

Bowl or Tub Vibratory machine

We are a sub-contract manufacturing company machining a variety of parts; sizes, alloys, and quantities. We are considering purchasing our first vibratory machine for general finishing and deburring. Can you explain how these systems work and whether we should purchase a bowl or tub type machine.

The vibratory finishing process can burnish (brighten), provide uniform finishes, clean, deburr, radius, stress relieve, and refine the surfaces of your parts.

The energy of both the bowl and tub vibratory machines are generated by an electric motor rotating an eccentric weighted shaft between 1200-2700 rpms. The shaft is attached vertically to a bowl machine and horizontally to a tub machine. The machines can have adjustable amplitude (power setting) by shaft weight adjustment and variable speed motor settings.

The eccentric weighted rotating shaft generates the vibrating energy to the machine. The machine transfers its energy through the media to the part.

It's best to review parts and production rates before making a machine type and size recommendation, however, I recommend the bowl vibratory machine more often than the tub. The bowl has a more stable and precision process with more flexibility. The bowl vibratory systems can be set up for part unload, rinse, inhibit, part drying, and media classification.

Below is a summary of both bowl and tub vibratory machines that may help you determine what is right for you.

Bowl Vibratory Equipment

Bowl vibratory machines are comprised of a donut shaped u-channel. The bowl can have various channel sizes and overall diameters. The bowl is held suspended by springs that are attached to a round base. The eccentric shaft is mounted vertically through the center column of the bowl. The bowl can be driven by an external drive motor attached to the base running the center shaft by a v-belt drive. A bowl can also be driven by an integral drive motor where the weighted eccentric shaft is built within the motor and mounted together in the center column.

Advantages:

Internal part unloading
And media separation

Less part-to-part damage

Disadvantages:

Restrictive on long parts

Higher capital investment

Secondary operations such as media classification, part rinse and drying
Can be integrated

Can be built for batch or continuous
Automation

Tub Vibratory Equipment

Tub vibratory systems are comprised of a rectangular u-shaped tub. Tubs can have various channel diameters and channel lengths. The tub is mounted and suspended on springs attached to the base of the machine. The motor and rotating shaft are generally located within the base. The shaft is attached to the bottom of the tub and run by a v-belt drive from the motor that is attached to the base.

Advantages:

Long part processing

Easily divided, for running large parts that cannot touch or different medias at one time

Smaller systems are inexpensive and Portable

Large systems can be built for continuous In-line automated operations

Disadvantages:

Manual part unloading

Small flat parts stick to the tub side walls

Parts migrate to the drive end of the tub decreasing media-to-part ratio which can increase part-on-part damage

Bowl

Tub

