

### **How do I select the correct refill device for a weight-loss feeder?**

**A: Paul Matarazzo, Acrison Inc., says:** All too often, a great deal of thought goes into selecting a weight-loss feeder with little consideration given to the refill device for the equipment other than the dimensional restrictions. A variety of other variables need to be considered if the weight-loss feeder is to function properly. Such factors as the type of refill device, proper sizing of the device, type of shut-off valve to be used, and venting all have to be carefully evaluated.

Numerous devices can be used for refilling a feeder. They range from a simple static hopper with a valve (for free-flowing materials) to hoppers with air pads and vibratory and mechanical dischargers. It's crucial to consider how these devices work with the materials to be handled. While a hopper with air pads is usually the most economical, it can cause a material to fluidize to the point that it will flush uncontrollably through a feeder. A vibratory discharger will handle a large number of materials but can cause some materials (such as adhesive powders) to pack and others (such as plastic film) to interlock, resulting in a bridge above the feeder. Mechanical dischargers tend to be more expensive, but will typically require less maintenance and have a longer life cycle.

Sizing the unit is another critical consideration. In addition to the dimensional restraints, the device needs to hold a sufficient charge to refill the feeder while at the same time having the capability to deliver the material in a timely manner. The size of the charge can vary depending on the size of the feeder to be refilled, the upstream equipment's ability to maintain a sufficient charge, and the customer's desire to hold surplus material in case the delivery system to the refill bin shuts down. The refill bin's outlet size is also critical. While it has to be large enough to allow the product to discharge, it can't be excessively large, as this may cause an overflow condition of the feeder. This can be a problem when a material has very poor flow characteristics, requiring a large outlet, and the weight-loss feeder below is small. In these instances, you can use a properly sized volumetric feeder or rotary valve mounted below the refill bin to give a more controlled refill.

Numerous valve types are available for mounting below a surge bin. These include butterfly valves, rotary valves, flapper valves, and knife gates. When selecting a valve, you must consider several things. First and foremost, the valve must provide a positive seal. If material leaks from the valve, the weight-loss feeder will be inaccurate. Also, the valve must seal against any positive or negative pressure present in the refill system, which would also adversely affect the weight-loss feeder. The valve must also be quick-acting to prevent overfilling the feeder.

A crucial issue, which is commonly overlooked, is the proper venting of a weight-loss feeder during refill. When a feeder is being refilled, the displaced air resulting from the incoming rush of material must be vented. If not, the result will be a surge of material out of the feeder's discharge cylinder. In some instances, for fluid materials, this can result in uncontrollable material flow. A properly sized vent (based on calculations for the amount of displaced air) on the cover of the weight-loss feeder will eliminate this problem.

For a successful installation, careful evaluation of the refill system is imperative when purchasing weight-loss feeders.