

Vibratory Feeders: A type of parts feeder that uses controlled vibration to orient bulk, randomly oriented parts, and provide a consistent feed of correctly oriented parts to a larger automated process.

Common processes that use Vibratory Feeders:

- Assembly (most common)
- Packaging
- Inspection
- Sorting

Industries that use Vibratory Feeders:

- Automotive
- Cosmetic
- Pharmaceutical
- Electrical
- Food & Beverage
- Consumer Goods
- Appliance
- Manufacturing

Why use Vibratory Feeders?

Vibratory Feeders can contribute to:

- Improved line efficiency
- Decreased production downtime
- Operator/personnel safety
- Decreased part wear
- Final product consistency
- And more...

In order to achieve optimum efficiency in an automated process, each step in the assembling, packaging, or inspecting of a product must be predictable and consistent. Vibratory feeders provide a consistent and constant feed of predictably oriented parts so that personnel, robots, pick-and-place mechanisms, and other equipment may work optimally.



Vibratory feeders specialize in applications that call for between 1-250 oriented parts per minute, although rates outside of this range are possible and largely dependent on the part being processed.

Common Styles:

The Straight Wall style is the most versatile variation of a vibratory feeder, but they come in several shapes and sizes to fit the exact needs of each application.

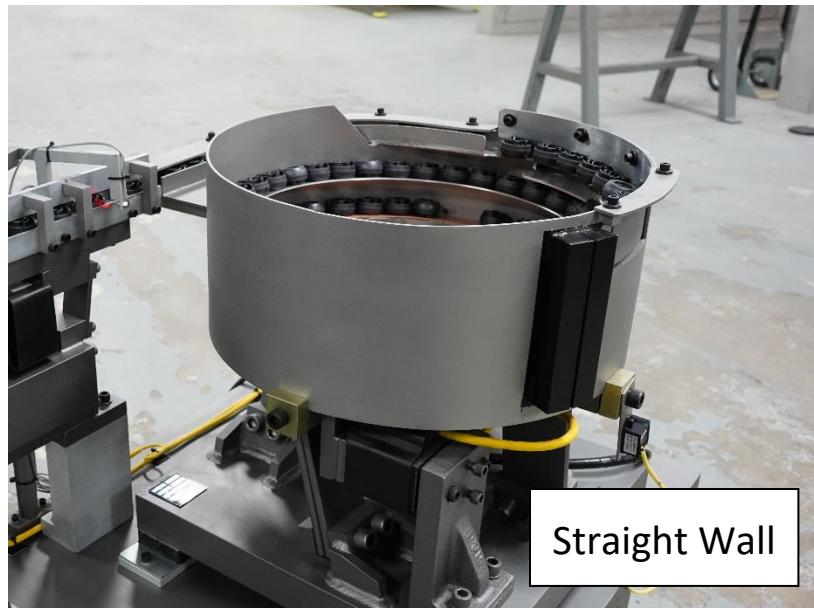


Figure 1



Figure 2

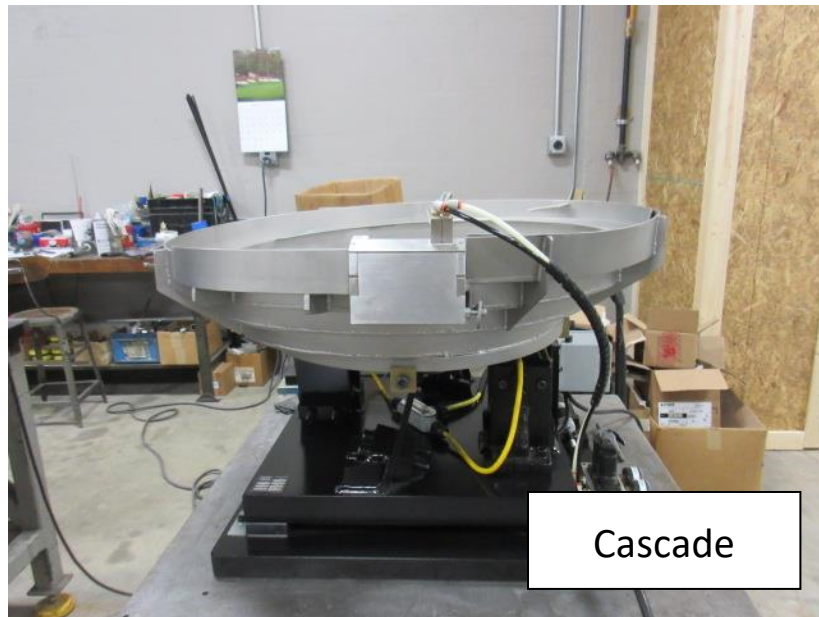


Figure 3



How do vibratory feeders work?

Every vibratory feeder has (2) main components: the **drive unit** and the **bowl** (shown in Figure 4).

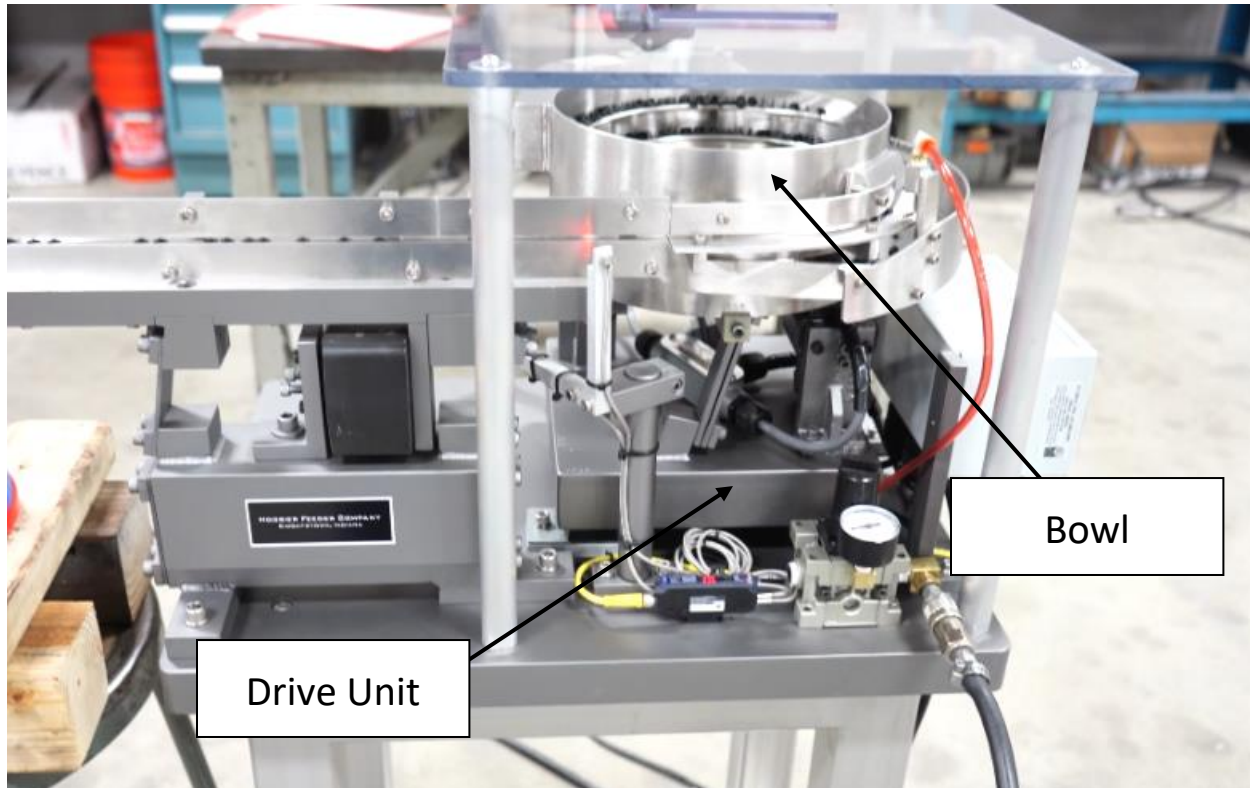


Figure 4

The **drive unit** attaches to the bottom of the bowl and utilizes electromagnetic coils to produce vibration, typically between 60-120 Hz. The coils, in combination with angled spring banks (shown in Figure 5) cause the bowl to “throw” the parts up and forward as it vibrates which drives the part movement around the bowl.

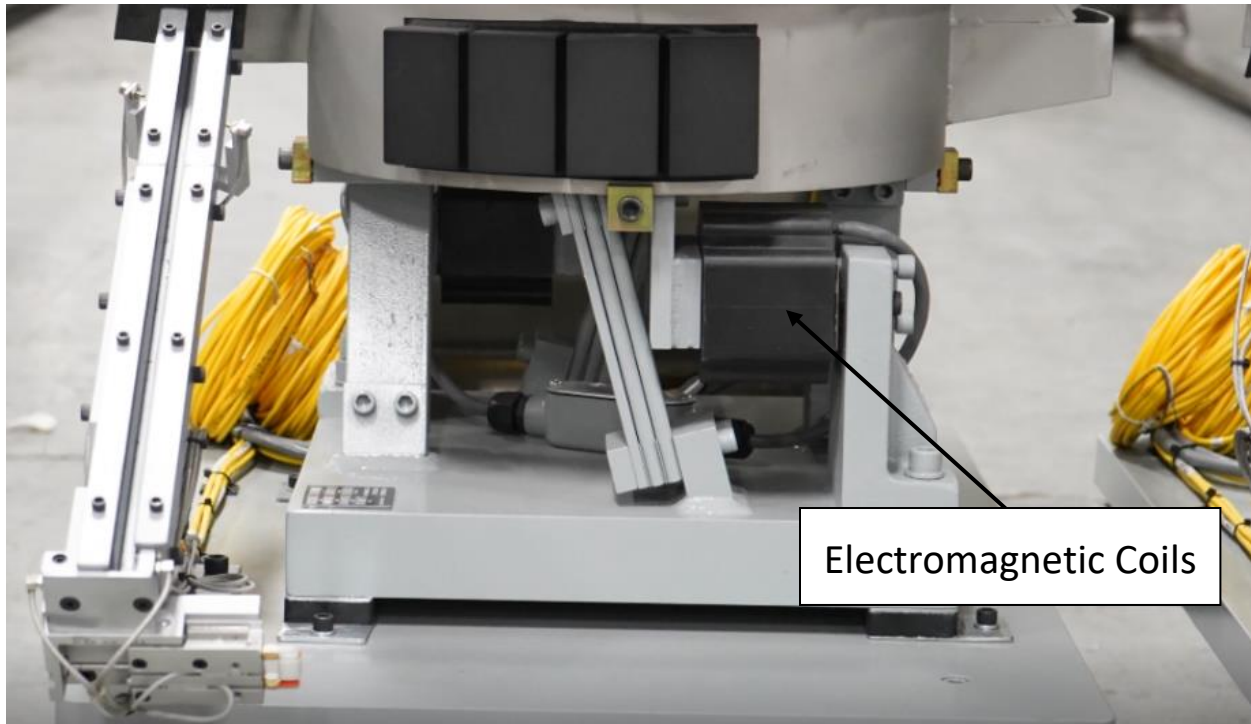


Figure 5

The **bowl**, typically made from stainless steel, is the component that contacts the parts and is outfitted with custom tooling concepts that physically manipulate the parts as they travel around the circumference. Feeder bowls are typically custom fabricated to suit each application and can range from very simple, to incredibly complex depending on the nature of the part and requirements of the automated process.

Some applications for feeder bowls require the use of pressurized air to manipulate parts, in addition to a wide variety of coatings and linings. To satisfy the most difficult parts and applications, sometimes a combination of complex metal tooling features, air jets, and coatings is required to complete the task. (Examples of feeder bowls below)



Figure 6

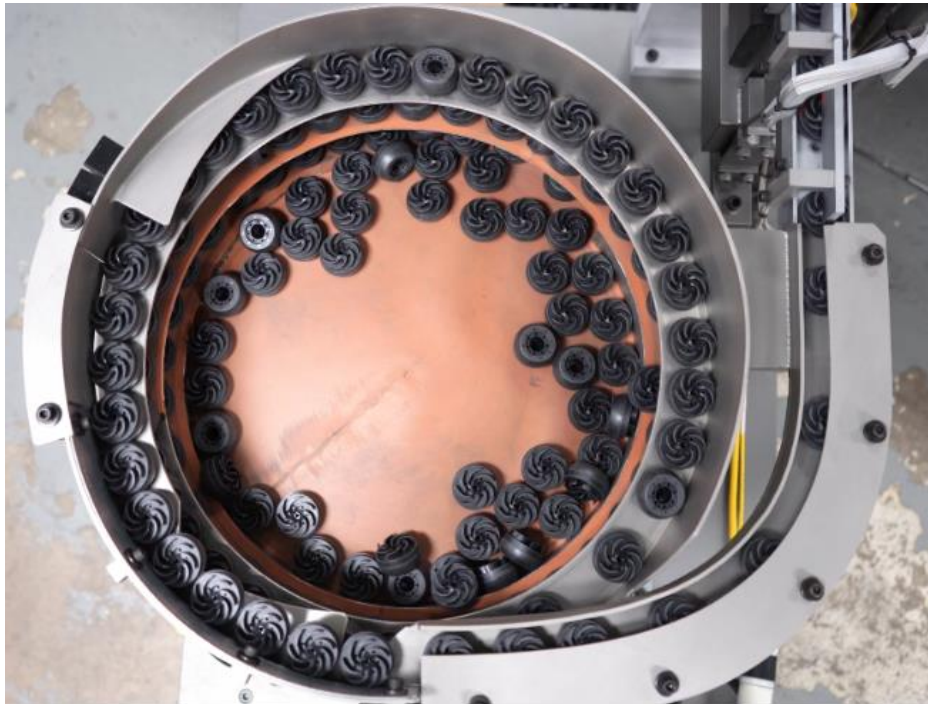


Figure 7

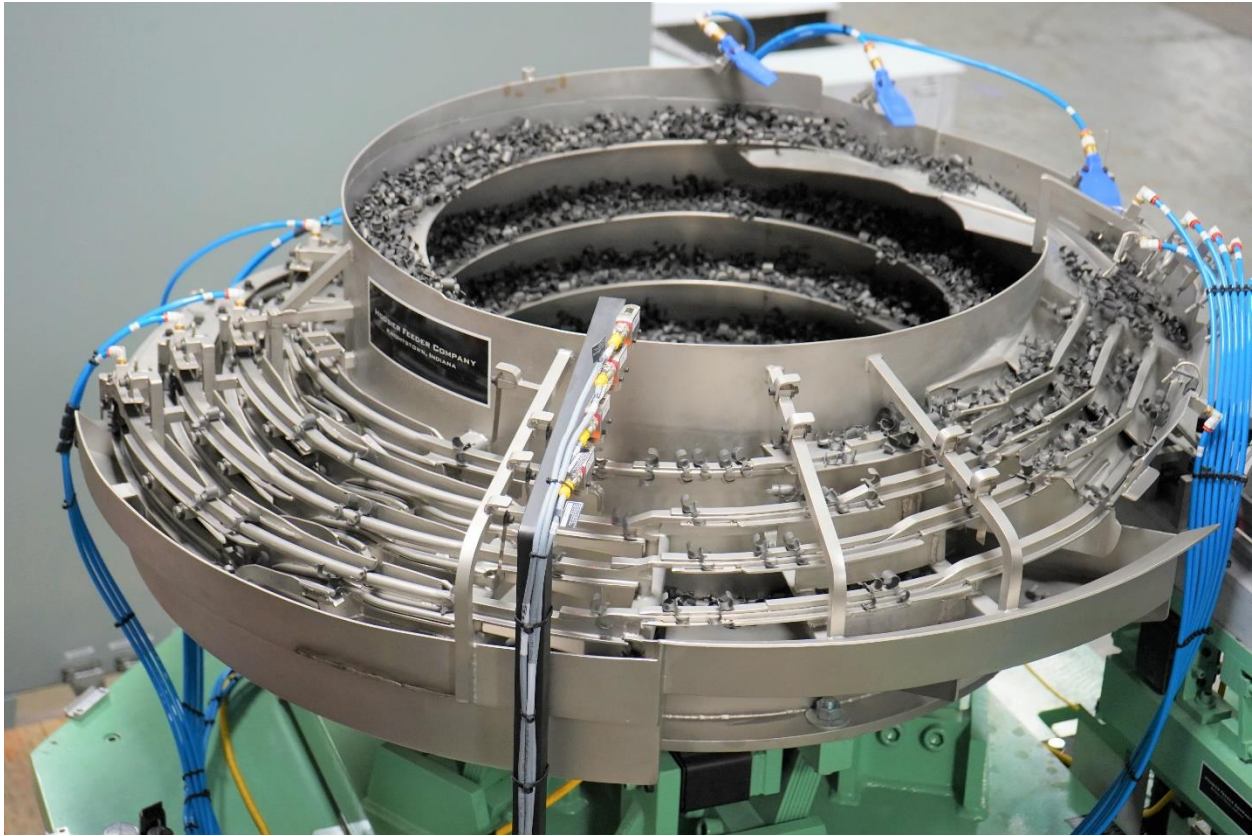


Figure 8

Coatings and Linings

Vibratory feeders are coated or lined with a large range of materials to reduce noise levels, decrease wear and damage to the parts, to provide extra grip or traction, or increase the working life of the feeder itself. Some of the coating/lining materials include:

- Plastic compounds (Urethane, Teflon, etc.)
- Bristled matting
- Rubber matting
- Metal plating (Chrome, Tungsten Carbide, etc.)



Summary

Vibratory Parts Feeders orient bulk parts to feed automated production lines for a vast range of parts and products. Using controlled vibration, custom tooling features, air jets, and coatings, they physically manipulate parts to achieve an orientation and output rate to satisfy requirements of the overall process.

It is important to understand the key functional characteristics as well as the capabilities and variations of feeders to properly implement these machines, which can add a tremendous amount of value to an automated process. Vibratory Feeders come in many shapes, sizes, and styles but understanding the **basics** will put you ahead of the pack.



Module Presented by:



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