

www.howden.com



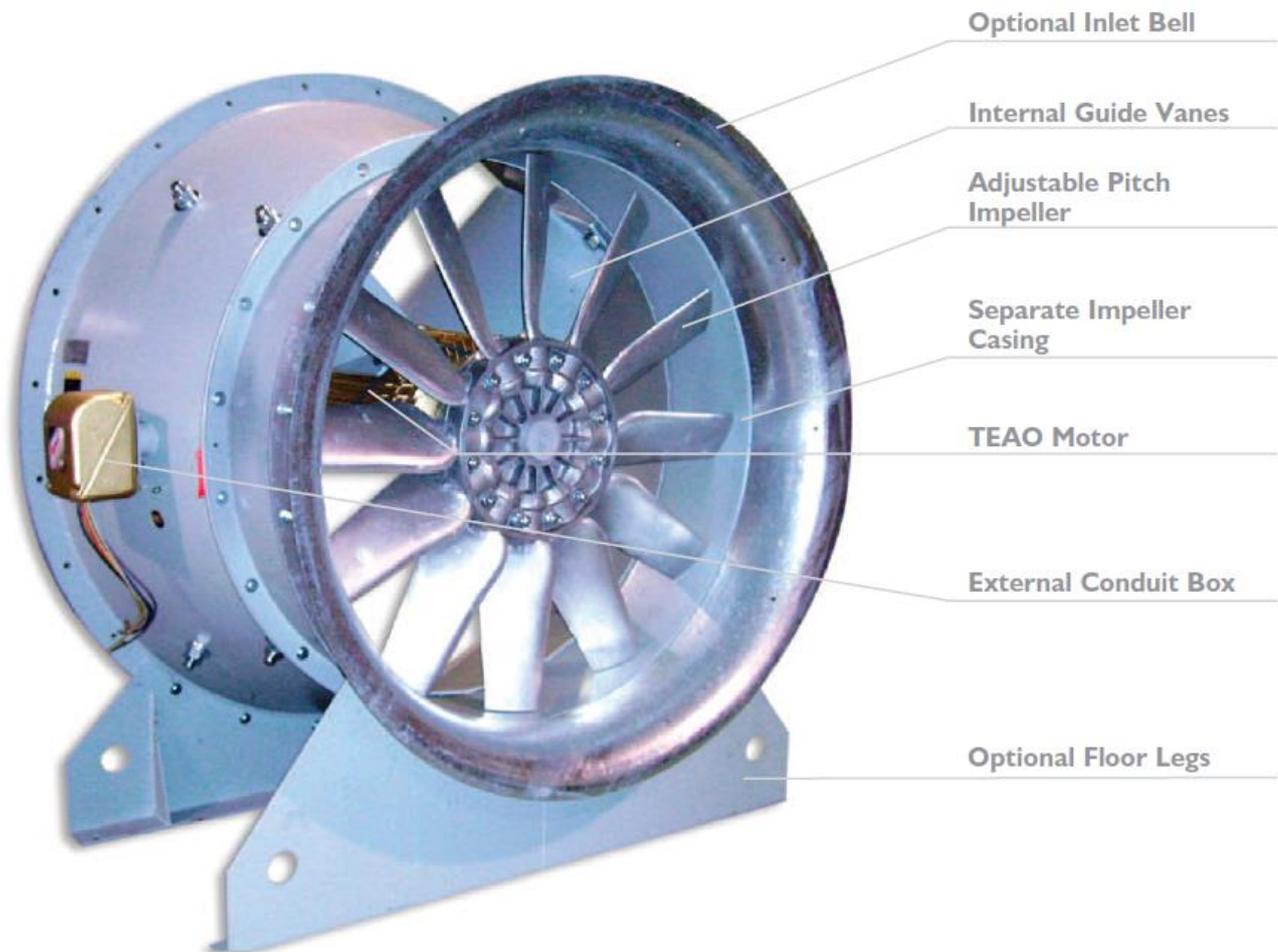
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# Evase Vaneaxial Fans

500mm to 1400mm Diameter  
Bulletin ECA 10-07





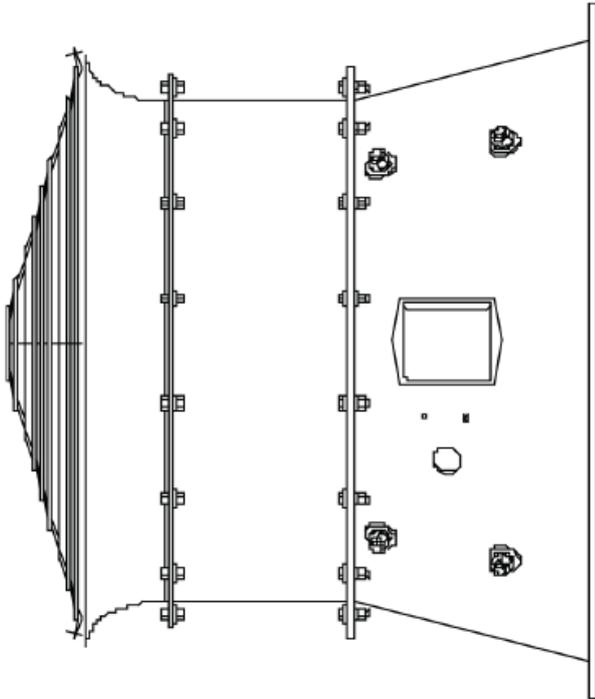
Evase Vaneaxial fans by Howden can save energy over the installed life of the system by recovering the kinetic energy contained in the high velocity airstream's mass. These fans work just as hard as the normal fans that you are accustomed to and then go on to recovery energy by converting the velocity pressure in the system into static pressure by means of a built-in discharge cone. It's now not necessary to specify a discharge cone for your system, therefore reducing the fan's overall footprint.

With this fan installed in your system, air velocity is low enough for outlet damper and shutters to operate without fear of these relatively sensitive components being destroyed by high velocity flutter.

## How it works

The energy contained in the moving airstream is converted to static pressure by means of a cone, which allows the diffusion of the high velocity airstream to slow to a lower rate. This causes an effective conversion of velocity pressure into static pressure. When applied to the installation, the resulting reduced static pressure allows the fan system to perform more efficiently at reduced static pressures, with resulting lower energy consumption.

Howden's Evase fan design incorporates integral stationary anti-rotation guide vanes to enhance the regain effect by slowing the rotation imparted to the airstream by the fan impeller and recovering rotational energy losses, while reduces fan noise generation. A separately formed Impeller Casing is used to insure uniform minimal tip clearance for full pressure development.

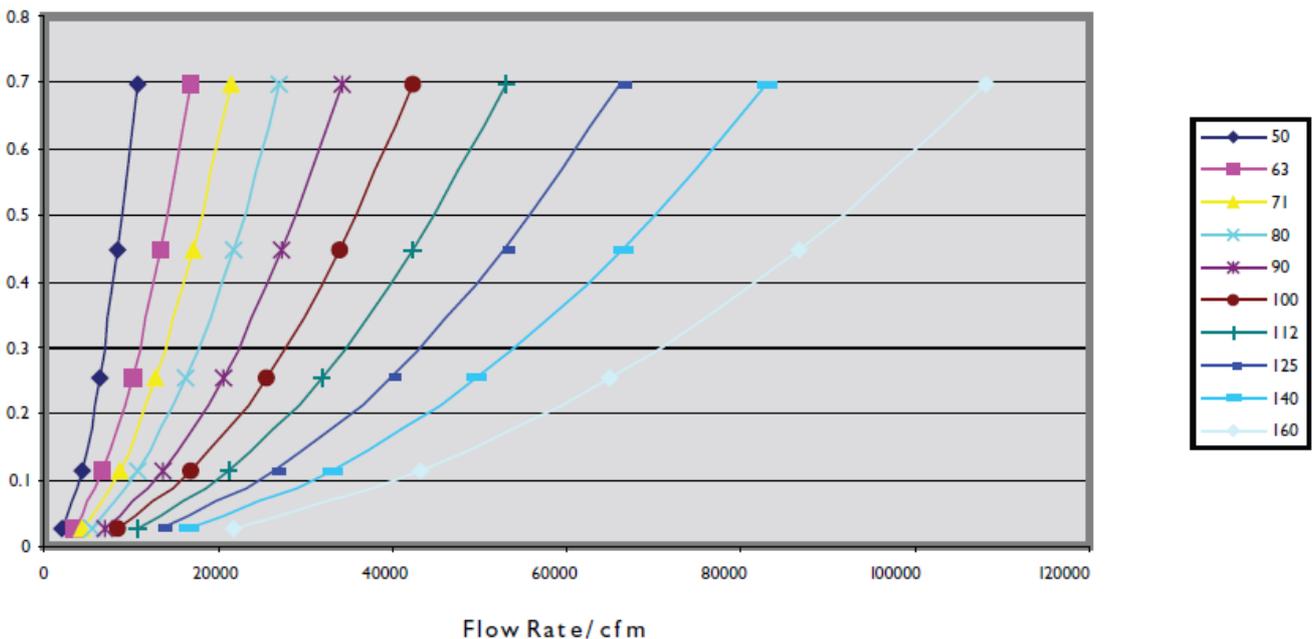


## To Select an Evase Fan

1. Design the fan system as per usual
2. Using the Howden Selection Program, or technical literature, make a preliminary selection for a JMG Vaneaxial Fan.
3. From the chart on the next page determine the amount of static regain for the fan size selected.
4. Subtract the regain from the system static requirement and re-select the fan
5. Specify the fan:
  - Model Number – EV (denoting an Evase fan)

- CFM
- Fan Diameter
- Impeller Pitch
- Fan Speed
- Fan Total Pressure
- Fan Static Pressure
- Motor HP
- Fan BHP

## Regain Data



Use the chart above to determine the regain available from the Evase housing construction. Then select the JMG fan for your application using Howden American Fan's selection software or published fan curves.

**Rugged. Flexible. Efficient.**

## Vaneaxial Fans

Fans shall be Howden JM Evase Vaneaxial Fans, as manufactured by Howden Fans shall be Arrangement 4, direct motor driven with the fan impeller mounted on the motor shaft and supported by the motor bearings.

## Performance

Fan performance shall be based on tests conducted in accordance AMCA 210 test code for air moving devices and shall be guaranteed by Howden American Fan Company to deliver rated published performance levels within permitted tolerances.

## Construction

Fan casing shall be of welded two-piece construction, consisting of an impeller duct and a motor and guide van evase section. Drilled inlet and outlet flanges are standard and shall be integrally rolled or solid welded to insure a leak-proof casing. Fans above size 100 shall be equipped with built-in sling lifting eyes to facilitate shipment and on-site handling. Furnish an inspection port in the casing to observe fan rotation. A precisely formed impeller housing designed for minimum impeller clearance shall be used in the construction of the fan. A conical guide vane section shall enclose the fan motor and permit the recovery of high velocity airstream energy. Vanes shall be precisely located and attached to both the housing and the drive motor and act to straighten the tangential component of the air movement downstream of the impeller blades, thereby converting rotational energy losses to pressure, improving efficiency and static pressure capability and reducing power requirements.

## Impeller

The impeller shall consist of high-pressure die cast aluminium airfoil blades, hub and clamp plate. The

impeller shall be manually adjustable through the full range of pitch angles. All impeller components are to be inspected using real time radiography, and examines to ASTM E-155, prior to machining to assure casting integrity and quality. Impellers shall be precision balanced as a fan assembly to minimise vibration levels and assure smooth operation. Conversion (guide) vanes shall be matched to impeller design for improved efficiency and decreased noise output.

## Motor

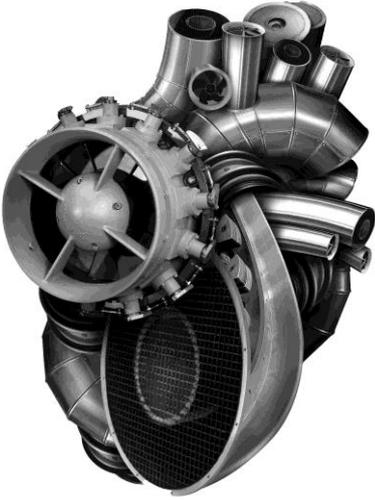
Motors for fans shall be manufactured in accordance with current applicable standards of IEEE and NEMA and, where applicable, shall meet at least current EPACT standards for efficiency level. Motors shall be pad-mounted, NEMA standard TEAO-enclosed, continuous duty, ball bearing type with class F insulation and of cast iron construction when commercially available.

## Finish

The entire fan assembly, excluding the impeller, shall be thoroughly cleaned before application of the finish coat. Prior to assembly, all steel parts shall be primed and then painted with a finish coat of gloss alkyd enamel shall be applied to a dry film thickness of 2.0 mils minimum and oven-dried. Enamel shall be mercury-, lead-, and chromate-free. Aluminium components shall be unpainted.

## Factory Run Test

All fans with motors and drives mounted by Howden shall be completely assembled and test run as a unit at the specified operating speed prior to shipment. Records shall be maintained and a written copy shall be available upon request for a minimum of seven (7) years.



## At the heart of your operations

Howden people live to improve our products and services and for over 160 years our world has revolved around our customers. This dedication means our air and gas handling equipment adds maximum value to your operations. We have innovation in our hearts and every day we focus on providing you with the best solutions for your vital operations.



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