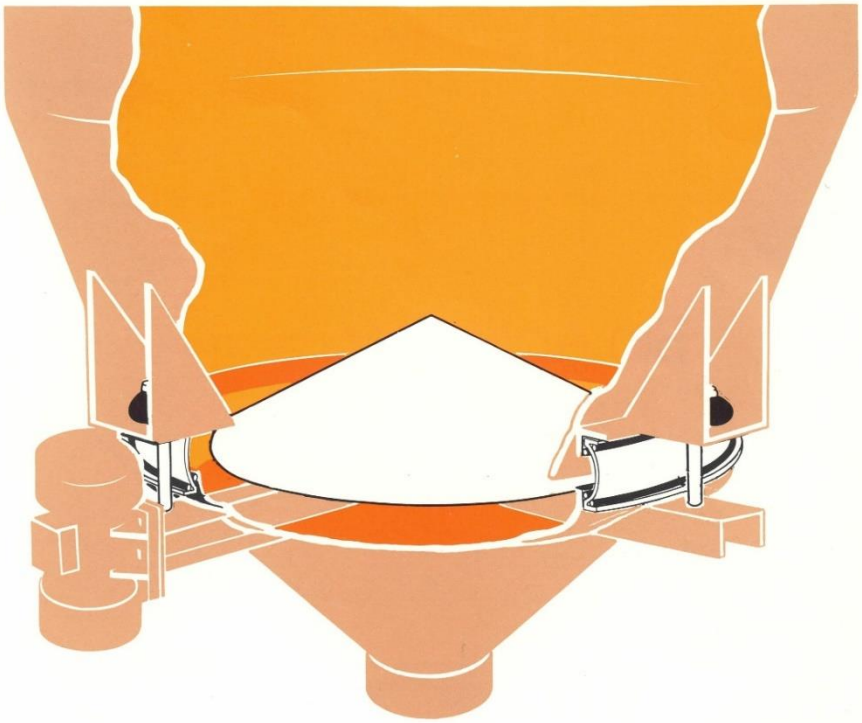
GRAIN TECH – DATA TECH

BIN ACTIVATOR

The Bin Activator has been proven worldwide to give a continuous, but controlled flow of difficult-to-handle materials from bulk storage silos, through the controlled use of vibration.

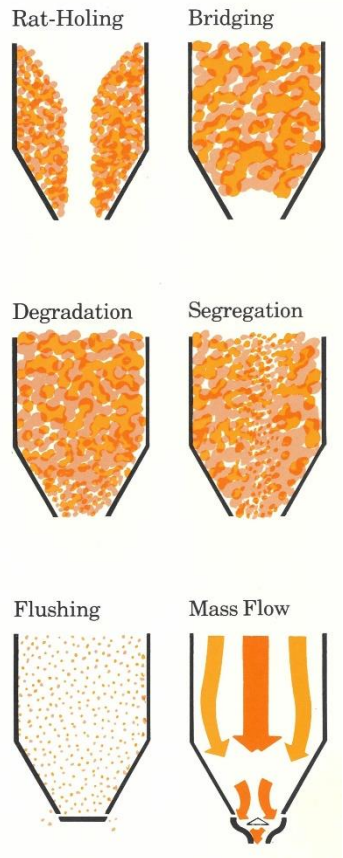


It has been established that under vibration, the shear strength of the material decreases and the bulk density of the material increases. The action of the Bin Activator is to break down the shear strength and thus induce flow. When the Activator is switched off, the material shear strength is unaffected and therefore material ceases to flow.

By careful design, the Bin Activator eliminates the possibility of ratholing, degradation and segregation of materials within the silo and when sized, will ensure an even flow of material on a mass-flow basis (the first in, first out principle).

The Bin Activator is ideally suited to a cylindrical hopper, but it can be successfully applied to square or rectangular bins. When compared to an unassisted mas-flow silo, it's low profile allows for a substantial reduction in the height of the silo and its associated building costs.

Grain Tech's expertise in handling diverse and difficult materials ensures that the correct equipment is specified for your application.



Description

A Bin Activator consists of a spun steel dish onto which a discharge cone has been bolted. Across the dish are a number of welded cross-members that support the internal baffle cone. A vibrator motor – two on some sizes – is bolted on the outside of the dish. The degree of vibration is adjustable by means of a pair of out-of-balance weights situated at each end of the motor.

The whole assembly is suspended beneath the outlet of the silo on a number of suspension rods located in rubber isolation mounts, to ensure that vibration is not transmitted up the silo walls. The number and style of rods depends upon the size and duty of the Bin Activator. These rods are attached to the hopper of the silo via a support ring which is welded or, in some cases, bolted to the hopper. This ring is an integral part of the supply of the Activator.

A rubber sleeve secured by clamps, seals the gap between the support ring and the Bin Activator assembly.

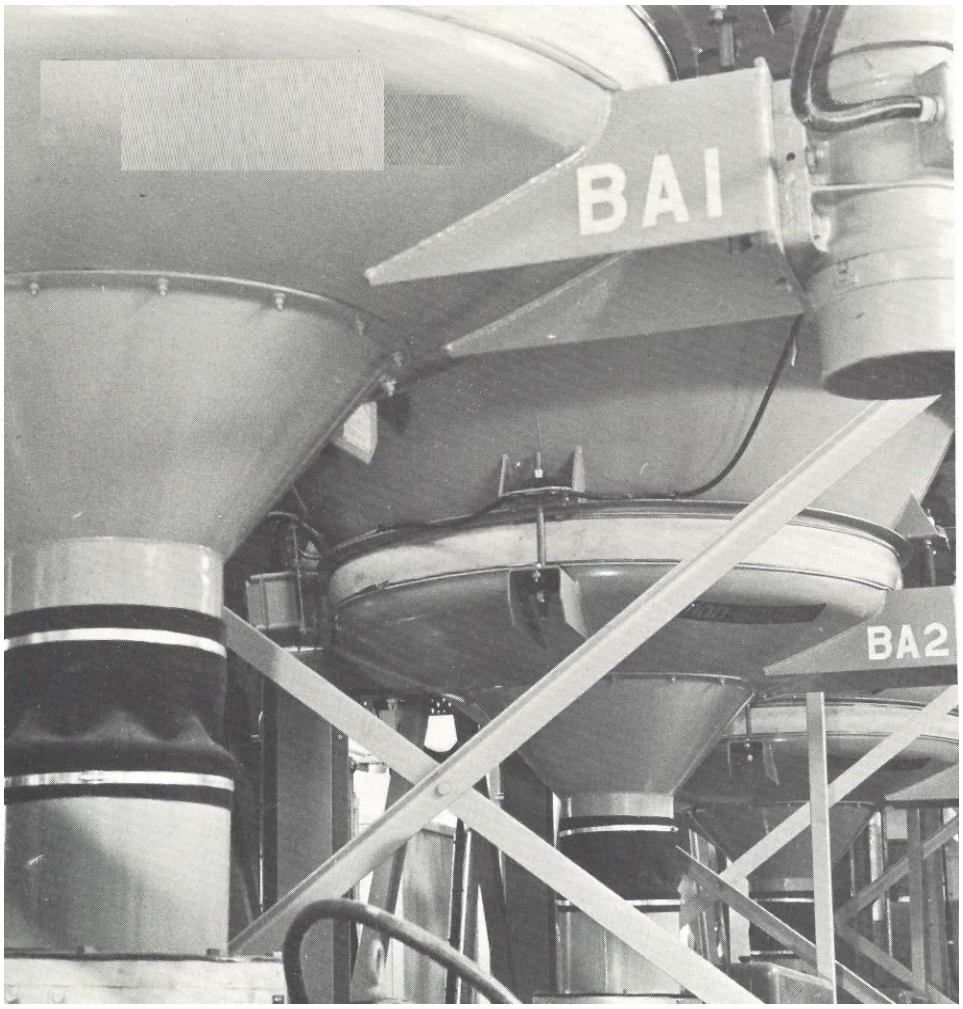
The diameter of the internal baffle cone is smaller than that of the Activator. The resultant annular gap between the two is pre-set to give the flow of material required.

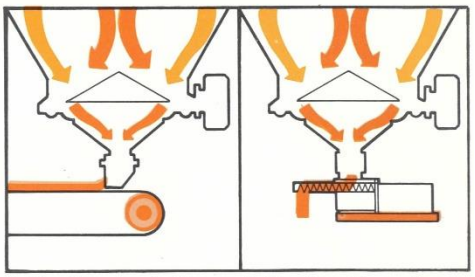
The size of the Bin Activator is determined by many parameters including:- the size of the silo, the material characteristics and the discharge throughput required. This can vary between 1/3 of the diameter of the silo, for free-flowing materials, to the same diameter for fibrous or flaky materials. Other parameters are also considered in order to optimise the specification.

The Grain Tech Engineer has at his disposal, a computer programme which will calculate the headload acting upon the Bin Activator. Knowing this, the Engineer will specify either a Light, Normal or Heavy-Duty machine.

The outlet beneath the Activator must only be connected to any subsequent equipment by means of a flexible sleeve, in order to isolate nay vibration from the downstream equipment.

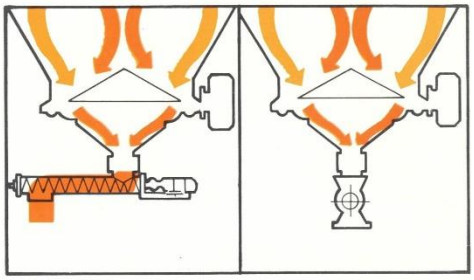
Applications





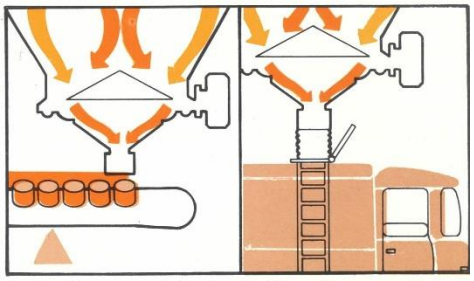
1 Feeding to a belt feeder

2 Feeding through a metering feeder



3 Feeding a screw conveyor

4 Feeding a rotary valve



5 Feeding a weighbelt feeder

6 Charging a road tanker

Operation

With difficult-to-handle materials, most flow problems occur after the material has flowed down the silo.

This is solved by removing the compaction zone and substituting a Bin Activator. The powerful horizontal thrusts from the external vibrator motor(s) breaks the vertical bridge of material between the baffle cone and the dish to feed the material into the discharge cone. The horizontal vibrations are also converted by the baffle cone into vertical vibrations that travel up through the material to break any bridging that is liable to take place.

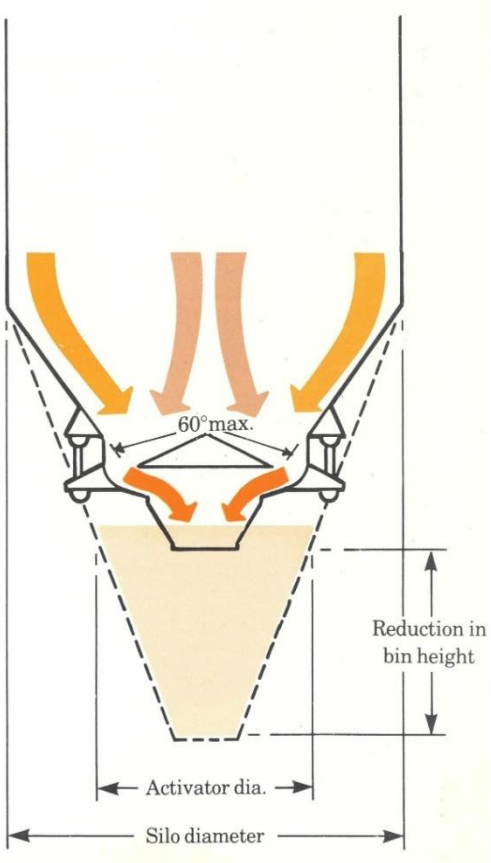
The Bin Activator induces a mass-flow condition within the whole silo. This balanced condition allows the material to move towards the annulus from both the periphery and the core of the silo at the same rate, thereby re-mixing any segregation that has occurred during the filling operation. Ratholing within the silo cannot occur as the material in the core of the silo is supported on the baffle cone.

Light aeratable materials that would normally flush through the silo, can be successfully handled, as the vibrations from the baffle cone release the entrained air raising the material density to such a degree that it can be handled in the ordinary way.

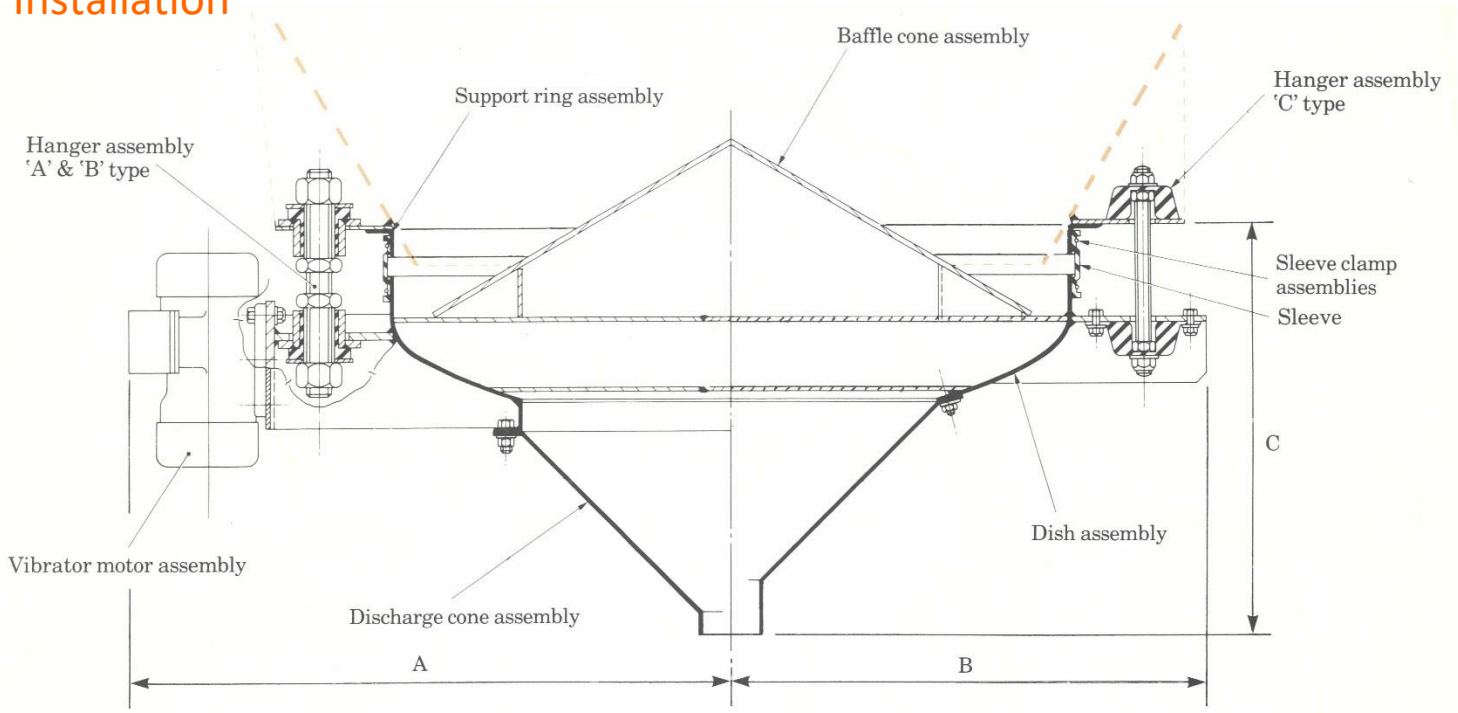
The only maintenance required is periodic lubrication to the externally mounted vibrator motor.

Installation

The Bin Activator is a pre-assembled, self-contained unit which can easily be fitted to new or existing silos. The support ring supplied with each Activator is welded, or bolted, to the hopper outlet. The Activator is then suspended from the ring by the suspension rods and the flexible sleeve is fitted between the ring and the Bin Activator ensuring dust-tight operation.97



Installation



Size Range

2-12 (610mm∅ to 365mm∅
Sizes above 12 can be supplied if required.

Materials of Construction

Mild steels and stainless steels; special applications on request.

Coatings:
Shellac, PTFE, Epoxy, special paints and special applications to suit customer requirements.

Finishes:
One coat primer, polishing to various grades including food quality.

Sleeve:
White food quality neoprene rubber as standard. Other special sleeve materials available to suit particular applications.

Vibrator Motor

HP and speeds are selected to suit Bin Activator size and application. 380/420 volts, 50c/s is standard. Other variations and classifications to suit requirements.5

		Dimensions (mm)			Hangers	
Size	**Duty**	**A**	**B**	**C**	**No.**	**Type**
2	Normal	643	485	410	3	C
	Heavy	643	485	410	4	C
3	Normal	797	637	550	3	C
	Heavy	813	637	560	4	C
4	Normal	1034	790	657	4	C
	Heavy	1039	795	697	4	B
5	Normal	1234	942	706	4	C
	Heavy	1239	947	738	4	B
6	Light	1405	1095	726	4	C
	Normal	1397	1095	826	4	B
	Heavy	1430	1095	826	4	B
7	Light	1568	1258	913	4	B
	Normal	1568	1258	913	4	B
	Heavy	1612	1292	963	4	A
8	Light	1720	1410	1044	4	B
	Normal	1764	1439	1094	4	A
	Heavy	1764	1439	1094	6	A
9	Light	1873	1563	1174	4	B
	Normal	1916	1591	1324	4	A
	Heavy	1918	1593	1324	6	A
10	Light	2045	1725	1256	4	B
	Normal	2068	1743	1406	4	A
	Heavy	2159	1745	1406	8	A
12	Light	2383	2048	1556	4	A
	Normal	2465	2050	1554	8	A
	Heavy	2504	2038	1524	8x2	A

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