

Tech Notes

Grill Sizing for acceptable Return Air

50 sq. in per 100 CFM FB, 200 sq in per ton or 2-CFM per square inch of filter area

Recommended velocity across filter 200 FPM - 500 FPM

600 CFM	20 x 20 FB	18 x 16 NON FB
800 CFM	24 x 20 FB	20 x 20 NON FB
1000 CFM	24 x 24 FB	24 x 20 NON FB
1200 CFM	30 x 24 FB	24 x 24 NON FB
1400 CFM	30 x 30 FB or 36 x 24 FB	30 x 24 NON FB
1600 CFM	36 x 30 FB	30 x 24 NON FB
1800 CFM	36 x 30 FB	30 x 30 NON FB
2000 CFM	36 x 36 FB or 48 x 24 FB or 2-24 x 24 FB	30 x 30 NON FB

*If you don't enough space to install an adequate R/A grill another one needs to be added

***DO NOT USE LOUVER DOORS FOR RETURN AIR**

Quick Check for Sizing Units to enough Airflow

Actually, even on service calls where there are cooling problems the ductwork should have a quick Manual D performed.

Then take the ESP static pressure & compare to blower graph or chart, also take the FPM duct velocity.

Then do a quick estimate of airflow per equipment tonnage.

To find area of a round duct example; Duct diam. is 7"; $7" \times 7" = 49\text{-sq. ins.}$, X's $.7854 = 38.04845\text{-sq.ins}$ divided/ by 144= 0.2672541-sq.ft. area X's FPM Velocity 600-FPM (recommended FPM) = 160.35246-CFM X30 = $4,810.5738$ each 7" run X's 6 branch runs = $28,863\text{-BTUH}$, or airflow for 2.4-ton.

That would also be good for 2-ton; at 550-FPM velocity X's $0.2672541 = 147\text{-CFM}$ X 30-BTUH Per-CFM = $4,410\text{-BTUH}$ each run X 6-runs = airflow for $26,460\text{-BTUH}$. ($12,000\text{-BTUH} / 400\text{-cfm per-ton} = 30\text{-BTU per CFM ratio}$ | / 450 = $26.666\text{-BTUH per-CFM}$)

Never sell units requiring more airflow than the duct system will support!

Unless the proper CFM heat load goes through the evaporator coil it is nearly impossible to achieve an accurate & proper refrigerant charge, and BTU/HR along with efficiency will be way below Ratings!