

DUCT SIZING

ASHRAE Fundamentals, 2005

Air temperature, °F	70
Viscosity, ft ² /s	0.0001643
Density, lb/ft ³	0.0749

Branch name	PD, inch
Supply ductwork	1.45
Return ductwork	1.06

Branch name	PD, inch

Section ID	Flow rate, ft ³ /min	Duct length, ft	Duct material	Duct diameter or height, inch	Duct width (0 if round), inch	Velocity V, f/min	Friction loss rate, in. w.c./100ft	Fitting list	Sum of loss factors	Other pressure loss sources	Other source losses, in. w.c.	Roughness, ft	Hydraulic diameter, inch	Criterion of Reynolds	Friction factor	Dynamic pressure, in. w.c.	Friction losses, in. w.c.	Fitting losses, in. w.c.	Total pressure loss, in. w.c.
1-2	238	8	Flex duct metallic	8.0		681	0.17	bal.damper, tee, elbow	1.40	diffuser	0.05	0.01000	8.00	46,058	0.0394	0.03	0.01	0.04	0.10
2-3	475	13	Galvanized steel	8.0	12.0	713	0.09	tee	0.04			0.00030	8.60	57,879	0.0218	0.03	0.01	0.00	0.01
3-4	951	13	Galvanized steel	8.0	18.0	951	0.12	tee	0.20			0.00030	11.08	89,044	0.0200	0.06	0.02	0.01	0.03
4-5	1,426	34	Galvanized steel	10.0	20.0	1,027	0.11	2 elbows, tee	1.18	reheat coil	0.30	0.00030	13.33	115,758	0.0188	0.07	0.04	0.08	0.42
5-6	3,233	35	Galvanized steel	14.0	24.0	1,385	0.14	tee	0.18			0.00030	17.68	207,122	0.0170	0.12	0.05	0.02	0.07
6-7	4,558	39	Galvanized steel	16.0	28.0	1,465	0.13	tee	0.18			0.00030	20.36	252,194	0.0164	0.13	0.05	0.02	0.07
7-8	5,595	14	Galvanized steel	18.0	32.0	1,399	0.10	tee	0.18			0.00030	23.04	272,438	0.0161	0.12	0.01	0.02	0.04
8-9	7,008	30	Galvanized steel	20.0	34.0	1,484	0.10	tee	0.18			0.00030	25.19	315,961	0.0157	0.14	0.03	0.02	0.06
9-10	7,400	11	Galvanized steel	22.0	36.0	1,345	0.08	tee	0.18			0.00030	27.31	310,615	0.0156	0.11	0.01	0.02	0.03
10-11	8,474	38	Galvanized steel	22.0	38.0	1,460	0.09	tee	0.18			0.00030	27.87	343,841	0.0154	0.13	0.03	0.02	0.06
11-12	11,557	65	Galvanized steel	28.0	46.0	1,292	0.05	3 elbow, transition	1.26	silencer	0.40	0.00030	34.81	380,252	0.0149	0.10	0.03	0.13	0.57
13-14	11,557	21	Galvanized steel	28.0	46.0	1,292	0.05	elbow, transition	0.58	motorized damper	0.50	0.00030	34.81	380,252	0.0149	0.10	0.01	0.06	0.57
14-15	11,557	33	Galvanized steel	28.0	46.0	1,292	0.05	bellmouth, 3 elbows, fan inlet	1.82	silencer, damper, louver	0.85	0.00030	34.81	380,252	0.0149	0.10	0.02	0.19	1.06
			Galvanized steel			0	0.00					0.00030	0.00	0	0.0000	0.00	0.00	0.00	0.00
Air-intake louver	11,557		Galvanized steel	42.0	48.0	826	0.02					0.00030	44.80	312,652	0.0151	0.04	0.00	0.00	0.00
Relief air louver	11,557		Galvanized steel	42.0	48.0	826	0.02					0.00030	44.80	312,652	0.0151	0.04	0.00	0.00	0.00
			Galvanized steel			0	0.00					0.00030	0.00	0	0.0000	0.00	0.00	0.00	0.00
R/C-1	1,426		Galvanized steel	12.0	20.0	856	0.07					0.00030	15.00	108,523	0.0189	0.05	0.00	0.00	0.00
R/C-2	1,806		Galvanized steel	14.0	24.0	774	0.05					0.00030	17.68	115,735	0.0184	0.04	0.00	0.00	0.00
R/C-3	1,325		Galvanized steel	12.0	20.0	795	0.06					0.00030	15.00	100,810	0.0191	0.04	0.00	0.00	0.00
R/C-4	1,037		Galvanized steel	12.0	16.0	778	0.06					0.00030	13.71	90,191	0.0196	0.04	0.00	0.00	0.00
R/C-5	1,413		Galvanized steel	12.0	20.0	848	0.07					0.00030	15.00	107,500	0.0189	0.04	0.00	0.00	0.00
R/C-6	392		Galvanized steel	6.0	12.0	783	0.13					0.00030	8.00	52,988	0.0224	0.04	0.00	0.00	0.00
R/C-7	1,074		Galvanized steel	12.0	16.0	805	0.07					0.00030	13.71	93,386	0.0195	0.04	0.00	0.00	0.00
R/C-8	858		Galvanized steel	12.0	12.0	858	0.09					0.00030	12.00	87,085	0.0199	0.05	0.00	0.00	0.00
R/C-9	2,225		Flex duct metallic	16.0	24.0	835	0.09					0.01000	19.20	135,454	0.0315	0.04	0.00	0.00	0.00