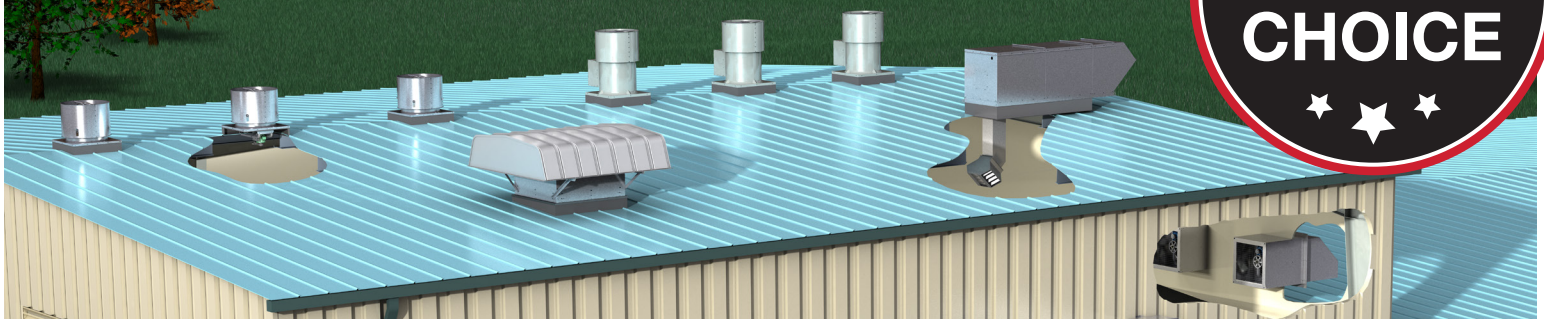


SELECTION GUIDE MANUFACTURING/WAREHOUSE

HVAC fact sheet



BASIC OVERVIEW

Ventilating a building simply replaces stale or foul air with clean, fresh air. Although the ventilation process is required for many different applications, the airflow fundamentals never change — *undesired air out, fresh air in.*

Key Variables That Change Based On Applications

Fan Model, Airflow Rate (CFM), Resistance to Airflow (Static Pressure, SP) and Sound Produced by the Fan (Sones)

| AIR FLOW | | APPLICATIONS | | | | | | | DRIVE TYPE | | IMPELLER TYPE | | INSTALLATION | | PERFORMANCE | | | |
|----------|--------|-------------------|------------------|-----------------|--------------------|-------------------------|-------------------------------|--------|------------|-------------|-----------------|--------|--------------|----------------------|----------------------------------|--------------------------------------|----------|--|
| EXHAUST | SUPPLY | GENERAL/CLEAN AIR | CONTAMINATED AIR | SPARK RESISTANT | SMOKE CONTROL (UL) | HIGH TEMP (ABOVE 200°F) | HAZARDOUS VAPORS OR PARTICLES | DIRECT | BELT | CENTRIFUGAL | PROPELLER/AXIAL | DUCTED | NON-DUCTED | MAXIMUM VOLUME (CFM) | MAXIMUM STATIC PRESSURE (IN. WG) | SONES @ 0.25" SP @ 5FT. (10,000 CFM) | COST/CFM | |

CHOOSING A FAN MODEL

Dayton

WALL-MOUNTED

| | | | | | | | | | | | | | | | | | |
|--------------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|--------|------|------|------|
| Propeller Fan | | X | X | X | | | | X | X | X | X | | X | 69,692 | 0.75 | 22.9 | \$ |
| Centrifugal Exhaust Ventilator | | X | | X | X | X | X | X | X | X | X | X | X | 14,727 | 2.00 | 18.6 | \$\$ |

UTILITY BLOWERS

| | | | | | | | | | | | | | | | | | |
|-----------------------------|--|---|--|---|---|---|---|---|---|---|---|---|--|--------|------|----|--------|
| Centrifugal Utility Exhaust | | X | | X | X | X | X | X | X | X | X | X | | 13,516 | 5.00 | 26 | \$\$\$ |
|-----------------------------|--|---|--|---|---|---|---|---|---|---|---|---|--|--------|------|----|--------|

ROOF-MOUNTED

| | | | | | | | | | | | | | | | | | |
|--|--|---|---|---|---|---|---|---|---|---|---|---|---|--------|-------|-------|--------|
| Upblast Centrifugal Exhaust Ventilator | | X | | X | X | X | X | X | X | X | X | | X | 18,611 | 2.00 | 18 | \$\$ |
| Upblast Axial Exhaust Ventilator | | X | | X | X | | | | X | X | X | | X | 64,326 | 0.75 | 17.2* | \$\$ |
| Hooded Axial Fan | | X | X | X | | | | | X | | X | | X | 43,906 | 0.625 | 22.9 | \$\$ |
| Emergency Smoke Exhaust Ventilator | | X | | X | X | X | X | | X | | X | | X | 34,761 | 0.50 | 18.4* | \$\$\$ |
| Downblast Ventilator | | X | X | X | X | | X | X | X | X | X | X | X | 37,068 | 2.00 | 15.8 | \$\$ |

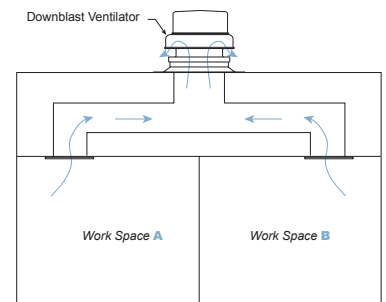
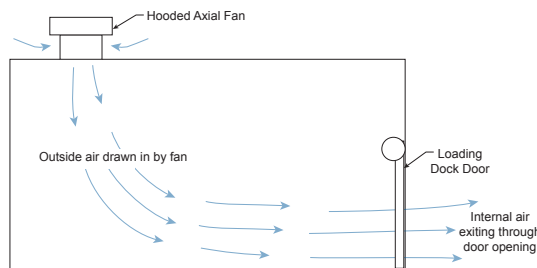
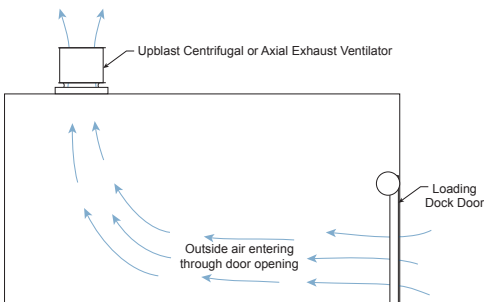
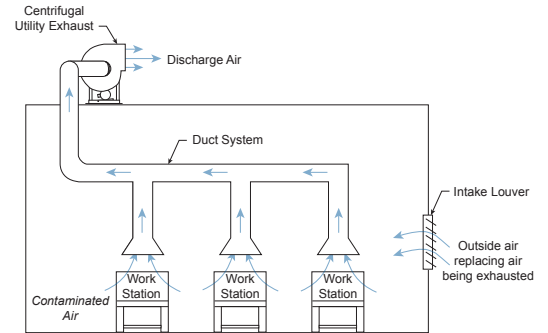
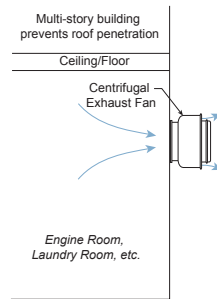
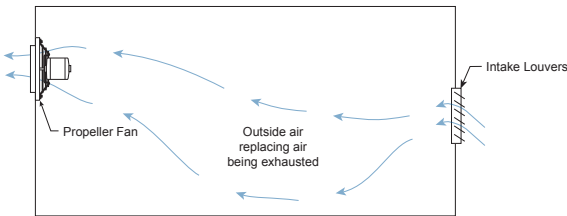
* Sones @ 0.125 SP @ 5Ft.

OTHER FAN SELECTION CONSIDERATIONS

- **Belt-Drive vs. Direct-Drive** — *Belt-drive* fans offer the ability to adjust fan speed for system balancing if necessary. They also offer more flexibility in speeds and motor selections. *Direct-drive* fans are often preferred for jobs where maintenance access is difficult. Maintenance costs are generally lower, since there are no belts or bearings to replace and no pulleys to adjust.
- **Larger Fans vs. Smaller Fans** — Larger fans tend to turn slower and generate less sound, they also tend to have higher initial costs but lower operating costs. Smaller fans, with their higher speeds, have more stable performance curves, lower initial costs, higher sound levels, and higher operating costs.
- **Low Sound vs. High Static Pressure** — Fans selected for high static pressures run at higher speeds resulting in higher sound levels. Conversely, in low pressure applications, fans generally run at lower speed producing lower sound levels.
- **How Accessories Affect Static Pressure** — Accessories will restrict airflow and must be accounted for when calculating static pressure load. Refer to Static Pressure Guidelines table for more information.

For propeller fans – dampers, guards and weatherhoods add very little to total system pressure. These can typically be specified with low pressure capabilities below 0.375" w.g.

TYPICAL VENTILATION INSTALLATIONS



SUGGESTED AIR CHANGES FOR INDOOR AIR QUALITY

| AREA | MIN./CHG. | AREA | MIN./CHG. | AREA | MIN./CHG. |
|-----------------|-----------|----------------|-----------|----------------|-----------|
| Attic | 2-4 | Foundry | 1-5 | Packing House | 2-5 |
| Barn | 12-18 | Garage | 2-10 | Plating Room | 1-5 |
| Boiler Room | 1-3 | Generator Room | 2-5 | Printing Plant | 3-8 |
| Cafeteria | 3-5 | Kitchen | 1-5 | Restroom | 5-7 |
| Corridors/Halls | 6-20 | Laundry | 2-4 | Store | 3-7 |
| Dairies | 2-5 | Machine Shop | 3-6 | Transfer Room | 1-5 |
| Dining Room | 4-8 | Meeting Room | 3-10 | Warehouse | 3-1 |
| Engine Room | 1-3 | Mill | 3-8 | | |
| Factory | 2-7 | Office | 2-8 | | |

$CFM = \frac{\text{Room Volume}}{\text{Min./Chg.}}$

STATIC PRESSURE GUIDELINES

| | |
|----------------------|--|
| Non-Ducted | 0.05" to 0.20" |
| Ducted | 0.2" to 0.40" per 100 feet of duct (assuming duct air velocity falls within 1,000-1,800 feet per minute) |
| Fittings | 0.08" per fitting (elbow, register, grill, damper, etc.) |
| Kitchen Hood Exhaust | 0.625" to 1.50" |

Static pressure is the resistance to airflow measured in inches of water gauge. It is an additive property in which each accessory, fitting, or length of ductwork adds to the total static pressure.

IMPORTANT: Static pressure requirements are significantly affected by the amount of make-up air supplied to an area. Insufficient make-up air will increase static pressure and reduce the amount of air that will be exhausted. Remember, for each cubic foot of air exhausted, one cubic foot of air must be supplied.



INCREASE MANUFACTURING FLOOR AIR QUALITY – INDUSTRIAL AIR CIRCULATORS

Air circulators should be used – regardless of other ventilation chosen – to increase indoor air quality for workers. These can be used to keep the fresh air moving throughout the facility and also used for spot cooling. A more comfortable worker is a more productive worker!

Find it at Grainger.



Call or visit your local branch or go to grainger.com/dayton or www.solutionsforair.com for complete product line information.

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