

BULLETIN 944A

INSTALLATION & OPERATION

Evasser Bin Aerator

The Monitor evasser bin aerator is a device used to promote the flow of bulk powder material from a storage vessel.

PRINCIPLE OF OPERATION

The evasser operates by continuously introducing air into a mass of stored powder. When first conveyed into a storage vessel, the powder is actually a highly aerated mixture of air and particulate. In this state, the mixture flows quite easily.

As the material settles, however, the particulate and air separate. The material decreases in volume and increases in density, and in turn, begins to behave more like one solid mass rather than a fluid-like mixture of individual particles.

By replacing the naturally lost air, the high air-to-particulate mixture ratio is held, thus maintaining the fluid-like characteristic of the aerated powder.

PRE-INSTALLATION CONSIDERATIONS

Air Quality

Compressed air is needed to operate the evasser. The quality of air introduced into the stored powder will be that of the compressed air system. An oil and water trap should be installed on the feed lines to prevent contamination of stored powders.

Air Volume

Depending on the number of evassers installed, a large volume of air may be required. Small quantities of evassers can be operated from a compressor. Typically, large quantities of evassers are more economically operated from a blower.

Air Supply

It is strongly recommended that the evasser be operated on a continuous basis. It is critical that the operating pressure of the evasser exceed the interior vessel pressure at all times in order to prevent possible material back-flow problems. Vessel filling via a pneumatic conveying process will increase internal vessel pressure. This should be considered when determining the continuous operating pressure for the evasser.

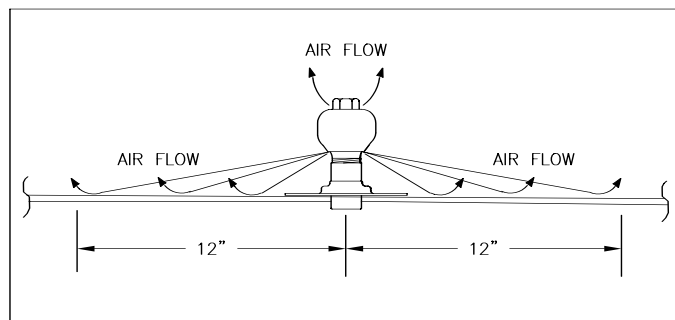


Figure 1: Evasser Principle of Operation

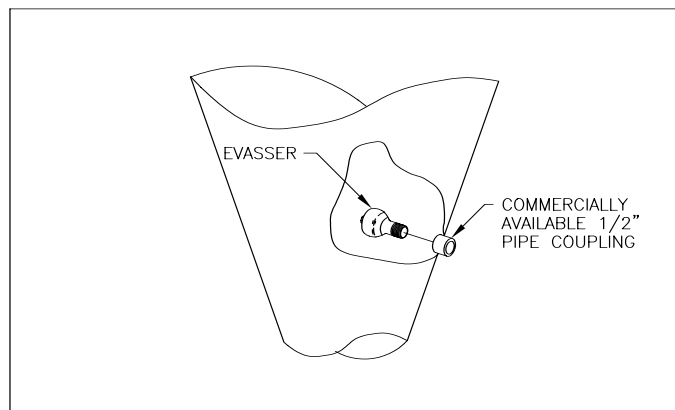


Figure 2: Evasser Installation w/o Mounting Plate

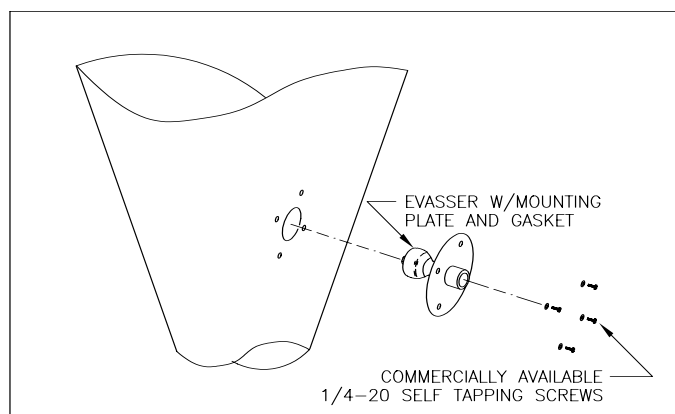


Figure 3: Evasser Installation with Mounting Plate



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Operating pressure is typically recommended at 3-5 psid (the difference between the air feed pressure and the internal vessel pressure) with air consumption of 3-3.5 scfm per evasser. Demanding applications may require operating pressures of up to 80 psid (consult factory). See Table 1 for air pressure and consumption rates.

MECHANICAL INSTALLATION

Mounting

The evasser can be supplied with or without a mounting plate.

Evasser w/o Mounting Plate: Weld a 1/2" pipe coupling into the vessel wall. Thread the evasser into the coupling from the vessel interior. See Figure 2. The feed air fitting is connected to the coupling from the vessel exterior.

Evasser with Mounting Plate: A 2-1/4" diameter through hole and four bolt holes are required to mount the evasser to the exterior of the vessel. See Figures 3 and 4. The feed air fitting is connected to the coupling from the vessel exterior.

Location

Knowing the origin of a flow problem is most beneficial, but the evasser is typically located at the discharge opening, where most flow problems originate. Evassers can be installed to fluidize the footing of the flow obstruction. Effective radius of each evasser is approximately 12 inches. See Figure 1. Space the evassers so the entire troublesome area is influenced by the evasser's air.

Air Connections

A 1/2" coupling is used to mount the evasser, regardless of whether a factory mounting plate was used. Each evasser will need to be connected to a compressed air source via this fitting. On applications using more than one evasser, the evassers should be fed from a properly-sized air manifold. See Table 1 for sizing information. The air manifold will ensure the individual evassers are fed a reasonably uniform air pressure and volume. If necessary, a commercial plumber can be contracted to install such a system.

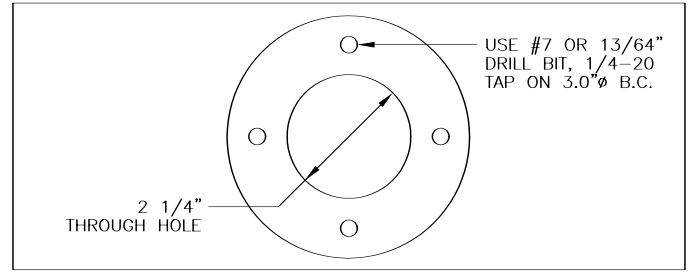


Figure 4: Evasser Cut Out Dimensions

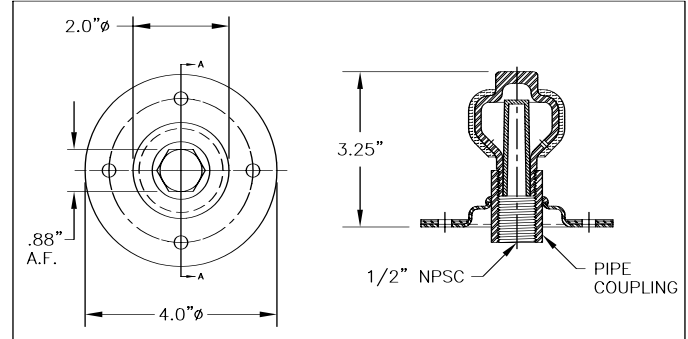


Figure 5: Evasser Dimensions

WARRANTY

Monitor Technologies LLC warrants each evasser bin aerator it manufactures to be free from defects in material and workmanship under normal use and service within two (2) years from the date of purchase within North America, and within one (1) year from date of purchase outside of North America. The purchaser must give notice of any defect to Monitor within the warranty period, return the product intact and prepay transportation charges. The obligation of Monitor Technologies LLC under this warranty is limited to repair or replacement at its factory. This warranty shall not apply to any product which is repaired or altered outside of the Monitor Technologies LLC factory, or which has been subject to misuse, negligence, accident, incorrect wiring by others or improper installation.

Monitor Technologies LLC reserves the right to change the design and/or specifications without prior notice.

Table 1: Pipe Size Needed for Manifold with Different C.F.M. and PSIG Required
C.F.M. Required

	25	75	90	100	125	150	175	180	200	225	250	270	275	300	360	450	540	630	720	810	900	990	1080	
	Manifold Size in Inches																							
* PSIG	2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3
	4	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3
	6	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
	8	3/4	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
	10	3/4	3/4	1	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
12	3/4	3/4	3/4	1	1	1	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	

* Material level in feet above center of pad multiplied by .433 will give PSIG required for proper operation.
FORMULA: SL = Material Level in Feet (SL) (.433) = PSIG

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