



The benefits of curved Inlet Bells are well known in the air cooler industry (see scientific explanation, next page). Inlet Bells lower fan noise and horsepower as well as increasing airflow. All modern fan programs have a tab to show the benefits.

Standard R=.05D Inlet bells



We supply Inlet Bells in kit form with all the parts and instructions to mount to any style axial fan ring/guard.

A standard Inlet Bell is recommended for use on all axial fans where best performance is required, as well as, "Low-noise" fan projects.

Elliptical Inlet Bell  
0.10D/0.15D



**New E-Bell™ design now available in all sizes**

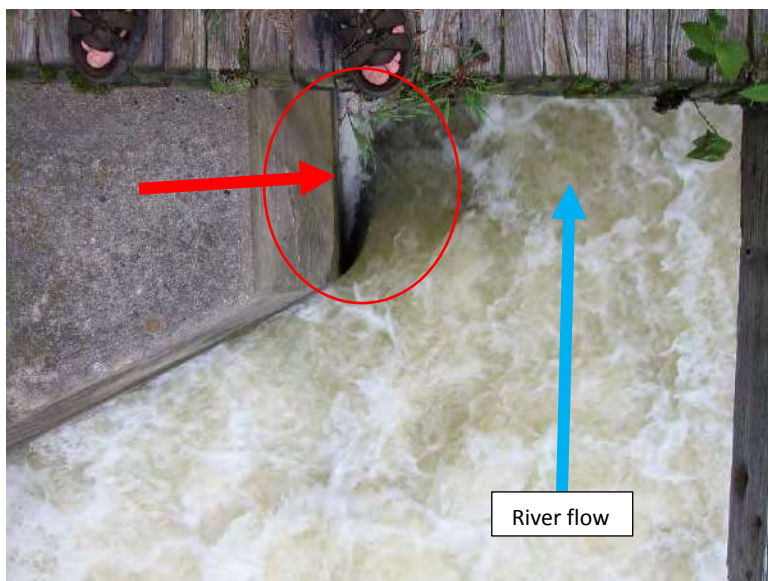
This larger Elliptical Inlet Bell is recommended for use on "Ultra-Low-Noise" projects, which use the "Ultra-Low Noise" fans.

**E-Bell™**

# Effect of Inlet conditions

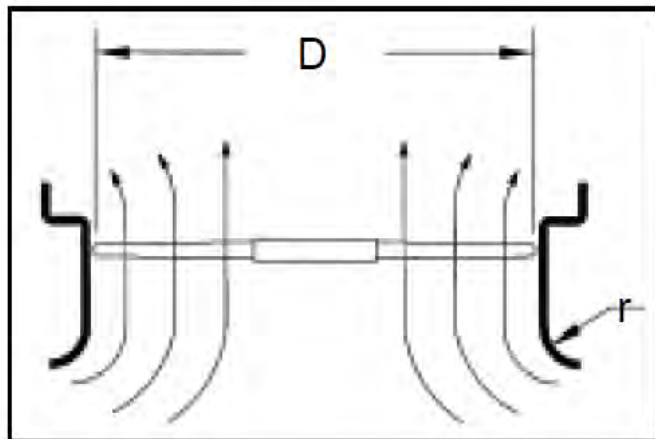
Consider the air around the entrance to the fan. Air must be collected from all directions and accelerated to the velocity at the plane of the fan. Some of this air is moving 90° to the fan axis. If smooth transition is not present, the inability of the airflow vectors to make rapid changes in direction will create a “Vena Contracta” at the blade tip, starving the blade of air in this area. (See Figure 1).

Here is a great visual of “Vena Contracta” in a river flow.

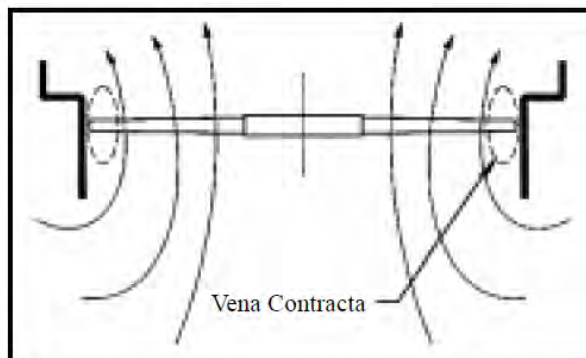


**Most modern fan rating programs allow for several choices of inlet conditions:**

- No Inlet
- Elliptical Inlet Bell 0.1D/1.15D
- Rounded Inlet Bell  $r = 0.05D$
- Conical Inlet with  $r = 0.05D, 0.1D$  or  $0.15D$ .



**Airflow with Inlet Bell**  
**Fig. 2**



**Airflow with No Inlet Bell**  
**Fig. 1**

Since most of the work is done by the outer portion of the fan blade, the result can be a big loss of efficiency. An additional adverse effect can be increased vibration. To prevent this loss, consider the use of an Inlet Bell attached to the bottom of the fan ring.

A properly designed and installed Inlet Bell provides a smooth transition as air is gathered from all directions into the plane of the fan, as shown in figure 2.

**Ask us about our patented safety device to prevent back spin on axial fans**

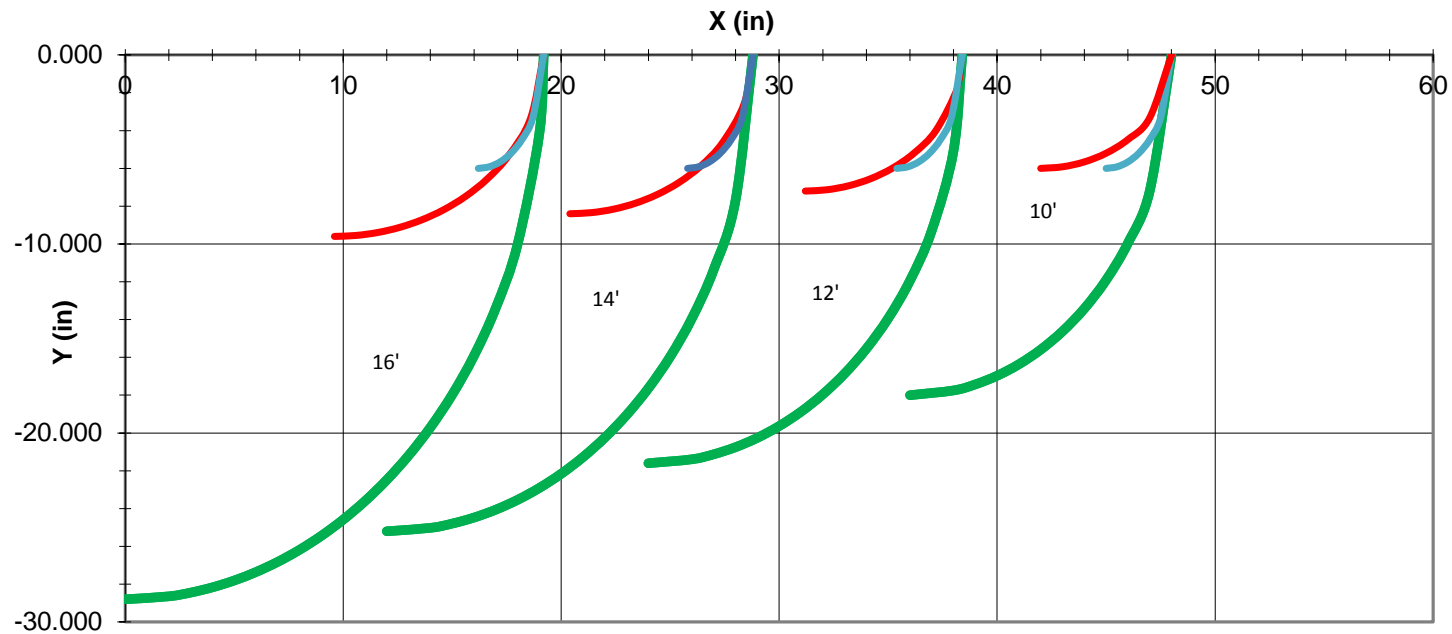
**Why fans wind mill backwards**

<https://www.youtube.com/watch?v=KdWCJeuilWM>



### Shapes of Various Bell Types for Different Fan Sizes

Blue = Brand-X 3"x 6", Red = Round 05D, Green = Elliptical E-Bell™ 0.10D x 0.15D



Irsea 11/5/24 -B Irs

**Warning: The traditional "Standard" Inlet bells supplied in North America (for decades), do not meet industry standards > 9' fan diameter (see chart).**

**"Brand X" is non industry compliant.**

**To meet noise and airflow targets, consider the larger, Elliptical Inlet Bell for all fans. Better known as E-Bells™.**