1767	834	2474	1168	2827	1334	3534	1668
20	508	2182	1030	3054	1441	3491	1647	4363	2059
22	559	2640	1246	3696	1744	4224	1993	5280	2492
24	610	3142	1483	4398	2076	5027	2372	6283	2965
26	660	3687	1740	5162	2436	5899	2784	7374	3480
28	711	4276	2018	5986	2825	6842	3229	8552	4036
30	762	4909	2317	6872	3243	7854	3707	9817	4633
32	813	5585	2636	7819	3690	8936	4217	11170	5272
34	864	6305	2976	8827	4166	10088	4761	12610	5951
36	914	7069	3336	9896	4670	11310	5338	14137	6672
38	965	7876	3717	11026	5204	12601	5947	15752	7434
40	1016	8727	4119	12217	5766	13963	6590	17453	8237
42	1067	9621	4541	13470	6357	15394	7265	19242	9081
44	1118	10559	4983	14783	6977	16895	7973	21118	9967
46	1168	11541	5447	16157	7625	18466	8715	23082	10893
48	1219	12566	5931	17593	8303	20106	9489	25133	11861
50	1270	13635	6435	19090	9009	21817	10296	27271	12870
52	1321	14748	6960	20647	9744	23597	11136	29496	13921
54	1372	15904	7506	22266	10508	25447	12010	31809	15012
56	1422	17104	8072	23946	11301	27367	12916	34208	16145
58	1473	18348	8659	25687	12123	29356	13855	36696	17318
60	1524	19635	9267	27489	12973	31416	14827	39270	18533
62	1575	20966	9895	29353	13853	33545	15832	41932	19789
64	1626	22340	10543	31276	14761	35744	16869	44680	21087
66	1676	23758	11213	33262	15698	38013	17940	47517	22425
68	1727	25220	11903	35308	16664	40352	19044	50440	23805
70	1778	26725	12613	37415	17658	42761	20181	53451	25226
72	1829	28274	13344	39584	18682	45239	21350	56549	26688
74	1880	29867	14096	41814	19734	47787	22553	59734	28191
76	1930	31503	14868	44104	20815	50405	23789	63006	29736
78	1981	33183	15661	46456	21925	53093	25057	66366	31321
80	2032	34907	16474	48869	23064	55851	26359	69813	32948
82	2083	36674	17308	51343	24231	58678	27693	73347	34616
84	2134	38485	18163	53878	25428	61575	29060	76969	36325
86	2184	40339	19038	56474	26653	64542	30461	80678	38076
88	2235	42237	19934	59132	27907	67579	31894	84474	39867
90	2286	44179	20850	61850	29190	70686	33360	88357	41700
92	2337	46164	21787	64630	30502	73862	34859	92328	43574
94	2388	48193	22745	67470	31842	77109	36391	96386	45489
96	2438	50265	23723	70372	33212	80425	37956	100531	47445
98	2489	52382	24721	73334	34610	83811	39554	104763	49443
100	2540	54542	25741	76358	36037	87266	41185	109083	51481

Circular

Half Round
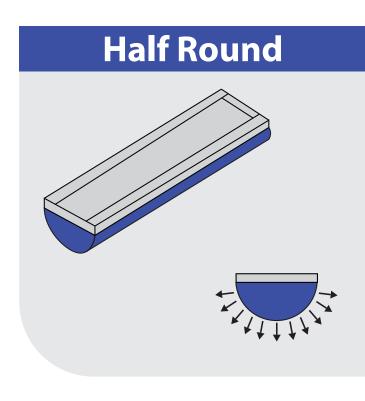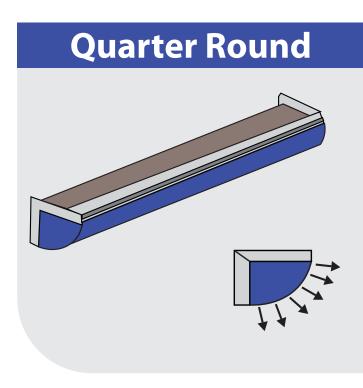
Round Inlet Diameter		Half-Round Size		Maximum Inlet Velocity					
in	mm	in	mm	1000 fpm	5.1 m/s	1400 fpm	7.1 m/s	1600 fpm	8.1 m/s
		(d x r)	(d x r)	CFM	L/s	CFM	L/s	CFM	L/s
6	152	8 x 4	203 x 102	175	82	244	115	279	131
8	203	10 x 5	254 x 127	273	128	382	180	436	205
10	254	12 x 6	305 x 152	393	185	550	259	628	295
10	254	14 x 7	356 x 178	535	251	748	352	855	402
12	305	16 x 8	406 x 203	698	328	977	459	1117	525
14	356	18 x 9	457 x 229	884	415	1237	581	1414	665
16	406	20 x 10	508 x 254	1091	513	1527	718	1745	820
16	406	22 x 11	559 x 279	1320	620	1848	869	2112	993
18	457	24 x 12	610 x 305	1571	738	2199	1034	2513	1181
20	508	26 x 13	660 x 330	1844	867	2581	1213	2950	1387
20	508	28 x 14	711 x 356	2138	1005	2993	1407	3421	1608
22	559	30 x 15	762 x 381	2454	1153	3436	1615	2927	1846
24	610	32 x 16	813 x 406	2793	1313	3910	1838	4468	2100
26	660	34 x 17	864 x 432	3153	1482	4414	2075	5044	2371
26	660	36 x 18	914 x 457	3534	1661	4948	2326	5655	2658
28	711	38 x 19	965 x 483	3938	1851	5513	2591	6301	2961
30	762	40 x 20	1016 x 508	4363	2051	6109	2871	6981	3281

Quarter Round
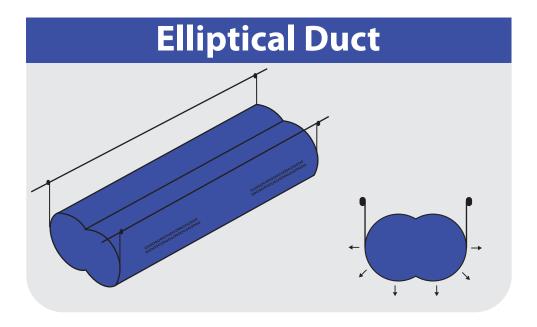
Round Inlet Diameter		Quarter-Round Size		Maximum Inlet Velocity					
in	mm	in	mm	1000 fpm	5.1 m/s	1400 fpm	7.1 m/s	1600 fpm	8.1 m/s
		(r x r)	(r x r)	CFM	L/s	CFM	L/s	CFM	L/s
4	102	4 x 4	102 x102	87	41	122	57	140	66
6	152	5 x 5	127 x 127	136	64	191	90	218	102
6	152	6 x 6	152 x 152	196	92	275	129	314	148
8	203	7 x 7	178 x 178	267	125	374	176	428	201
8	203	8 x 8	203 x 203	349	164	489	230	559	263
10	254	9 x 9	229 x 229	442	208	619	291	707	332
10	254	10 x10	254 x 254	545	256	764	359	873	410
12	305	11 x 11	279 x 279	660	310	924	434	1056	496
12	305	12 x 12	305 x 305	785	369	1100	517	1257	591
14	356	13 x 13	330 x 330	922	433	1290	606	1475	693
14	356	14 x 14	356 x 356	1069	502	1497	704	1710	804
16	406	15 x 15	381 x 381	1227	577	1718	807	1963	923
16	406	16 x 16	406 x 406	1396	656	1955	919	2234	1050
18	457	17 x 17	432 x 432	1576	741	2207	1037	2522	1185
18	457	18 x 18	457 x 457	1767	830	2474	1163	2827	1329
20	508	19 x 19	483 x 483	1969	925	2757	1296	3150	1481
20	508	20 x 20	508 x 508	2182	1026	3054	1435	3491	1641

13
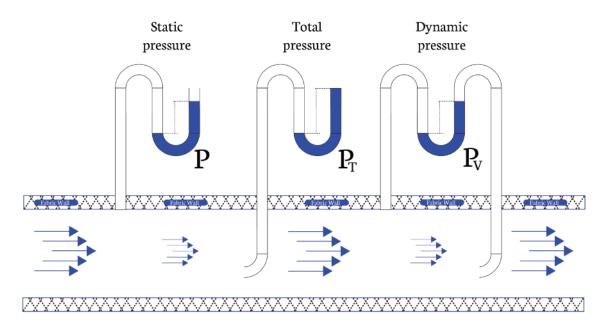
| Diameter				Maximum Inlet Velocity					
Size (w x h)		Equivalent Round		1000 fpm	5.1 m/s	1400 fpm	7.1 m/s	1600 fpm	8.1 m/s
in	mm	in	mm	CFM	L/s	CFM	L/s	CFM	L/s
47 x 11	1190 x 280	24	610	3142	1483	4398	2076	5027	2373
50.75 x 12	1290 x 300	26	660	3687	1740	5162	2436	5899	2784
54.75 x 12.75	1390 x 320	28	711	4276	2018	5986	2826	6842	3229
58.5 x 13.75	1490 x 350	30	762	4909	2317	6872	3244	7854	3707
62.25 x 14.75	1580 x 370	32	813	5585	2636	7819	3691	8936	4218
66.25 x 15.5	1680 x 390	34	864	6305	2976	8827	4166	10088	4762
70 x 16.5	1780 x 420	36	914	7069	3336	9896	4671	11310	5338
73.75 x 17.25	1870 x 440	38	965	7876	3717	11026	5204	12610	5948
77.75 x 17.25	1970 x 460	40	1016	8727	4119	12217	5767	13963	6590
81.5 x 19	2070 x 480	42	1067	9621	4541	13470	6358	15394	7266
85.25 x 20	2170 x 510	44	1118	10559	4984	14783	6978	16895	7974
89.25 x 20	2270 x 530	46	1168	11541	5447	16157	7626	18466	8716
93 x 21.75	2360 x 550	48	1219	12566	5931	17593	8304	20106	9490

Elliptical Duct

Design Pressure
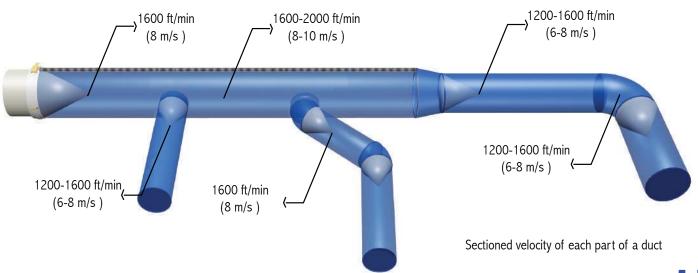
SoftDucts, LLC. air diffusers are designed from 0.25" w.g. minimum to 5" (or more), with 0.5" as the standard. SoftDucts could provide underground ventilation projects upon request with higher pressure for the mining industry.

Static pressure

Velocity within a SoftDuct

-1100-1200 ft/min for Low Noise Applications
-1600 ft/min for Systems with Fittings
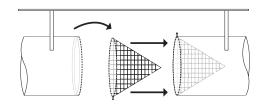-1800 ft/min for Straight Runs
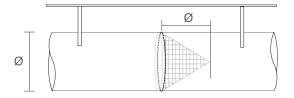-2000 ft/min for Special Case Straight Runs

1600 ft/min (8 m/s)

1600-2000 ft/min (8-10 m/s)

1200-1600 ft/min (6-8 m/s)

1200-1600 ft/min (6-8 m/s)

1200-1600 ft/min (6-8 m/s)

1600 ft/min (8 m/s)

Sectioned velocity of each part of a duct

15

Standard Cones

Complementary pieces that are placed at the beginning of each duct to counteract the force with which air enters the Softduct and eliminate turbulence, they are also placed after each change of direction, for example, after elbows and grafts or after each diameter change (reductions). They are provided in order to reduce the turbulence generated by changes in the trajectory obtaining a laminar air flow. The cones are attached to the ducts by means of a plastic closure and are completely removable.

Standard cone
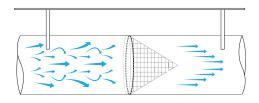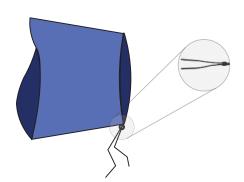
Cone Instaling

Cone is incorporated by placing a zipper.
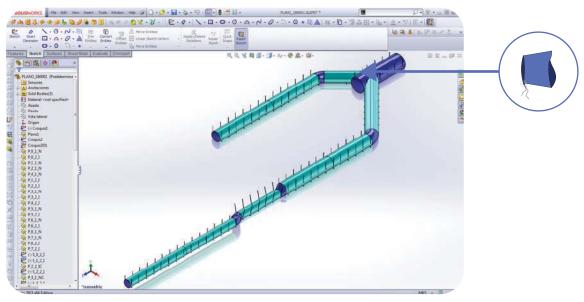
Cone length is according to duct diameter.

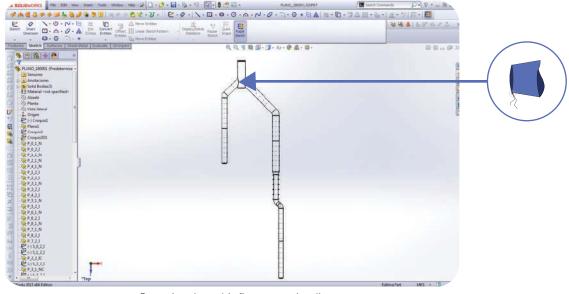Cone diminishes inside duct turbulence reaching a linear flow.

Adjustable Flow Cones

Designed to be placed in strategic points where you can vary the flow rate in a certain area, or when the amount of air to pass in a duct is not completely defined. They consist of a drawstring that can be adjusted manually to open or close the passage of air; Whether more or less air flow is required, with the variable flow cone can solve problems of turbulence, low pressure, overpressure or even when the original duct changes its length or diffusing area.
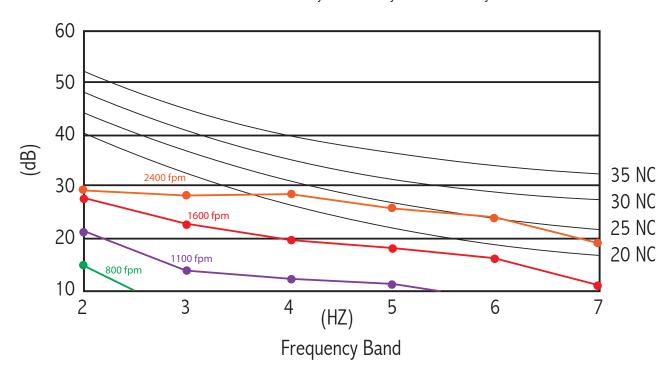

Duct drawing with flow cone detail

Duct drawing with flow cone detail

Noise of a SoftDuct is mostly controlled by the inner velocity

Sound Pressure Levels		
Sounds	dB	Examples
Very Loud	90	Very loud factory
	80	
Loud	70	Noisy office Suburban railway Typewriter Radio set at full volume Workshop
Moderate	60	Big store Average office Silent vehicle Quiet office Averahe household
	50	
Soft	40	Public library Rural road Quiet conversation Rustling paper Human whistle
	30	
Very Soft	20	Quiet church Silent night in the countryside Soundproofed Rooms
	10	

18

3

Fabric Types

DATA SHEET 06-19-BENELUX PREMIUM MATERIAL

Textile material: 100% Polyester

Weight: 6.19 oz/yd2, 210 g/m2

Tear Strength NMX-A-109-INNTEX-2005

Warp: 12 lbf / 57.5 N

Weft: 6 lbf / 29.1 N

Tensile Strength NMX-A-059/2-INNTEX-2008

Warp: 314 lbf / 1400 N

Weft: 179 lbf / 800 N

Permeability ASTM-D737-04: 0.82 cfm / sqft

Vertical Flammability ASTM-D-6413-08

Warp Char Length: 5.64 in / 143.4 mm

Weft Char Length: 4.49 in / 114.1 mm

Warp After Flame: 3 s

Weft After Flame: 0,0 s

Warp Flash Fire Exposure: 0,0 s

Weft Flash Fire Exposure: 0,0 s

Flammability (NFPA, 701): Passed

Others: HVAC Application

Fabric made in

White
Pantone 11-0601 TCX

Red
Pantone 18-1661 TCX

Blue
Pantone 18-3945 TCX

Gray Oxford
Pantone 18-3905 TCX

Black
Pantone Black

CLASSIFIED UL® 2518

10 years WARRANTY

Permeability

0.4 Wg	0.48 Wg	0.56 Wg	0.72 Wg	0.88 Wg	1.04 Wg	
0.079	0.094	0.112	0.147	0.164	0.182	CFM/Ft

Air pressure

0.4 Wg	0.48 Wg	0.56 Wg	0.72 Wg	0.88 Wg	1.04 Wg	
16.4	18.6	22.8	28.3	30	32.9	m3/m2/h

CFM/Ft²

m3/m2/h

SoftDucts Benelux Premium by DTI

Area of Applications			
Showrooms	Sports Halls	Vehicle Workshops	Schools
Supermarkets	Fitness Studios	Conference Halls	Child Care Facilities
Department Store	Swimming Pools	Offices	Laboratories
Museums	Light Industry	Sound Studios	Food Industry

DATA SHEET 03-67-POLY 4 MATERIAL

Textile material: Polyester NK

Weight: 124.5 g/m2. 3.67 oz/yd2

Tear Strength NMX-A-109-INNTEX-2012

Warp: 4 lbf / 17 N

Weft: 3 lbf / 15 N

Tensile Strength NMX-A-059/1-INNTEX-2008

Warp: 247 lbf / 1100 N

Weft: 247 lbf / 1100 N

Permeability: ASTM-D-737-04, valor 1.2 CFM/SQFT

Vertical Flammability ASTM-D-6413M-2015

Char length: 91 mm

After flame: 0,0s

Flash fire exposure: 0,0s

Temperature

Máxima: 140˚F

Minima: 14˚ F

Fabric made in

White
Pantone 11-0601 TCX

Yellow
Pantone 14-0760 TCX

Blue
Pantone 19-4050 TCX

Red
Pantone 18-1661 TCX

Green
Pantone 148-8 TCX

Pearl Gray
Pantone 15-4305 TCX

Poly 4 is a high-quality permeable material that provides outstanding hygiene results for ventilation systems in industries with environments that require high hygienic standards.

Permeable Fabric

5 years WARRANTY

SoftDucts Poly 4 by DTI

Area of Applications			
Showrooms	Sports Halls	Vehicle Workshops	Schools
Supermarkets	Fitness Studios	Conference Halls	Child Care Facilities
Department Store	Swimming Pools	Offices	Laboratories
Museums	Light Industry	Sound Studios	Food Industry

SoftDucts, LLC.
AIR FLOW
OPTIMIZERS
By DTI

DATA SHEET 08-09-G1 MATERIAL

Textile material: 100% Polyester

Weight: 274.3 g/m2, 8.09 oz/yd2

Tear Strength ISO 3377-1-2002

Warp: 96.1 N

Weft: 41.2 N

Permeability: ASTM-D1.25CMF SQFT a 0.5 Inwg

Tensile strength NMX-A-059/1-INNTEX-2008

Warp: 560.0 N

Weft: 2 200.0 N
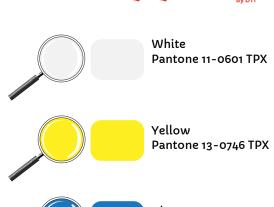
Flame resistance ASTM-D-6413M-2015

Warp: 0,0 s

Time after the flame: 0,0 s (Self extinguishing)

Shine time: 0,0 s

Weft: 0,0 s

Time after the flame: 0,0 s (Self extinguishing)

Shine time: 0,0 s

SoftDucts, LLC.
AIR FLOW
OPTIMIZERS
By DTI

White
Pantone 11-0601 TPX

Yellow
Pantone 13-0746 TPX

Blue
Pantone 19-4056 TPX

Pearl Gray
Pantone 16-000 TPX

Fabric made in:

5 years WARRANTY

SoftDucts G1 by DTI

Area of Applications			
Showrooms	Sports Halls	Vehicle Workshops	Schools
Supermarkets	Fitness Studios	Conference Halls	Child Care Facilities
Department Store	Swimming Pools	Offices	Laboratories
Museums	Light Industry	Sound Studios	Food Industry

SoftDucts, LLC.
AIR FLOW
OPTIMIZERS
By DTI

DATA SHEET 00-10-AEROFLEX MATERIAL

Textile material: 100% Coated polyester of PVC

Weight: 10 oz/yd2, 3509 g/m2

Tear Strength NMX-A-109-INNTEX-2005

Warp: 11 lbf / 52 N

Weft: 6 lbf / 27 N

Tensile Strength NMX-A-059/2-INNTEX-2008

Warp: 128 lbf / 570 N

Weft: 101 lbf / 450 N

Permeability ASTM-D737-04: NONE

Vertical Flammability ASTM-D-6413-08

Warp Char Length: 6.46 in / 164.1 mm

Weft Char Length: 6.50 in / 165.3mm

Warp After Flame: 0,0 s

Weft After Flame: 0,0 s

Warp Flash Fire Exposure: 0,0 s

Weft Flash Fire Exposure: 0,0 s

Flammability (NFPA, 701): Passed

Others: Underground Mining Application

Fabric made in

White
Pantone 705
Ral 9003

Yellow
Pantone 1235
Ral 1023

Blue
Pantone 3015
Ral 5015

Non-Permeable Fabric

1 year WARRANTY

SoftDucts Aeroflex 10 by DTI

Area of Applications
Green houses
Farms
Mining

How to choose your color

The value of colors in branding

Colors play a significant role in purchases and branding; countless studies have found that up to 90% of snap judgments made about products can be based on color alone (depending on the product).

In regards to brand awareness, results from studies have shown that the relationship between a brand and color depends largely on the perceived appropriateness of the color being used for the particular brand (in other words, does the color "fit" or adapt to what is being sold). The use of colors then becomes an important role when creating a brand identity, new brands can benefit greatly from specifically targeted logo colors that ensure contrast from competitors and that blends into what is being sold. Certain colors generally align with specific traits (e.g., brown with ruggedness, purple with sophistication, and red with excitement).

What values or emotions each color? This is one of the most important points at the time to build our visual message in fabric ducts. Worth noting that the psychological impact of color it is subjective since not everyone reacts in the same way before each one of the colors However, if There are certain generalities about way we perceive the colors and the emotions that they transmit to us.

White:

White is color that is associated with complete and pure, making it a perfect example of purity, cleanliness, safety and peace. White can also represent new beginnings, providing a blank slate. Since white has an equal balance of all the colors, it can have several meanings, with equality outweighing them all. White is a great color for simplicity, cleanliness, clarity, modernism and idea creation and is an ideal choice when adding a logo or brand; however, avoid using too much white as it can reference to isolation, loneliness, and emptiness. This color is most prominent in hospitals, clean rooms, pharmacies, food production facilities and any space where cleanliness and minimalism are a focus point.

Positive Implications	Negative Implications
Cleanness	Coldness
Clarity	Unfriendliness
Purity	Elitism
Simplicity	Isolation
Sophistication	Emptiness
Freshness	

White

Red:

Arguably the most dynamic of colors, red's effects on the psyche are not subtle. Hence, it's important that it be used correctly for branding purposes. Red has been shown to reduce analytical thinking it accelerates and intensifies our reactions. For this reason, clearance sale prices are put on red tags. Athletes competing against opponents wearing red are more likely to lose, and students tend to perform worse on tests if exposed to red beforehand. Red, after all, is the color of stop signs, grammatical mistakes, and negative finances. Red has the longest wavelength of all the colors, and so appears to be nearer than it actually is. It is the color of passion and romance. Red tends to increase the appetite and is used in a range of colorful terms centered on excitement: red hot, red handed, paint the town red, seeing red. Other emotional traits linked to red include the following.

Positive Implications	Negative Implications
Power	Anger
Passion	Danger
Energy	Warning
Fearlessness	Defiance
Strength	Aggression
Excitement	Pain

Red

Blue:

Blue is associated for its trust and dependability. It's reliable, responsible, and mentally soothing. For that reason alone, it's one of the most liked colors across the entire world. Unlike red, blue lends a more mental reaction rather than physical that allows us to destress, calm down, and think of the most ideal situation. Unfortunately, it also is one of the last colors to be seen, and can be perceived as distant, cold, or unfriendly if used it great amounts.

Overall, blue is a well-liked color that can bring a sense of calmness and trust when building relationships, especially in marketing.

Blue is commonly used in: Workout facilities, hospitals, spas and Tech companies.

Positive Implications	Negative Implications
Trust	Coldness
Loyalty	Aloofness
Dependability	Emotionless
Logic	Unfriendliness
Serenity	Uncaring
security	Unappetizing

Yellow:

In color psychology, the color meaning for yellow revolves around sunshine. It evokes feelings of happiness, positivity, optimism, and summer but also of deceit and warning. Some brands choose to use a cheerful yellow color as the background or border for their website design. Because it has a relatively long wavelength, it is the most visible color; it's stimulating and attention grabbing. Traffic signs, advertisements, legal pads, and certain warning labels take advantage of this fact. Other feelings evoked by yellow include:

Positive Implications	Negative Implications
Optimism	Irrationality
Warmth	Fear
Happiness	Caution
Creativity	Anxiety
Intellect	Frustration
Extraversion	Cowardice

Green:

Green is a color that is synonymous with calmness, safety, and freshness. Its various shades can create a unique brand identity for your company. Green tends to be associated with health along with the feelings of peace and serenity. In essence, the brand color green stands for Cleanliness, freshness and renewed energy.

Positive Implications	Negative Implications
Wealth	Boredom
Health	Stagnation
Prestige	Evy
Serenity	Blandness
Generosity	Enervation
Safety	Sickness

Gray:

Gray can be powerfully suggestive, it is modern and sophisticated, a hue that has worked well for technology and luxury brands. Skillful use of gray elicits power and sophistication; it is a clean slate on which bold concepts thrive. It has a serious effect on the colors around it, working both to balance tones and establish negative space in lieu of white. The attributes of gray include:

Positive Implications	Negative Implications
Timelessness	Lack of confidence
Neutrality	Dampness
Reliability	Depression
Balance	Hibernation
Intelligence	Lack of energy
Strength	Dull

Gray

Orange:

Orange is stimulatory, conjuring feelings of excitement, enthusiasm, and warmth. It is a fun, energetic hue found in the branding of sports teams, energy drinks, restaurants and retail stores. Orange is used to draw attention in traffic cones and advertising collateral. Consumers tend to associate the color orange with value and creates feelings of comfort and warmth. Emotions that associate with the color orange comprise the following.

Positive Implications	Negative Implications
Courage	Deprivation
Confidence	Frustration
Warmth	Frivolity
Innovation	Immaturity
Friendliness	Sluggishness
Energy	

Orange

Black:

Black is the total absorption of all color, it is a symbol of power. Black stands for sophistication, weight, and seriousness. Black is timeless and effortlessly stylish. Some psychological attributes of black include the following.

Positive Implications	Negative Implications
Sophistication	Oppression
Security	Coldness
Power	Menace
Elegance	Heaviness
Authority	Evil
Substance	Mourning

Black

Brown:

Brown is made up of constituent hues red and yellow, with a large percentage of black. For this reason, it has much of the same seriousness as black, but with a warmer, softer tone. Brown is sturdy and reliable, the color of earth and abundant in nature. Its psychological attributes include:
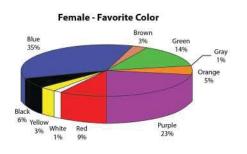
Positive Implications	Negative Implications
Seriousness	Lack of sophistication
Warmth	Conservativeness
Earthiness	Humorlessness
Reliability	Heaviness
Support	Sadness
Authenticity	Dirtiness

Brown
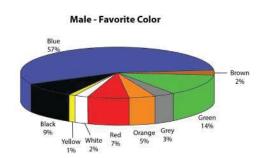
However, it's far more important for a brand's colors to support the personality you want to portray instead of trying to align with a stereotypical color association. Color preferences are also influenced by gender, Joe Hallock's Colour Assignments showcases some clear preferences in certain colors across gender:

COLOR TYPES

PRIMARY   SECONDARY   TERTIARY

COMPLEMENTARY   ANALOGOUS

Female - Favorite Color

Blue 35%
Brown 3%
Green 14%
Gray 1%
Orange 5%
Purple 23%
Red 9%
White 1%
Yellow 3%
Black 6%

Male - Favorite Color

Blue 57%
Brown 2%
Green 14%
Grey 3%
Orange 5%
Red 7%
White 2%
Yellow 1%
Black 9%

The competitive advantage of colors in branding and marketing is clear which is why SoftDucts offers various color options in all of its fibers as well as sublimation of logos and designs in order to meet your exact needs, whether it be to create a new, powerful brand identity that resonates with your target audience or to increase the potential of your existing brand.

MEANINGS

INTENSE, FIRE & BLOOD, ENERGY, WAR, DANGER, LOVE PASSIONATE, STRONG.

SKY, SEA, DEPTH, STABILITY, TRUST MASCULINA, TRANQUIL.

ROYALTY, POWER, NOBILITY, WEALTH, AMBITION DIGNIFIED, MYSTERIOUS.

SUNSHINE, JOY, CHEERFULNESS, INTELLECT, ENERGY ATTENTION-GETTER.

NATURE, GROWTH, FERTILITY, FRESHNESS, HEALING SAFETY, MONEY

WARM, STIMULATING, ENTHUSIASM, HAPPINESS, SUCCESS CREATIVE, AUTUMN.

COOL, PASSIVE

WARM, ACTIVE

Fabric Details

Customization logos

You can customize your SoftDucts by adding to them images, logos or slogans to suit the design of the space they will be installed.

Pantone
17-1641

McCLOSKEY

- **Blue**
- **Yellow**
- **Green**
- **Red**
- **Magenta**
- **Gray**
- **Black**

The following sources are used for the letters, logos and simple one-color images:

Arial- Comic Sans-ARIQ-Magnolia sky-PONY MAKER

Example Textures:

Printing Requirements

In order to provide the best resolution for your printed designd, files must be sent in ai, eps, pdf, jpg or png.
Form and all sources must be converted into vectores.

28

Temperature

SoftDucts, LLC. air diffusers are designed for temperature ranges between 0ºF and 180ºF (-17.8ºC and 82ºC). SoftDucts, LLC. can supply upon request insulated ducts.

The temperature differential (in control terminology, is the difference in temperature between the high event and the low event) will have a very important effect to consider within the design of the air dispersion, since the higher the differential, the greater the "fall" air, precipitating with a smaller extension and a greater velocity of displacement towards the occupied zone.

Because of the density differential, with the cooled air being heavier compared to the warmer air in the room, the room air is displaced below the duct while the supply air continues moving towards the floor. The warm air is driven up to high level where it will not cause any discomfort.

Hot air balloon

"Hot air is less dense than cool air causing the balloon to rise.
The inverse effect happens in air conditioned systems."

Certificates

Standard for Air Dispersion System
UL 2518

UL 2518 covers air-dispersion systems (previously called air-distribution devices) for use in air-conditioning and ventilation systems intended for installation in accordance with ANSI/NFPA 90A, "Installation of Air-Conditioning and Ventilating System", "International Mechanical Code", and the "Uniform Mechanical Code".

Our products have been investigated in accordance with the requirements for surface-burning characteristics, weight, air permeability, mold growth and humidity, erosion, temperature and pressure.

CLASSIFIED

UL®

AIR DISTRIBUTION DEVICE
IN ACCORDANCE WITH FLAMMABILITY REQUIREMENTS
OF NFPA 90A
4KV9

www.softducts.com

Certificate

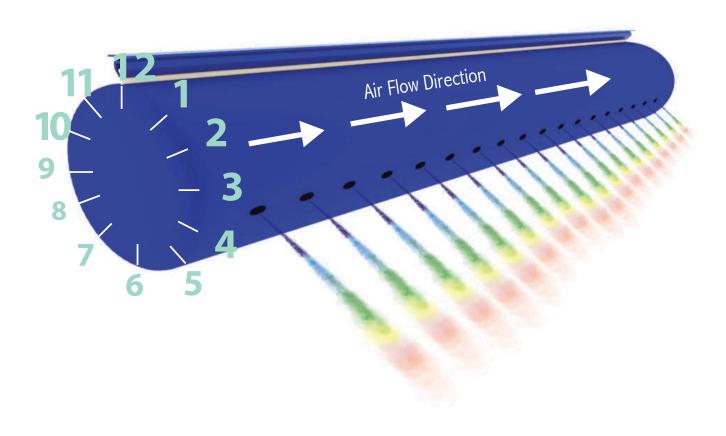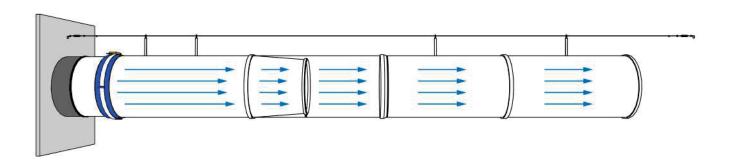**SoftDucts, LLC.**
AIR FLOW
OPTIMIZERS
By DTI

4

Air Dispersion

We have a great diversity of air dispersion systems that can be summarized in three types: Low range, medium range and high range. Being able to offer great flexibility in throw combinations.

This is the correct way to orientate the direction of the existing air from the SoftDuct.

Air Flow Direction

Air Dispersion Ranges

Short Range

∆T: >10°F

∆T: 5 - 10°F
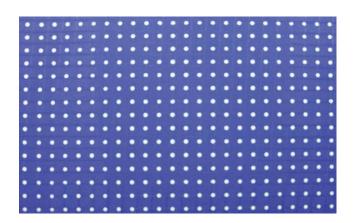
∆T: 0 - 5°F

This system is recommended with air conditioning applications, utilized when large amounts of airflow need to be diffused at a low velocity preventing drafts in the occupied zone, which results in a greater level of comfort. Two primary methods are utilized with Short range applications. The diffusion through micro laser perforation, we can define the permeability that is required on the textile fiber. The micro perforations are calculated both in diameter and in separation between them in order to guarantee that the required permeability on the duct will be obtained, the minimum diameter of the microperforations is 1/64". The second is based on having high permeability fibers that allows a large quantity of air to exit at a low speed by means of a great surface area, the delivery area is tailored made. These systems work excellent at low heights and under thermal conditions of softducts can achieve the desired permeability by means of laser micro perforations that have a diameter of 1/64 "so that we place more or less outlet air according to the requirements of the system.

It is important to realize that airflow in rooms ventilated by short range systems is based on natural air movement, i.e. density differences (cold air displaces warm air).

You can request a simulation to our department of engineering

Utilized in areas where only a comfortable space is desired and not a direct airflow.

Through laser microperforation, we can achieve the permeability desired on the textile fiber.

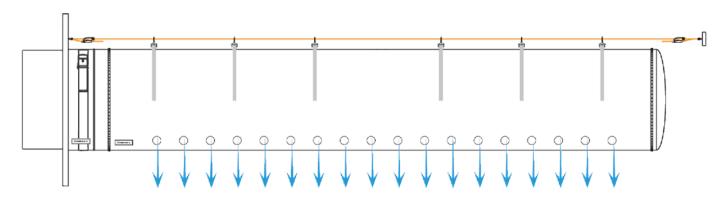velocity of 50ft/min

8 ft

6 ft

Occupation zone

Air Dispersion Ranges

Medium Range

Air dispersion is accomplished by strategically placed orifices made with a precise CO2 laser which cauterizes and eliminates any lose threads. Design is based on required air throw depending on factors like total airflow to diffuse, length of the duct, number of diffusing lines, height above floor, desired distributions of velocities and temperatures, among others. Any pattern and direction are achievable in order to meet desired airflow requirements. This range is recommended for heights of 9ft to 30ft.

This application is based on mixing ventilation and is distinguished by delivering air at a high velocity. During the first air flow rotation the air velocity will be high, but as the quantity of room air that becomes mixed increases, the air velocity will decrease. The delivered air volume will be fully mixed with the room air before it reaches the occupation zone. The supply air is distributed with high initial energy in the form of velocity through orifices with the effect that the air is released into the area instead of being distributed through a permeable surface at low velocity.

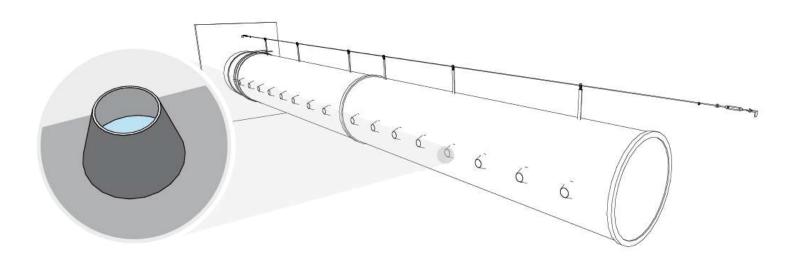| Orifice Size		Design Pressure		Terminal Velocity					
				150 FPM	0.8 m/s	100 FPM	0.5 m/s	50 FPM	0.3 m/s
inches	mm	in w.g	Pa	ft	m	ft	m	ft	m
0.5	12.7	0.5	125	4	1.2	6	1.8	11	3.4
1	25.4	0.5	125	8	2.4	11	3.4	23	7.0
2	50.8	0.5	125	15	4.6	23	7.0	45	13.7
2.5	63.5	0.5	125	19	5.8	28	8.5	57	17.4
3	76.2	0.5	125	23	7.0	34	10.4	68	20.7
4	101.6	0.5	125	30	9.1	45	13.7	91	27.7
5	127	0.5	125	38	11.6	57	17.4	113	34.4

Air Dispersion Ranges

High Range

This system can be composed of two elements; High quality textile nozzles and Multi Directional Aluminum Nozzles. It is characterized by a long throw (up to 60ft) and long penetration distance in order to ventilate large areas.

System of nozzles that allows for a greater reach in the air throw, thus guaranteeing the arrival of air at the average comfort height (5ft). The nozzles used for this system are 100% textile and are integrated as a single element to the duct, avoiding damage(rupture or detachment from the duct) and facilitating the laundering process. The diffusion by textile nozzles consists of maintaining an area of air conduction in the base of the nozzle and reducing it to the exit point while maintaining the velocity.
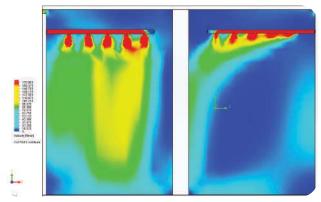

Size	Design Pressure		Throw					
			150 FPM	0.76 m/s	100 FPM	0.51 m/s	50 FPM	0.25 m/s
	in w.g	Pa	ft	m	ft	m	ft	m
1in diameter	0.50	125	7	2.1	10	3.0	20	6.1
2in diameter	0.50	125	14	4.3	21	6.4	43	13.1
3in diameter	0.50	125	23	7.0	34	10.4	68	20.7
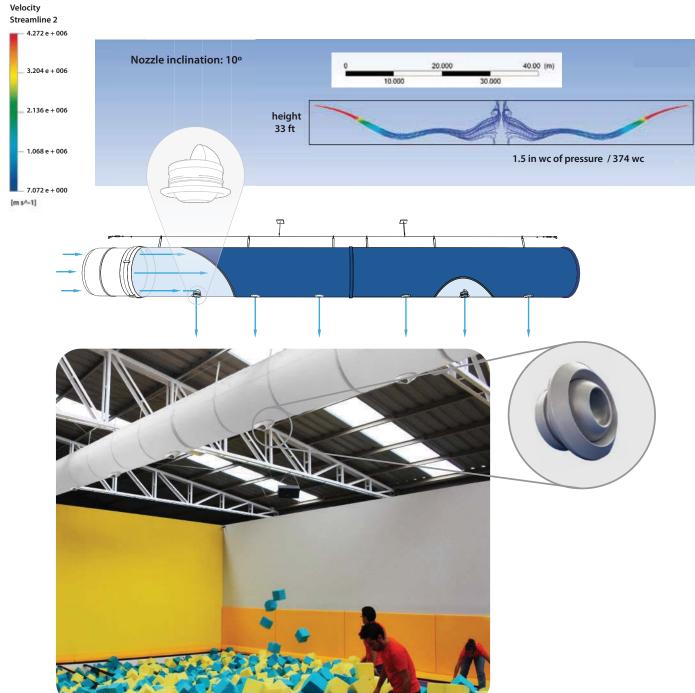
Multi Directional Nozzle

Multi-adjustable aluminum Nozzles are used for the injection of hot or cold air in ventilation and air conditioning systems where a long throw, high induction and low noise levels are required. The air is diffused through aluminum nozzles of varying sizes that are inserted directly on the fabric in a linear fashion or along the duct where distribution is necessary. The nozzles allow the direction of the air jet to be freely adjusted up to 30º in any direction in relation to the nozzles centerline.
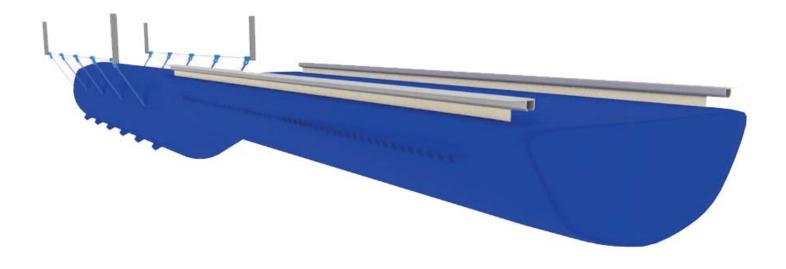
**Velocity
Streamline 2**

4.272 e + 006	
3.204 e + 006	
2.136 e + 006	
1.068 e + 006	
7.072 e + 000	

[m s^-1]

Nozzle inclination: 10º

0	20.000	40.00 (m)
	10.000	30.000

**height
33 ft**

1.5 in wc of pressure / 374 wc

Hybrid Systems

Diffusion system that combines a low-range system with a high-range system, this system is used in areas with high ΔT, the principle of its operation is based on the combination of strategically placed orifices to achieve a dispersion of air that can maintain a comfortable environment in specific occupation areas taking care of the throws and the thermal sensation. When designing the combination of orifices, the low-range orifices disperses the cold air in an area closer to the duct, preventing the air coming from the high range orifices from "falling" immediately and ensuring that the air reaches a higher distance. This system offers a wide versatility and adaptability to occupational areas with very specific ventilation needs in which we can have areas with very low speed ventilation and areas where more impulse is required.

5

Cable

The duct systems will be send through a carrier service. The shipments may consist of one or more boxes, depending on the size of the project. Larger orders will be shipped in cardboard packaging through a forwarding agent.
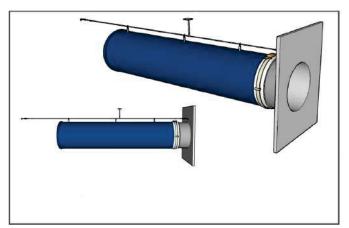
Each length of SoftDuct will be packed in individual plastic bags and labeled according to the size and number of the section. Other labels or indications will be incorporated for the larger and more complex systems.
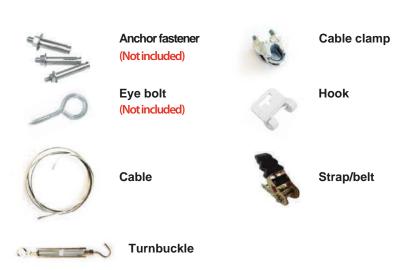
The package will contain a layout of the entire project, marking each of the specific parts with colors.

- Identification Label

The sections of the SoftDuct will have a tag indicating the size and the section number, both on a special label that is always in a visible place, as well as the type of fabric and the type of diffusion.
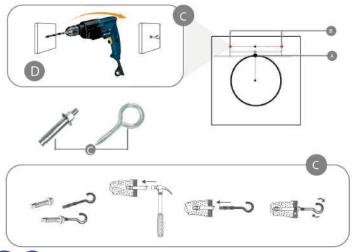
We do not include include some of the components indicated unless they are requested by the client and can have an increment on the cost.
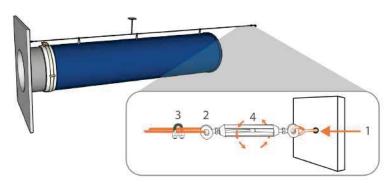

Anchor fastener (Not included)

Eye bolt (Not included)

Cable

Cable clamp

Hook

Strap/belt

Turnbuckle
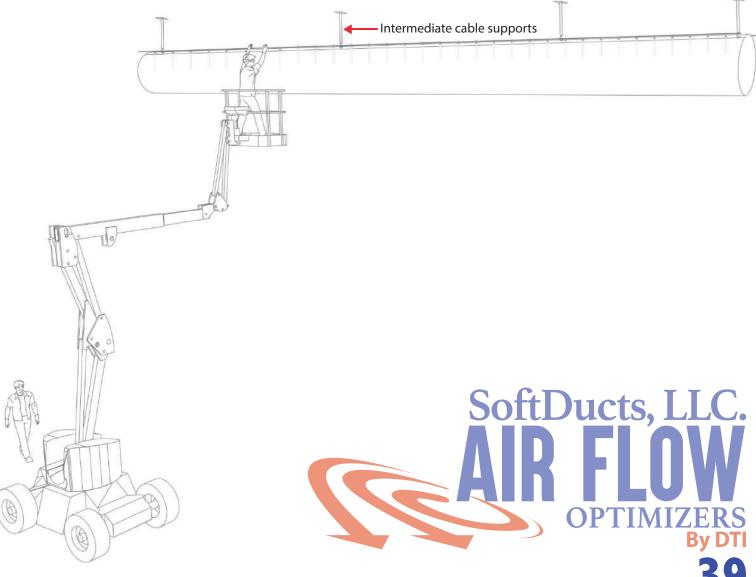
Step 1

-Install cable and intermediante supports.

A) Determine the placement of the cable by marking an imaginary point above the 12:00 position of the SoftDuct.

B) From the marked point measure to the side´s the distance equivalent to the radius of the duct and mark the points where the eye bolts will be fastened into the structure of the building.

C) Drill to insert anchor fastener with hammer and screw in the eye bolt or the preferred fastening means.

D) Do the same for the installation of the second cable.

E) Repeat the process for the oppose end of the duct.
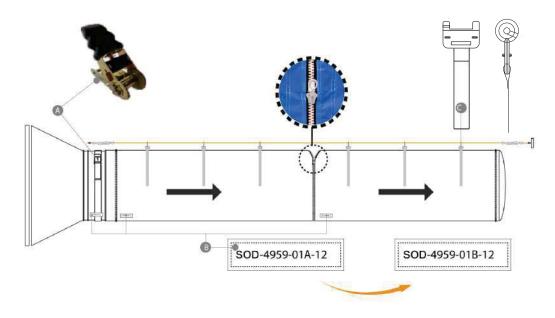
Cable tensioning with turnbuckle.
1) Hook one end of the turnbuckle to the eyebolt.
2) Insert cable through the other and of the turnbuckle.
3) Cable is then fastened with cable clamps.
4) Tighten or loosen turnbuckle to adjust cable as needed.

- Intermediate cable supports.

- SoftDucts recommends to install intermediate cable support at every 13 ft or less to reduce sag of the cable.

-Client needs to notify if they will require additional cable for intermediante supports and this may increase the cost of the project.
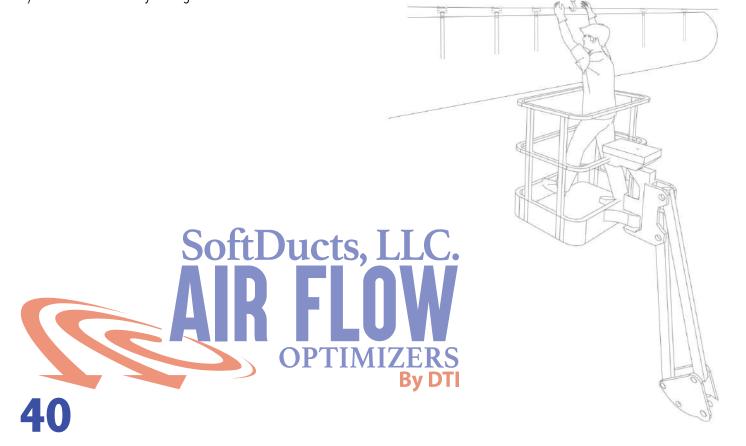
Intermediate cable supports

39

Step 2

-Install SoftDuct system by connecting it to the metal inlet collar and placing the hooks on the cable manually.

SOD-4959-01A-12   SOD-4959-01B-12

A) Locate tha fabric collar using the identification labels as a reference and connect to the metal inlet collar using the strap/belt.

B) Connect each duct section by following the order indicated in the identification labels (Duct sections are connected by means of zipper).
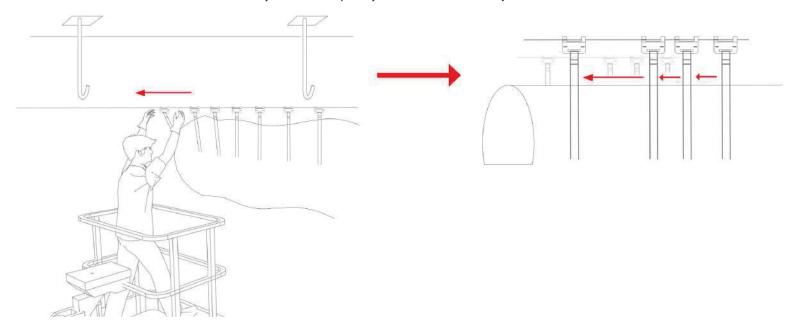
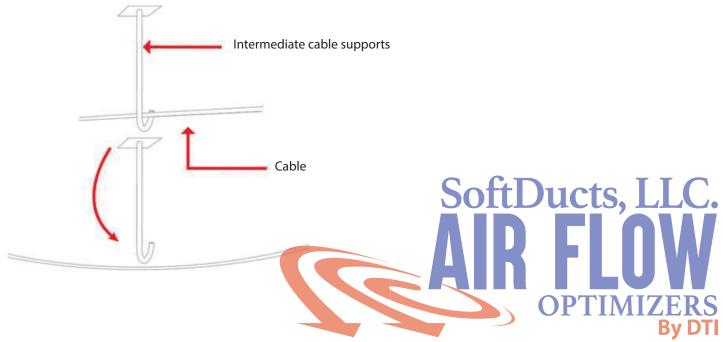C) Place hooks manually throughout the tensioned cable.

Step 3

-Move the hooks towards the end of cable system to completely extend the SoftDuct system.
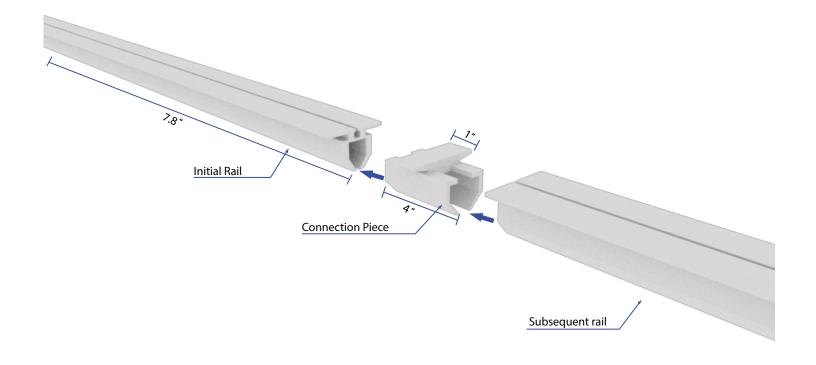
Step 4

-Mount the cable on the intermediate supports

Intermediate cable supports

Cable

Rail PVC

7.8"

Initial Rail

1"

Connection Piece

4"

Subsequent rail
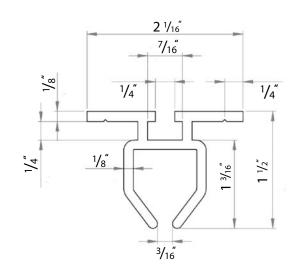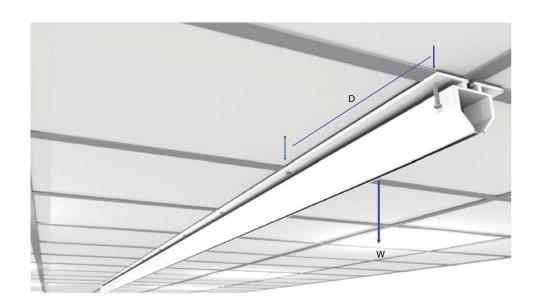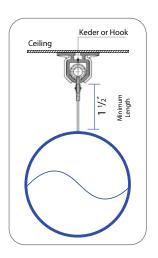
a) With the help of a measuring laser or another tracing element, draw a straight line.
b) Once the rail is fixed, join the connection piece. Position the subsequent rail at the other end of the connection piece.
c) Repeat this procedure until the desired length is reached.
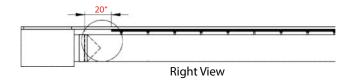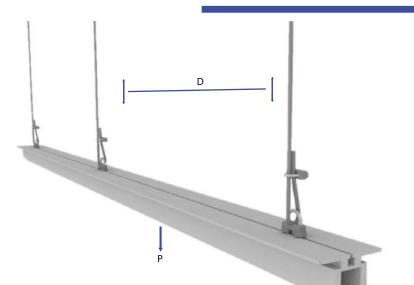
$2 \frac{1}{16}$"

$\frac{7}{16}$"

$\frac{1}{8}$"

$\frac{1}{4}$"

$\frac{1}{4}$"

$\frac{1}{4}$"

$\frac{1}{4}$"

$\frac{1}{8}$"

$1 \frac{3}{16}$"

$1 \frac{1}{2}$"

$\frac{3}{16}$"

Ceiling

Keder or Hook

1 ½"

Minimum Length

Separation between screws / threaded rod

D	2 Ft	3 Ft	4 Ft
W	60 lbs	20 lbs	6 lbs

Maximum weight resistance per feet

Ceiling

20"

Metal Connection End

20"

Right View

D

P

Cable

Clamp

1 ½"

Minimum Length
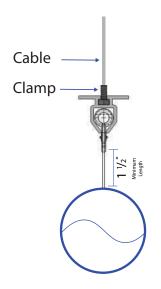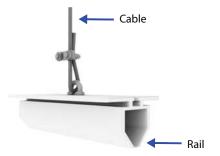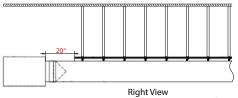
Cable Installation

Cable

Rail

Separation between screws / threaded rod

D	2 Ft	3 Ft	4 Ft
W	60 lbs	20 lbs	6 lbs

Maximum weight resistance per feet

20"

Right View

Rail Weight Support per Diameter

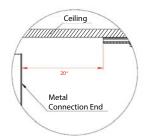| Oz/yd²	6.3	4.0	3.0	7.6	8.8	
	Premium (lbs)	PP (lbs)	Full Color (lbs)	Kristal (lbs)	Pyro (lbs)	Aluminum Ring
Length (Ft)	4					
Diameter						
18	3.16	2.02	1.52	3.79	4.42	0.14
24	4.21	2.70	2.02	5.06	5.90	0.19
30	5.27	3.37	2.53	6.32	7.37	0.24
38	6.67	4.27	3.20	8.01	9.34	0.30
44	7.72	4.94	3.71	9.27	10.81	0.35
50	8.78	5.62	4.21	10.53	12.29	0.39
56	9.83	6.29	4.72	11.80	13.76	0.44
60	10.53	6.74	5.06	12.64	14.75	0.47

SPECIFICATIONS:
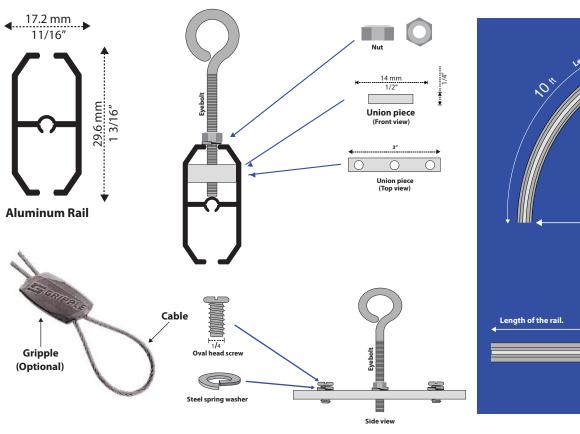
Properties	Measuring Units	Min	Max	Reference
Hardness	Shore "D"	75	81	ASTM D 2240-86 ACA-1-601
Specific Weight		1.44	1.480	ASTM D 792-91 ACA-1-602
Thermal Stability	Mins/ 177° C	100		ASTM D 2115-92 ACA-1-603
Tension Effort	kg/cm2	300		ASTM D 638-96 ACA-1-606

Rail Colors

White

Blue

Red

Yellow

Gray Oxford

Glide Rail 17 mm

17.2 mm
11/16"

29.6 mm
1 3/16"

Aluminum Rail

Gripple
(Optional)

Cable

Nut

Eyebolt

14 mm
1/2"
1/4"

Union piece
(Front view)

3"

Union piece
(Top view)

Oval head screw
1/4

Steel spring washer

Eyebolt

Side view

Length of the curved rail

10 ft

Curved Aluminum Rail

90˚

Length of the rail. **6.5 ft** **Aluminum Rail**

EXAMPLE
of how pieces should be utilized.

5 ft
Piece 1

5 ft
Piece 1

Rail Start

5 ft

6.5 ft
Union (Piece 2)

Piece 1

Piece 2

6.5 ft
Union (Piece 2)

5 ft

Piece 3

6.5 ft
Union (Piece 3)

Glide Rail 24 mm

25 mm

35 mm

Aluminum Rail

Eyebolt

22 mm

1/4"

Union piece
(Front view)

3"

Union piece
(Top view)

Cable

Gripple
(Optional)

1/4
Oval head screw

Steel spring washer

Eyebolt

Side view

Aluminum Rail

6.5 ft

Length of the rail.

EXAMPLE
of how pieces should be utilized.

5 ft

Piece 1

5 ft

Piece 1

5 ft

Rail Start

6.5 ft
Union (Piece 2)

Piece 1

5 ft

6.5 ft
Union (Piece 2)

Piece 3

Piece 2

6.5 ft
Union (Piece 3)

6

Keep the Shape

The internal frame work consists of removable 360-degree aluminum (or plastic) rings that maintain the duct tensioned and taut even when the AHU is not powered on.

Hybrid Hook Hangers
Spaced apart along cable or rail.

Cable (or Rail) Suspension System

Zipper

Cable

Vertical support
(Not Included)

Tumbuckle and cable with clamp

Cross-piece tensioning ring
An aluminum cross-piece ring will be placed at the endcap of the fabric duct system so that it can be connected to a vertical support by means of cable and a tensioner to fully extended and smooth wrinkling.

Aluminum Internal Rings

Removable internal rings by means of Velcro spaced at a very 3´to 5´ft (depending on the diameter). Helps maintain the circular shape of the duct even when the unit is off.

WITH TRACK OR CABLE

1 ROW

2 ROW

Static Free

The antistatic effect can be achieved by means of strategically placed copper wire along the duct and straps. As well as electrically conductive fibers that are designed to achieve dispersion of large amounts of stored energy in the ducts due to the passage of dry air.

Galvanized hook

Galvanized cable

Copper →
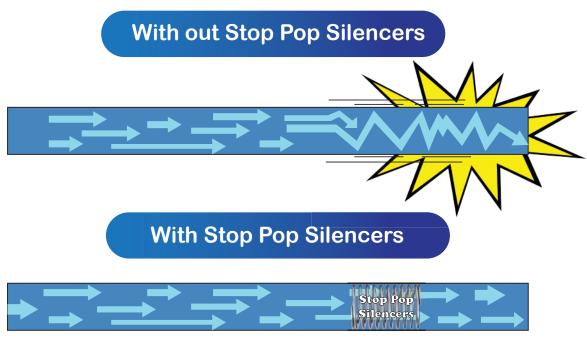
Stop pop

The purpose of this development is to mitigate the abrupt start-up and inflation pop in ventilation systems that do not have a VFD (Variable Frequency Drive).

The inflation pop is considered as a shock wave that is caused by the sudden stop or reduction of the flow of a fluid, this can cause sudden increases in pressure that can damage the end cap of the duct system

With out Stop Pop Silencers

With Stop Pop Silencers

Stop Pop
Silencers

7

AEROLIS CFD
BY DTI
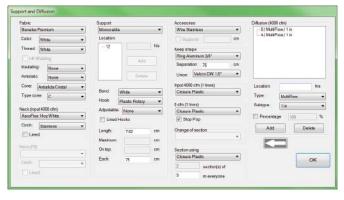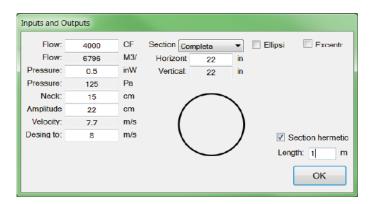
Aerolis CFD is derived from the growing need to anticipate the results of our projects and assure complete product quality to our clients. It is a comprehensive engineering software that executes simulations considering various parameters in order to foresee situations and provide detailed analysis and optimize the performance of projects.
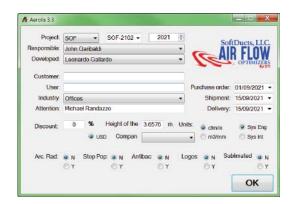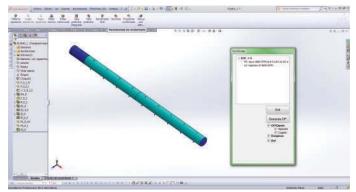
The process begins by collecting general project information including customer name, type of industry, special application needs and installation height. Followed by technical information of the project like air flow, pressure, desired velocity, duct shape and type of application. The software then creates the various sections of a Softduct which can be individually modified from fabric type, color, special application (anti-static and insulated), type of cone, hook attachments, diffusion type and diameter size of orifices.

Subsequently, Aerolis generates 3D detailed drawings with the provided information. Simulations can also be generated with the objective to analyze all possible outcomes and choose the optimal solution.
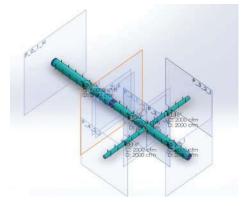
SolidWorks® is a mechanical design automation software that SoftDucts uses as a tool to make the design process of the fabric ducts and its components. The design process starts with a sketching and through the conjunction of the Aerolis software it is possible to quickly perform the models and detailed drawings by using their different operations automatically. Drawings are created from models, or drawing different views in a drawing document.

Another module, within the program, that is used is SolidWorks® Simulation, which is a design analysis system that provides a screen solution for the analysis of speed, temperature, optimization, distribution and behavior of both air inside the duct and in the environment. SolidWorks® Simulation Powered by fast problem-solving programs, it allows solving large problems quickly and anticipates saving time, effort, materials and therefore economic resources in the search for optimal results.

It is an effective tool to test and analyze the operation of products in the field. It is achieved by optimizing the development cycles. Product development cycles are expensive and time-consuming. A product development cycle usually includes the following steps:

● Build the model.
● Construction of a design prototype.
● Prototype test in the field.
● Evaluation of the results of the field tests.
● Modification of the design based on the results of the field test.

This process continues until a satisfactory solution has been reached. Analysis with SolidWorks® Simulation helps perform the following tasks:
Reduce the cost by simulating the test of your model on the computer instead of performing costly field tests.
Advance product marketing by reducing the number of product development cycles.
Improve products by quickly testing multiple concepts and situations before making a final decision, which gives you more time to come up with new designs.
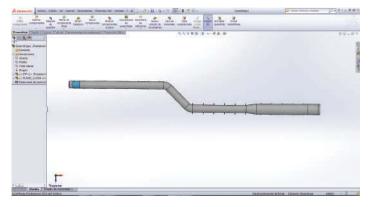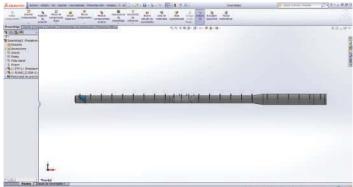
The software uses the Finite Element Method (FEM). The FEM is a numerical technique for analyzing engineering designs. The FEM is accepted as the standard analysis method due to its generality and compatibility to be implemented in computers. The FEM divides the model into numerous small pieces of simple shapes called "elements", which effectively replace a complex problem with many simple problems that must be solved simultaneously. The elements share common points called "nodes". The process of dividing the model into small pieces is called meshing.

The software formulates the equations that govern the behavior of each element considering its connectivity with the other elements. These equations refer to the response of loads, restrictions and known material properties.

8

SoftDucts, LLC.
AIR FLOW OPTIMIZERS By DTI

Main Gym

Top View

95'
Collar 10'-1 1/8" 28'-5 7/8" 25'-2 3/4" 27'-11 3/4"

Cone — A A
Cone Ø 36" Cone Cone (1A)

D D C C B B

(10) (1L) (1I) (1F)

86' 89'

Ø 36" Middle cap Middle cap Middle cap

17'-5 3/8" 14'-3" 12'-7 3/8" 12'-7 3/8" 13'-11 7/8" 13'-11 7/8" 3'-2 3/8"

88'-1 1/4"

Notes:
*Keep the shape with:
 - Plastic ring to Ø26", Ø24", Ø20"
 - Aluminum ring to Ø36", Ø10"
* Suspended with Black PVC Rail for all,
 8 foot long cable hangers on 5 foot centers.
* All cones with zipper

2 3/4" Gliders
Ø 36"
Section A-A
1A & 1G

8 3/4" Gliders
Ø 24"
7:30   5:30
Section B-B

8 3/4" Gliders
Ø 24"
7:00   5:00
Section C-C
1I & 1L

8 3/4" Gliders
Ø 24"
6:30   4:30
Section D-D

Fabric Duct	Diameter (in)	Air Flow (cfm)	Total holes	Holes Location (Hrs)	Diameter of holes (in)	Spacing between holes	Spacing between rings
1A, 1G	36	-	-	-	-	-	3' 3 1/8"
1F	24	3580	148	5:30 & 7:30	1.5	1' 2"	2' 5 1/2"
1I	24	3580	148	5:00 & 7:00	1.5	1' 2"	2' 5 1/2"
1L	24	3580	148	5:00 & 7:00	1.5	1' 2"	2' 5 1/2"
1O	24	3580	148	4:30 & 6:30	1.5	1' 2"	2' 5 1/2"

Detailed duct drawings

Aux Gym

Top View

40'-7 5/8" 34'-4 3/8"
Ø 20" Collar
1'-8" Cone Ø 26"
37'-10 5/8" 12'-5" (2A) E 31'-7 3/8"
Cone H H Cone Cone E E (2F) Cone
(2C)

F F
(2G)
31'-8" 35'-0"

(2D)

(2E) Middle cap (2H)
Cone J J G G Cone
38'-11 5/8" G
40'-7 5/8"
75'-0"

Notes:
*Keep the shape with:
 - Plastic ring to Ø26", Ø24", Ø20"
 - Aluminum ring to Ø36", Ø10"
* Suspended with Black PVC Rail for all,
 8 foot long cable hangers on 5 foot centers.
* All cones with zipper

5 3/4" Gliders
Ø 20"
4:30
Section E-E

5 3/4" Gliders
Ø 20"
6:30
Section F-F

5 3/4" Gliders
Ø 20"
7:00   5:00
Section G-G

5 3/4" Gliders
Ø 20"
7:30
Section H-H

5 3/4" Gliders
Ø 20"
5:30
Section I-I

5 3/4" Gliders
Ø 20"
7:00   5:00
Section J-J

Fabric Duct	Diameter (in)	Diffusion (cfm)	Total holes	Holes Location (Hrs)	Diameter of holes (in)	Spacing between holes	Spacing between rings
2A	26	-	-	-	-	-	2' 5 1/2"
2C	20	958	40	7:30	1 1/2"	11 3/8"	2' 5 1/2"
2D	20	794	33	5:30	1 1/2"	11 1/2"	2' 5 1/2"
2E	20	824	34	5:00 & 7:00	1 1/2"	1' 11 1/16"	2' 5 1/2"
2F	20	794	33	4:30	1 1/2"	11 1/2"	2' 5 1/2"
2G	20	794	33	6:30	1 1/2"	11 1/2"	2' 5 1/2"
2H	20	986	40	5:00 & 7:00	1 1/2"	1' 11 3/8"	2' 5 1/2"

Detailed duct drawings

54

Stage

Top View

Section L-L

Section M-M

SECTION K-K
ESCALA 1 : 39

Notes:
*Keep the shape with:
  - Plastic ring to Ø26", Ø24", Ø20"
  - Aluminum ring to Ø36", Ø10"
* Suspended with Black PVC Rail for all,
  8 foot long cable hangers on 5 foot centers.
* All cones with zipper

Fabric Duct	Diameter (in)	Diffusion (cfm)	Total holes	Holes Location (Hrs)	Diameter of holes (in)	Spacing between holes	Spacing between rings
3A	10	-	-	-	-	-	2' 5½"
3B	10	-	-	-	-	-	2' 5½"
3C	10	800	34	6:30 & 5:30	1.5	2' 6⅓"	2' 5½"
4A	10	-	-	-	-	-	2' 5½"
4B	10	-	-	-	-	-	2' 5½"
4C	10	800	34	6:30 & 5:30	1.5	2' 4¾"	2' 5½"

Customer:
Chet Adams Company
Project ID:
DTI-171106-2019
Manager:
John Garibaldi
Designed by:
L. G.
Date:
February 11th, 2018
Diffusion type:
MultiFlow
No. of diffusion lines:
Indicated
Location of diffusion:
Indicated
Location of suspension:
12:00
Fabric:
Benelux Premium
Color:
Black
Additional treatment:
None
Type of air / Design height:
Air Conditioning / 27'

Detailed duct drawings

Isometric View

Main Gym

Aux Gym

Stage

Notes:
*Keep the shape with:
  - Plastic ring to Ø26", Ø24", Ø20"
  - Aluminum ring to Ø36", Ø10"
* Suspended with Black PVC Rail for all,
  8 foot long cable hangers on 5 foot centers.
* All cones with zipper

	Color
Main Gym Duct	Gray Oxford
Aux Gym Duct	Gray Oxford
Stage Duct	Black

Customer:
Chet Adams Company
Project ID:
DTI-171106-2019
Manager:
John Garibaldi
Designed by:
L. G.
Date:
February 8th, 2018
Diffusion type:
MultiFlow
No. of diffusion lines:
Indicated
Location of diffusion:
Indicated
Location of suspension:
12:00
Fabric:
Benelux Premium
Color:
Variable
Additional treatment:
None
Type of air / Design height:
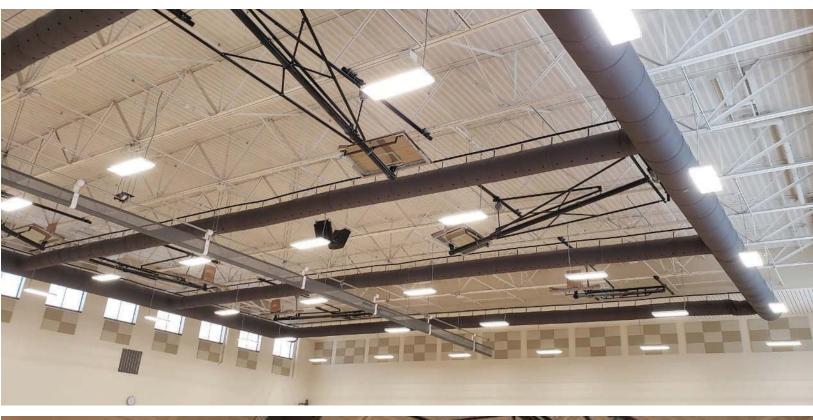**Air Conditioning / 27'**

Detailed duct drawings

9

There are various reasons for washing and maintaining fabric ducts. For instance, within the food industry where production must be carried out in microbiological pollution-free conditions and free of dust particles.

Other advantages of correct and specialized maintenance include:

→ Correct functioning of the system
→ Optimal permeability and porosity
→ Decreased energy costs
→ Extended Warranty
→ Avoid the accumulation and bacterial proliferation
→ Adaptations and modifications to existing systems
→ Asepsis and quality assurance

SoftDucts presents a comprehensive maintenance and sanitization solution supported by HAS American LLC, the industry leader in maintenance and sanitization of fabric ducts. HAS American, LLC. provides specialized maintenance to fabric ducts (any manufacturer) in order to guarantee the initial performance of the fabric via the use of UV light treatment and microbiological analysis.

Repairs and adaptations to sections can also be made. Documentation with permeability, airflow and microbiological analysis is provided to guarantee the correct performance of the system and traceability.

Sanitization of Ducts

Trained personnel carry out the correct launder of ducts, through highly specialized equipment that avoids the damage of textile fibers; Quality components are used for each application with a computerized dosage which is defined according to the age of the duct, the type of treatment, etc. the processes are documented and supervised by quality inspectors.
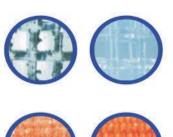
Drying Process

The drying of the system is done through a high level of centrifugal force and at controlled temperature to prevent moisture from remaining in the fibers of the duct.
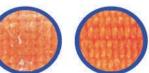
Retreatment

Antibacterial treatment can be applied and is recommended after three years of use of the system thus optimizing the operation and shelf life of the system.
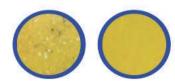
Chemical Analysis for the Detection of CFU

HAS American provides meticulous studies and tests of the before and after service of your system which includes laboratory tests, digital photographs and a detailed report of the results.
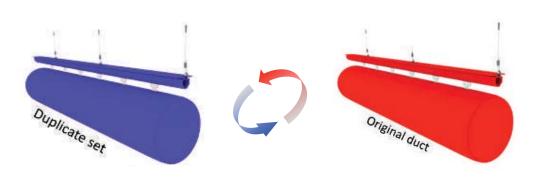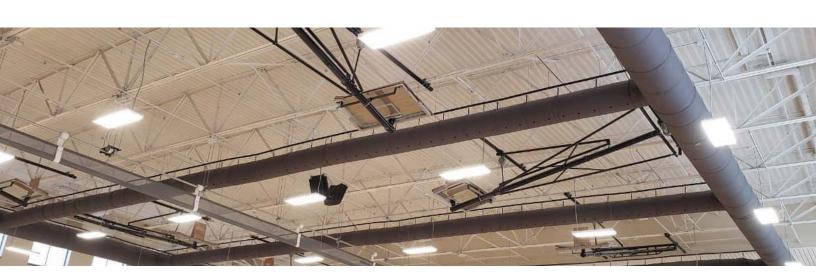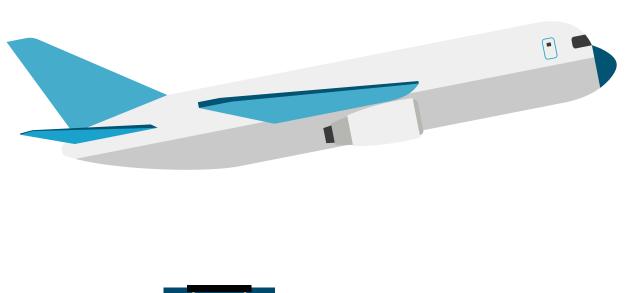
Before and After

10

1 Shipping Protection:

Upon request, Soft Ducts LLC will provide a special protective box. When necessary to store outside, store above grade and enclose with a vented waterproof wrapping.

2 Lead Times:

Standard lead times are from 4 to 6 weeks. Special applications, personalized colors and logos may require additional time.

SoftDucts, LLC.
AIR FLOW
OPTIMIZERS
By DTI

11

SoftDucts, LLC. warranty coverage begins at the time of shipment. Our product warranty is for credit towards repair or replacement only, the warranty is not available in the form of a cash payment.

SoftDucts, LLC. warranty does not cover labor, equipment rental, or freight charges incurred as a result of executing the warranty.

Damage to the fabric from improper installation, poor maintenance, abuse, abrasion, caustic chemicals, exposure to high temperature or any unauthorized modifications to the air diffusers will result in the invalidation of the warranty. SoftDucts systems must have been designed within our performance criteria. Our sales and engineering group are available to provide design assistance to ensure the SoftDuct systems are designed correctly.

For warranty to be valid all maintenance instructions from HAS America must be followed.

SoftDucts, LLC. warranty will only cover materials, manufacturing, and performance of the fabric section of the SoftDuct system.

Terms and Conditions

For more information, contact:

Mike Knott
MAK & Associates, LLC.
Dir.: (630) 739-2966
sales@mak-hvac.com
www.mak-hvac.com