

# FILTER SIZING PROCEDURE



## FILTER SPECIFICATIONS

- The recommended velocity through a filter is key to determining the size needed to properly do the job. Manufacturer's specifications are the source of this information, but are sometimes difficult to obtain.
- Typical velocities through various types of filters.

Filter Type	Velocity	Filter Type	Velocity
Std. Fiberglass	300-400 fpm	Electronic	350-450 fpm
Hog's Hair	350-400 fpm	Washable	350-450 fpm
Pleated	300-350 fpm	Electrostatic	200-300 fpm
High Eff. Media	150-200 fpm	HEPA	200-250 fpm

## SIZING PROCEDURE

- STEP ONE:** Calculate the square feet of filter required for the system using the following formula:  
 $CFM \div \text{Filter Velocity} = \text{Square Feet of Filter Needed}$

**Example:**  $1200 \text{ CFM} \div 300 \text{ FPM} = 4.0 \text{ Sq. Ft. of filter required.}$

- STEP TWO:** Calculate the size of the filters you will be using in square feet using the following formula:  $\text{Length} \times \text{Width} \div 144 = \text{Square Feet of each filter}$

**Example:**  $14'' \times 24'' = 336 \text{ sq. in.} \div 144 \text{ sq. in.} = 2.33 \text{ sq. ft.}$

- STEP THREE:** Calculate the number of filters needed in the system using the following formula:  
 $\text{Sq. Ft. of filter required} \div \text{Sq. Ft. of each filter used} = \text{Number of filters}$

**Example:**  $4.0 \text{ Sq. Ft. of filter needed} \div 2.33 \text{ sq. ft. each} = 1.7 \text{ filters}$

Round up to Two - 14" x 24" filters needed for this 1200 CFM system

- STEP FOUR:** Verify the pressure drop for that filter at the design velocity and compare it to the available static pressure of the system. As a rule of thumb, the pressure drop through residential filters should not exceed 20% of the fan's rated static pressure. (This may be too much if a restrictive coil is used or if ducting is undersized.)

**Example:** A fan rated at .50" should have no more than .10" of pressure drop through the filter.  
(.50" x 20% = .10" max. pressure drop)

## VARIATIONS

- Measure Total External Static Pressure and Pressure Drop over system components at the time of startup. Engineering is only an estimate of what should happen under field conditions.