

Crusher Relieved by Pre-Separator Screen (Grizzly)

For decades crushers have been utilized in the nonmetallic minerals industry. The optimum reduction effect of crushers can only be achieved with an efficient method of feeding the crusher. Ideally this includes pre-separation, or removal of fines upstream of the crusher.

A bin or truck dump hopper is charged in batches by a front end loader or a truck. The bin is discharged to a crusher by a vibratory feeder or conveyor. In order to separate fines from the crusher feed product, the discharge feeder can either be equipped with a screening section, or it can be followed by a screening machine. When fines are separated from the crusher feed product, crusher load is reduced and efficiency is increased. Pre-separation also extends the life of the crusher.

Bin discharge and pre-separation as two separate units

Optimum design of each machine to meet their respective application requirements is essential. The size of the largest pieces as well as the free-fall height of the feed product is taken into consideration during engineering. Bottom plates of a highly wear resistant material with a thickness of up to 2 inches and spacing buffers are used to dampen the kinetic energy. The bin discharge feeder geometry is designed based on product size and the bin outlet geometry. The discharge feeder is driven by unbalance vibrators or exciters and is followed by a separator (screen). The product is screened on a grid with conical slots. In most cases the slots are 2 inches wide but slots can be up to 12 inches wide. The pre-separator can also be a grizzly arrangement (fig.2). The separating equipment is also driven by unbalance vibrators or an exciter. Because there are two machines, each is adjustable independent of the other.

Bin discharge and pre-separation by one compact unit

The inlet section of the machine serves for bin discharging and the outlet section for separation (fig.2). The advantage of this unit is lower power consumption and less space requirements.

Differences:

There is an essential difference between the function and method of the bin discharge feeder and the pre-separator. The discharge conveyor is operated with strong horizontal motions for the primary task of feeding material. The screen or grizzly is designed with a high angle of attack (stronger vertical motions) for optimum material separation. The decision to use one integrated feeder/grizzly unit, or to use two separate machines (one feeder and one grizzly/screen) for bin discharge and pre-separation will depend on specific application requirements and available resources. Contact JVI to help determine which arrangement is best suited to the job.

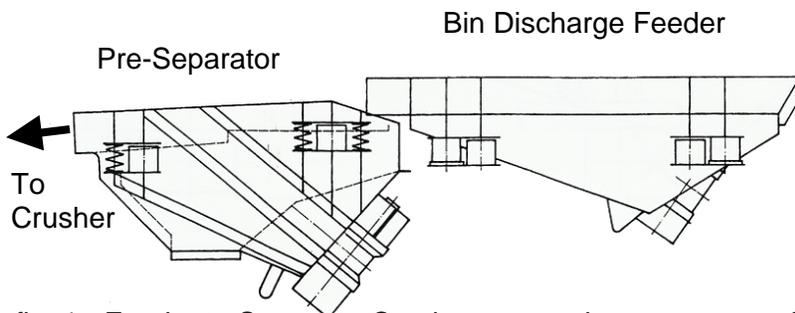


fig. 1 - Feeder to Screen to Crusher processing



fig. 2 – UGS Grizzly feeder arrangement