

Table 6.... Heating Capacities and Cfm of Branch Ducts in Extended-Plenum Perimeter Systems (Continued)

Section C. Side Take-Off to 6-Inch Round Pipe for Baseboard Diffusers Only													
Extended-Plenum Pressure 0.18 in. Static at 160 F						Furnace-Plenum Pressure 0.15 in. Static at 170 F							
No. of Elbows		Actual Length from Extended-Plenum to Diffuser—Feet											
		5	10	15	20	25	30	35	40	45	50	55	60
0	Btuh	9800	9100	8430	7820	7230	6700	6200	5730	5320	4920	4550	4210
	Cfm	106.6	104.4	102.3	100.3	98.5	96.8	95.0	93.1	91.7	90.0	88.5	87.2
1	Btuh	9230	8550	7930	7360	6800	6300	5830	5400	5000	4620	4280	3960
	Cfm	100.4	98.7	97.0	95.3	93.7	92.0	90.4	88.9	87.6	86.2	84.9	83.8
2	Btuh	8740	8100	7500	6960	6420	5960	5510	5110	4730	4390	4050	3750
	Cfm	95.5	93.8	92.2	90.6	89.4	88.0	86.5	85.2	84.0	82.8	81.6	80.6
3	Btuh	8300	7690	7130	6600	6110	5680	5240	4850	4500	4170	3840	3560
	Cfm	91.0	89.5	88.0	86.7	85.5	84.2	83.0	82.0	80.9	79.8	78.8	77.9
4	Btuh	7930	7350	6800	6290	5830	5400	5000	4620	4270	3940	3630	3370
	Cfm	86.8	85.5	84.2	83.3	82.0	81.0	80.0	79.1	78.0	77.0	76.1	75.3
5	Btuh	7600	7020	6500	6020	5580	5160	4770	4410	4080	3770	3470	3190
	Cfm	83.6	82.5	81.3	80.2	79.1	78.1	77.1	76.4	75.3	74.4	73.5	72.8
6	Btuh	7300	6760	6260	5780	5350	4950	4560	4200	3890	3580	3300	3040
	Cfm	80.4	79.5	78.4	77.5	76.3	75.3	74.4	73.5	72.6	71.2	70.6	

Note: Where any of the first three runs from the extended-plenum exceeds 20 ft and 3 elbows, count 3 extra elbows for that run.
The Equivalent Length Values used and included in calculating this table are: Diffuser and Boot = 100 ft; Each Elbow = 14 ft; Side Take-off = 20 ft.
Tapered Extended-Plenum Starting Collar.

Section D. Top Take-Off to 6-Inch Round Pipe for Baseboard Diffusers Only
Extended-Plenum Pressure 0.18 in. Static at 160 F Furnace-Plenum Pressure 0.15 in. Static at 170 F

No. of Elbows		Actual Length from Extended-Plenum to Diffuser—Feet									
		5	10	15	20	25	30	35	40	45	50
0	Btuh	8700	8050	7450	6900	6400	5910	5470	5160	4870	4600
	Cfm	95.0	93.2	91.7	90.0	88.6	87.3	86.0	84.7	83.5	82.4
1	Btuh	8260	7640	7090	6560	6080	5630	5200	4820	4470	4140
	Cfm	90.2	88.8	87.5	86.2	85.0	83.7	82.6	81.7	80.4	79.4
2	Btuh	7880	7290	6750	6250	5800	5380	4980	4590	4260	3940
	Cfm	86.3	85.0	84.0	82.9	81.7	80.5	79.6	78.7	77.6	76.7
3	Btuh	7560	7000	6470	5980	5540	5130	4740	4380	4060	3730
	Cfm	83.0	82.0	81.0	79.8	79.0	78.0	76.9	76.0	75.1	74.2
4	Btuh	7260	6700	6200	5740	5290	4900	4510	4160	3850	3560
	Cfm	80.0	79.1	78.1	77.2	76.2	75.2	74.3	73.5	72.7	71.9
5	Btuh	7000	6470	5970	5490	5070	4700	4320	3990	3600	3400
	Cfm	77.3	76.3	75.4	74.5	73.6	72.8	71.9	71.2	70.2	69.3
6	Btuh	6770	6230	5740	5290	4890	4500	4140	3820	3520	3240
	Cfm	74.6	73.8	73.0	72.2	71.3	70.5	69.8	69.0	68.3	67.5

Note: Where any of the first three runs from the extended-plenum exceeds 20 ft and 3 elbows, count 3 extra elbows for that run.
The Equivalent Length Values used and included in calculating this table are: Diffuser and Boot = 100 ft; Each Elbow = 14 ft; Top Take-off = 50 ft.
Tapered Extended-Plenum Starting Collar.

wall. For such systems, the combinations of parts selected as standard by the National Warm Air Heating and Air Conditioning Association are shown in Tables 9 and 10.

A simplified method for selecting the combinations of branches, boots, stacks, and registers, is given in Manual 7 of the National Warm Air Heating and Air Conditioning Association.* In this method, the sizes of the branch ducts

are obtained from two tables giving their Btu capacities. The proper combination of parts for each branch can be determined if the following information is available.

1. Location of room, that is, whether on first or second story.
2. Actual horizontal length of duct from bonnet to boot, in feet.
3. Btu loss from room to be heated.

Table 6.... Heating Capacities and Cfm of Branch Ducts in Extended-Plenum Perimeter Systems (Concluded)

Section E. Side Take-Off to 6-inch Round Pipe for Side-wall and Floor Diffusers													
Extended-Plenum Pressure 0.18 in. Static at 160 F						Furnace-Plenum Pressure 0.15 in. Static at 170 F							
No. of Elbows		Actual Length from Extended-Plenum to Diffuser—Feet											
		5	10	15	20	25	30	35	40	45	50	55	60
0	Btuh Cfm							8800 123.2	7930 120.0	7310 116.8	6740 114.0	6230 111.4	5800 109.1
1	Btuh Cfm						8560 117.4	7900 114.5	7290 112.1	6720 109.2	6200 107.0	5740 104.8	5340 102.8
2	Btuh Cfm					8510 112.7	7890 110.0	7300 107.6	6740 105.3	6230 103.1	5750 101.0	5310 99.0	4960 97.4
3	Btuh Cfm				8540 108.2	7900 105.8	7300 103.6	6780 101.5	6270 99.6	5800 97.8	5360 95.9	4960 94.0	4610 92.5
4	Btuh Cfm			8580 104.0	7970 101.9	7370 99.8	6820 97.8	6330 96.0	5850 94.5	5410 92.8	5000 91.1	4620 89.7	4300 88.3
5	Btuh Cfm		8720 100.2	8080 98.3	7490 96.7	6940 94.8	6440 93.0	5960 91.4	5490 90.0	5080 88.7	4690 87.2	4320 85.0	4020 84.7
6	Btuh Cfm	8900 97.0	8240 95.1	7630 93.4	7060 91.9	6550 90.2	6070 88.8	5600 87.3	5190 86.2	4800 85.0	4430 83.8	4100 82.6	3810 81.5

Note: Where any of the first three runs from the extended-plenum exceeds 20 ft and 3 elbows, count 3 extra elbows for that run.
The Equivalent Length Values used and included in calculating this table are: Diffuser and Boot = 40 ft; Each Elbow = 14 ft; Side Take-off = 20 ft.
Tapered Extended-Plenum Starting Collar.

Section F. Top Take-Off to 6-Inch Round Pipe for Side-wall and Floor Diffusers
Extended-Plenum Pressure 0.18 in. Static at 160 F Furnace-Plenum Pressure 0.15 in. Static at 170 F

No. of Elbows		Actual Length from Extended-Plenum to Diffuser—Feet									
		5	10	15	20	25	30	35	40	45	50
0	Btuh					8430	7800	7210	6660	6170	5700
	Cfm					111.2	108.8	106.3	104.4	102.2	100.2
1	Btuh				8450	7840	7250	6700	6210	5730	5300
	Cfm				107.2	105.0	102.8	100.7	98.9	97.0	95.1
2	Btuh			8530	7900	7320	6800	6280	5790	5350	4960
	Cfm			103.2	101.1	99.0	97.2	95.4	93.8	92.1	90.6
3	Btuh		8660	8020	7430	6900	6370	5900	5450	5030	4650
	Cfm		99.7	97.8	96.0	94.2	92.4	90.8	89.4	88.0	86.7
4	Btuh	8810	8180	7580	7010	6500	6000	5550	5150	4750	4400
	Cfm	96.0	94.4	92.8	91.2	89.7	88.0	86.8	85.7	84.3	83.1
5	Btuh	8390	7770	7200	6650	6160	5700	5280	4890	4500	4170
	Cfm	91.4	90.0	88.5	87.2	85.8	84.5	83.2	82.4	81.0	80.0
6	Btuh	7980	7380	6840	6340	5880	5430	5020	4650	4290	3970
	Cfm	87.5	86.2	85.0	83.8	82.5	81.4	80.2	79.4	78.3	77.3

Note: Where any of the first three runs from the extended-plenum exceeds 20 ft and 3 elbows count 3 extra elbows for that run.
The Equivalent Length Values used and included in calculating this table are: Diffuser and Boot = 40 ft; Each Elbow = 14 ft; Top Take-off = 50 ft.
Tapered Extended-Plenum Starting Collar.

4. Equivalent lengths in feet of all fittings and of the register.
Fig. 7 shows the values of equivalent lengths of fittings commonly used for domestic systems.

This simplified method is applicable to structures having heat losses not in excess of approximately 120,000 Btu per hour. The capacities shown in Tables 9 and 10 are based upon the most reliable data pertaining to friction losses and temperature drops in ducts. They are also based upon a 100 deg temperature rise of the air, and a static pressure

available for overcoming friction losses in the external duct system alone of 0.20 in. of water. The use of this method requires that the fan in the fan-furnace assembly will be capable not only of overcoming the resistance of the external duct system alone, but also the resistances imposed by the blower inlet, the filter, and the furnace casing.

Tables 9 and 10 are applicable for the selection of both warm air and return air branches. A depth of 8 in. has been adopted as the standard for trunk ducts, and where a branch