



DUCTSIZE OVERVIEW

The Elite Software DUCTSIZE Program quickly calculates optimal duct sizes using either the static regain, equal friction, or constant velocity method. The calculated duct sizes can be printed on a round, rectangular, and flat oval basis. Grilles, registers, and diffusers from manufacturers such as Titus can also be selected from with DUCTSIZE. Noise levels and required attenuation are printed for each runout duct. A library of fan data for noise calculations is built into the program. DUCTSIZE allows unlimited duct sections, and is suitable for both constant volume and VAV systems as diversity is accounted for. DUCTSIZE also has an option for specifying duct height and width constraints to control sizes. The duct dimension constraints can also be used for analyzing problems in existing systems where the duct sizes are already specified. The DUCTSIZE Program is based on the design procedures given in the ASHRAE Handbook of Fundamentals and the SMACNA HVAC Systems Duct Design manual. Important new features include a Project Explorer that provides a tree-style graphical representation of all trunks and runouts in the project. In addition, both supply and return duct systems can be entered in the same project.

TWO VERSIONS AVAILABLE

DUCTSIZE is available in two versions: equal friction and static regain. The static regain version of DUCTSIZE costs \$495 and it provides four sizing methods: static regain, equal friction, constant velocity and presize. The equal friction version of the program costs \$295, and it provides all methods of sizing except the static regain method. A functional demo of DUCTSIZE complete with manual costs \$35 plus shipping, and it provides all three methods of sizing as does the full version, but it limits the duct systems to only 8 trunks and 8 runouts. The demo can be "unlocked" if you decide to license the full program. \$35 of the demo price can be credited to the full purchase price. The functional demonstration version of DUCTSIZE (without manual) may also be downloaded free of charge from Elite's web site, www.elitesoft.com.

DUCTSIZE FEATURES

- Calculates Optimal Air Conditioning Duct Sizes
- Computes round, rectangular & flat oval duct sizes
- Calculates for Both Supply and Return Systems
- **Selects Registers and Diffusers from Titus & others**
- Calculates Total Duct Section Surface Area & Weight
- **Four Sizing Methods Available: Static Regain, Equal Friction, Constant Velocity, & Presize**
- Analyzes and Troubleshoots Existing Duct Systems
- Determines Noise Levels and required Attenuation
- Built-in Library of Fan Data for Noise Calculations
- Uses ASHRAE & SMACNA Procedures
- Over 120 ASHRAE Duct Fittings Built-in
- **Works with Drawing Board, our simple drawing program for Floor Plans and Duct Layouts**
- Allows for all Types of Duct Materials
- Number of Trunks and Runouts is Virtually Unlimited
- Instantaneous Input Error Checking
- **No Copy Protection Hassles!**
- **Works with AutoCAD MEP to create single and double line duct drawings**

CALCULATION METHOD

The DUCTSIZE Program is based on the design procedures of the ASHRAE Handbook of Fundamentals, the ASHRAE Duct Fitting Database, and the SMACNA HVAC Systems Duct Design manual. The DUCTSIZE user manual gives detailed information on the equations used, and explains how to manually verify program results.

PROGRAM INPUT

The DUCTSIZE program can run stand alone using standard Windows data entry procedures in a simple "fill in the blank" approach or it can obtain the necessary input data from a drawing created with Elite's own Drawing Board program or from the AutoCAD MEP cad package. Drawing Board is built right into DUCTSIZE and can be "unlocked" for an additional charge at any time desired. Extensive help information is provided for all input data. Four types of data are requested: general project data, system and fan data, trunk data, and runout data. The general project data includes the project name, location, client name, duct material, desired sizing method, and more. The fan system data includes the fan type, minimum and maximum allowable air velocities, desired noise levels and more. Trunk and runout data for both supply and return systems can be entered. The trunk and runout data includes such information as duct length, connection numbers, material type, insulation R-values, fitting types and quantities, runout cfm values, velocity constraints and any duct height and width constraints.

SYSTEM REQUIREMENTS

DUCTSIZE will run on computers with Windows 2000 or higher including Windows 7.

PROGRAM OUTPUT

The DUCTSIZE program provides both input and output data reports. The input reports provide a title page, general project data, trunk and runout input data and overall system data. The output reports include trunk and runout duct calculations, a sound analysis, and a system summary report. The trunk and runout data lists all data needed to manually verify the sizing results. Printed for each duct section are size, air cfm, velocity, all fitting names and loss coefficients, friction loss, dynamic loss and total pressure loss. In addition, the velocity, static and total pressure are printed both on a cumulative basis and on a per duct section basis. The runout duct where the greatest total system static pressure loss occurs is clearly identified. DUCTSIZE's comprehensive color reports can be printed, previewed on screen, saved to disk or created as a pdf file for emailing purposes.

System 1 Trunk Output Data - Supply									
Trunk	Dia	SM	L/100	Shape	Ups.Sh	Duct	Sect	Cumul	Press
Upstr	Hei	TOA	Reg	Ft1	Qty	Coef	Fit	Vel.P	Veloc
Vel	Wid	Gau	Ft2	Ft2	Qty	Coef	Loss	F.Tot	Stat
CFM	Len	Ref	Mat	Ups.Junc					Total
T-9	12.0	CV	0.680	Rect	N/A	---	0.850	0.932	0.367
FAN	10.0	0	0.000	CR3-1	1	0.2233	0.0821	0.000	0.102
2,443	12.0	24	No Fitting					0.932	1.034
1,919	15.0	Galv (approx)						1.034	1.158
T-19	8.0	CV	0.790	Rect	Rect	---	0.000	0.743	0.112
T-9	8.0	90	-0.630	CR9-5	1	0.4600	0.1175	0.000	0.079
2,037	8.0	26	No Fitting					0.743	0.821
711	10.0	Galv (approx)				2.448	0.6251	0.743	1.855
T-29	10.0	CV	0.705	Rect	Rect	---	0.000	0.045	0.066
T-9	8.0	0	0.020	No Fitting				0.000	0.056
2,215	10.0	26	No Fitting					0.045	0.101
1,208	8.0	Galv (approx)				0.149	0.0451	0.045	1.135
T-39	8.0	CV	0.795	Rect	Rect	---	0.000	0.570	0.111
T-29	8.0	90	-0.525	CR9-5	1	0.4600	0.1181	0.000	0.071
2,043	8.0	26	No Fitting					0.570	0.642
713	9.0	Galv (approx)				1.760	0.4521	0.570	1.777

System 1 Output Summary - Supply	
Number of active trunks:	4
Number of active runouts:	5
Total system weight (lb./sq.ft.) - fittings:	195.87
Total outlet flow:	1750
Total outlet flow/air heat gain:	1919
Size of largest trunk:	12.0
Size of smallest trunk:	8.0
Size of largest runout:	10.0
Size of smallest runout:	8.0
Max SP loss occurs in route to runout:	R-110
Cumulative static pressure loss at above runout:	1.82
Available static pressure at above runout:	0.00

DUCTSIZE also works with AutoCAD MEP and Elite's [Drawing Board](#) program, our easy-to-use drawing tool for creating floor plans and duct layouts..

System 1 Runout Output Data - Supply												
Runout	Dia	SM	L/100	Shape	Ups.Sh	Fit	Sect	Sect	Cumul	Press	Vel	Stat
Conn	Hei	TOA	Reg	Ft1	Qty	Coef	Loss	Diff	Dynam	Vel.P	Stat	Total
Vel	Wid	Gau	Ft2	Ft2	Qty	Coef	Loss	Abs.L	Fric	Stat	Total	Total
CFM	Len	Ref	Mat	Ft3	Qty	Coef	Loss	F.Tot	Total	Total	Total	Total
Off	R.N.C	Act.NC	Ups.Junc									
R-100	8.0	EF	0.185	Rnd	Rect	---	0.000	0.259	0.312	0.055		
T-19	8.0	90	-0.059	No Fitting			0.000	0.006	1.807	0.017		
945	8.0	26	No Fitting				0.259	0.265	2.120	0.072		
330	3.0	Galv (approx)					0.259					
	8.00	35 40	*SR5-15-BR		1	4.709	0.2590					
R-110	8.0	EF	0.245	Rnd	Rect	---	0.000	0.256	0.294	0.073		
T-19	8.0	90	-0.074	No Fitting			0.000	0.007	1.824	0.000		
1,092	8.0	26	No Fitting				0.256	0.263	2.118	0.073		
361	3.0	Galv (approx)					0.256					
	8.00	35 35	*SR5-15-BR		1	3.490	0.2559					
R-120	8.0	EF	0.315	Rnd	Rect	---	0.000	0.206	0.271	0.097		
T-39	8.0	90	-0.046	No Fitting			0.000	0.009	1.722	0.103		
1,255	8.0	26	No Fitting				0.206	0.215	1.992	0.200		
436	3.0	Galv (approx)					0.206					
	8.00	35 35	*SR5-5-BR		1	2.126	0.2060					
R-130	8.0	EF	0.135	Rnd	Rect	---	0.000	0.041	0.329	0.038		
T-39	8.0	0	0.178	No Fitting			0.000	0.004	1.492	0.332		
788	8.0	26	No Fitting				0.041	0.045	1.821	0.370		
275	3.0	Galv (approx)					0.041					
	6.00	35 35	SR5-5-MN		1	1.063	0.0406					
R-140	10.0	EF	0.130	Rnd	Rect	---	0.000	0.053	0.317	0.051		
T-29	8.0	0	0.198	CD3-1	2	0.1100	0.0056	0.000	0.022	0.893	0.931	
908	10.0	26	No Fitting				0.053	0.075	1.210	0.981		
495	17.0	Galv (approx)					0.053					
	7.00	35 40	SR5-5-MN		1	0.824	0.0418					

System 1 Runout Sound Data - Supply									
Runout Name	63	125	250	500	1000	2000	4000	8000	NC
R-100 Required Attenuation	28	31	34	36	33	32	31	29	35
Actual Attenuation	28	30	37	49	83	146	82	85	40
Additional Attenuation	0	0	0	0	0	0	0	0	0
R-110 Required Attenuation	28	31	34	36	33	32	31	29	35
Actual Attenuation	31	33	40	52	86	149	85	88	35
Additional Attenuation	0	0	0	0	0	0	0	0	0
R-120 Required Attenuation	28	31	34	36	33	32	31	29	35
Actual Attenuation	33	35	44	59	101	181	99	102	35
Additional Attenuation	0	0	0	0	0	0	0	0	0
R-130 Required Attenuation	28	31	34	36	33	32	31	29	35
Actual Attenuation	33	35	44	59	101	181	99	102	35
Additional Attenuation	0	0	0	0	0	0	0	0	0
R-140 Required Attenuation	28	31	34	36	33	32	31	29	35
Actual Attenuation	29	28	34	46	73	130	79	86	40
Additional Attenuation	0	0	0	0	0	0	0	0	0

