Using Figure 29 13 on page 62 in the Guide & Workbook what is diffuser’s deflection angle?

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Using Figure 29 13 on page 62 in the Guide & Workbook what is diffuser’s throw width and velocity at 25 feet?

50 feet per minute and approximately 15 feet wide (total width 7.5 per side).

Using Figure 28 on page 60 in the Guide & Workbook, What size filter would be needed if the CFM value was 4,200 and the design IWC was 0.20?

First find the approximate final face velocity in fpm (about 344) then divide the 4,200 CFM by the 344 FPM to get the filter sized in square feet (12.21)

Using Figure 28 on page 60 in the Guide & Workbook, What size filter would be needed if the CFM value was 3,200 and the design IWC was 0.20?

First find the approximate final face velocity in fpm (about 344) then divide the 3,200 CFM by the 344 FPM to get the filter sized in square feet (9.3)

Using Figure 28 on page 60 in the Guide & Workbook, if a 27×24 size filter was used for Zone 1’s 2,400 CFM what would the pressure drop (approximately) be in IWC?

First, find the square ft. of filter area: 27×24 ÷ 144 = 4.5

Second, find the feet per minute velocity by dividing the CFM by the filter area: 2,400 ÷ 4.5 = 533 fpm

Finally use the chart to find the pressure drop in IWC: 0.48 IWC

Using Figure 28 on page 60 in the Guide & Workbook, if a 27×24 size filter was used for Zone 2’s 3,200 CFM what would the pressure drop (approximately) be in IWC?

First, find the square ft. of filter area: 27×24 ÷ 144 = 4.5

Second, find the feet per minute velocity by dividing the CFM by the filter area: 3,200 ÷ 4.5 = 711 fpm

Finally use the chart to find the pressure drop in IWC: off of the chart.

Field Notes:

Unfortunately, it is not unusual to find a supply register with a design throw and angle that will cause someone to feel like they are sitting in a draft. Remember, simply throttling them down is not a solution. The author once found an office where 4 out of 5 diffusers were shut down causing the system to force the air through the last diffuser. The lady sitting in the strong breeze under that remaining noisy diffuser said she was the one who was always wanting it cooler so she didn’t feel she could complain. When all of the throw angles and CFM were properly set everyone was comfortable and the system had the correct airflow. Finally, it is way too common to find a filter that is too small for the HVAC system. Installers rarely check the filter area pressure drop design requirement and will install a return grille based on the duct size. Thus, the design external static pressure for the system will be high with an extremely high (negative value) value for the return duct measurement. You have probably seen in the field a properly designed system where the filter box area is much larger than the return duct.