

PRODUCT APPLICATION GUIDE

A technical bulletin for engineers, contractors and students in the air movement and control industry.

Fan Discharge and Throw Information

The following information provides general guidelines for selection and placement of fans used for air circulation and personnel cooling.

The first subject that the designer must address is what velocity of air will provide personnel comfort in the working environment. Since comfort is very subjective, there is not one answer. Here are some general guidelines to follow. Acceptable velocities range from 75 FPM for personnel sitting up to 400 FPM for active personnel. In most environments, the ideal velocity ranges from 150 to 200 FPM. Velocities of 400 FPM and over should be avoided if the application is personnel cooling only.

The next subject to address is where the fan can be placed or mounted. The distance that the fan is located from the area where a given velocity is required must be known before a fan selection can be made.

The graph below a discharge profile of a typical 36 inch diameter fan. This same general information can be used for other fan diameters because the airstream spread is virtually independent of unit size or velocity, and varies only with the distance from the fan. A fan size one foot smaller in diameter or one foot larger will have a spread, at a given distance, of only one foot difference than shown.

In placing the fans, avoid placement where storage racks and other equipment will impede airflow.

Application Guidelines:

Use the approximate distance that the fan will be located from the work area to find the spread diameter. The area in this diameter, times the required velocity, will equal the CFM required.

$$\text{CFM} = \text{Area (ft}^2\text{)} * \text{Velocity (ft/min)}$$

Fans without guards can be selected at free air (0.00 in. wg). Fans with safety discharge guards should be selected at approximately 0.12 in. wg.

In most cases, it is impractical to select a fan for throw distances greater than 80 feet.

These values are approximations which are subject to actual job conditions.

