

Homework #8 – Air Distribution Systems Design - ACCA Manual D

Show all work for full credit.

Due: 9/20

20 points

Name: Solution

1. The values shown in Table 1 are for the Blower System installed in the home used in HW#5.

Blower	Heating (iwc)	Cooling (IWC)
Total External Static Pressure	0.50	0.50
Pressure Losses in the System:		
Coil	0	0.05
Heat Exchanger	0.03	0.03
Supply Diffusers	0.03	0.03
Return Grilles	0.03	0.03
Filter	0.15	0.15
Balancing Damper	0.03	0.03
Total Pressure Loss in the System	0.27	0.32

Table 1

- A. Determine the Available Static Pressure for Heating

$$ASP = 0.50 - 0.27 = 0.23 \text{ iwc}$$

- B. Determine the Available Static pressure for Cooling

$$ASP = 0.50 - 0.32 = 0.18 \text{ iwc}$$

2. The values shown Table 2 are for the Trunk and Branch Duct System installed in the home used in HW#5.

Trunk and Branch Duct System	Supply (ft)	Return (ft)
Measured Length of Run-Out	12	7
Measured length of trunk	60	0
Equivalent length of fitting	60	30
Total length	132	37

Table 2

- A. Determine the Total Effective Length (TEL) = 132 + 37 = 169 ft

- B. Determine the Friction Rate for Heating (in/100 ft)

$$FR = ASP / TEL = (0.23 \text{ iwc} / 169 \text{ ft}) \times 100 = 0.136$$

- C. Determine the Friction Rate for Cooling (in/100 ft)

$$FR = ASP / TEL = (0.18 \text{ iwc} / 169 \text{ ft}) \times 100 = 0.107$$

3. Using the Flexible Duct chart shown and HW#7, complete the table below:

Trunk Duct	FR (iwc/100ft)	CFM	Duct Size (in)	FPM
SA1	0.11	850	14"	700
SA2	0.11	550	12"	600
Return	0.11	1400	16"	800

CHART NO. 3 Thermaflex M-KC, S-LP-10, S-TL
FLEXIBLE DUCT - STRAIGHT RUN
FRICTION LOSS PER 100 FT.

