without dragging coarse particles into the air stream

Breaking the free fall of material when it is transferred (from belt to belt, elevator to belt, chute to bin, etc) results in economies "Choke feeding," the coming up of material under a discharge point, can often control the dust so that no exhaust hood is required As an example, a hopper-bottom car might dump into a track hopper at the bottom of which is a screw conveyor which takes the product to some other point If the material is discharged from the car at a faster rate than it is removed by the screw conveyor, it will come up under the car hoppers The operation will then be essentially dustless, provided stray cross breezes are screened off This is a far superior method of dust control than exhaust ventilation

Several states have codes, copies of which should be in each local plant, and of course, their requirements must be met If no local code requirements supercede those of the New York State Industrial Code Rule No 34 (1942), then follow these These have been widely reprinted, they appear, for example, in the ACGIH *Industrial Ventilation* Manual

Such specifications are appropriate for old elevators, bins, and like equipment whose enclosures and covers are loose and leaky Here, the only practical way to control dust is to keep the enclosure under slight negative pressure by exhausting air

New equipment presents a quite different situation if strict compliance with codes which themselves are not too up-to-date is not required

For example, a new closed-top, welded bin should—according to some codes—have air exhausted from it at a rate of not less than 0 5 cfm per cubic foot of bin capacity But tight construction may make this impossible to achieve, hence dusty air that does not pass through the branch connection must travel at less than design velocity with the result that dust settles in the duct, which eventually becomes plugged To avoid this, the original branch can be built with an open-tee connection or a "navy" hood can be specified (see Fig 29-19, top)

The same problem arises with other *tight* enclosures such as those around belt conveyors, bucket elevators, vibrating screens, and some types of mixers The tee connection has the advantage that if leaks should develop in the enclosure, the damper can be closed and all the air will be used to keep the now-leaky equipment under a slight negative pressure

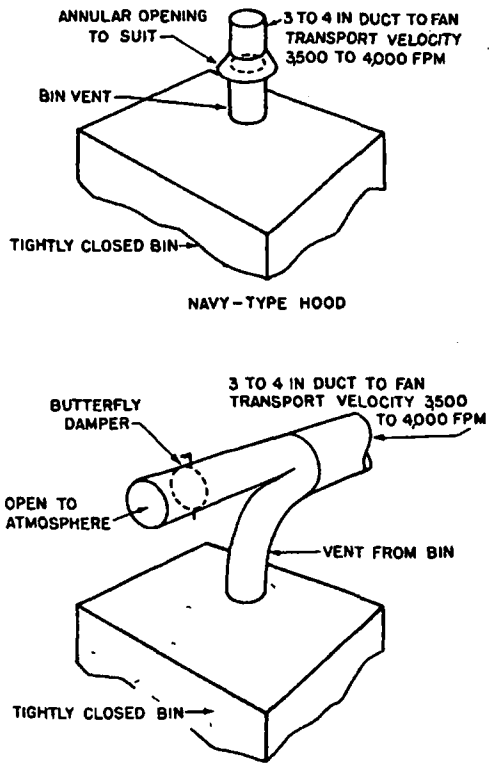


FIG 29-19 – Method of venting tight bins, hoppers, convevor casings, and the like, in order to maintain sufficiently high transport velocity in branch duct so that dust will not settle and plug the pipe

Courtesy American Cyanamid Co , Industrial Chemicals Div

Another solution (when equipment is new and bins and conveyor enclosures are tight) is to use the enclosed equipment itself as part of the dust exhaust system According to A C Stern's *Air Pollution*, vol II (see "References"), ducts needed to allow free passage of air from one piece of tightly enclosed equipment to another can be arranged in a near-vertical position—"steeple-shaped" air jumpers—of generous diameter to ensure low velocity Thus pneumatic pickup of dust is avoided, the enclosed equipment as a whole acts as plenum chamber, and loss of