

# BULLETIN 934A

## INSTALLATION & OPERATION

### Air Pad Bin Aerator

The Monitor air pad bin aerator is an aeration device used to promote the flow of dry bulk powders from a storage vessel.

#### PRINCIPLE OF OPERATION

The air pad operates by continuously introducing air into a body of dry powder. When a powder is first conveyed into a storage vessel, it is actually a highly aerated mixture of air and particulate. In this state, the mixture flows quite readily. However, as the powder settles, the particulate and air separate resulting in a decrease in volume and an increase in bulk density. This deaerated state can cause powders to behave more like a single large solid structure rather than a fluid-like mixture of billions of individual particles.

By replacing the naturally lost air, the 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 air pad. The quality of air introduced into the stored powder will be that of the compressed air system. In the event it is imperative to maintain the integrity of the stored material, the air must be conditioned accordingly. A supplier of air conditioning devices should be consulted to determine the correct combination of filters. At minimum, an oil and water trap should be installed on the air pad feed lines to prevent fouling of the air pad.

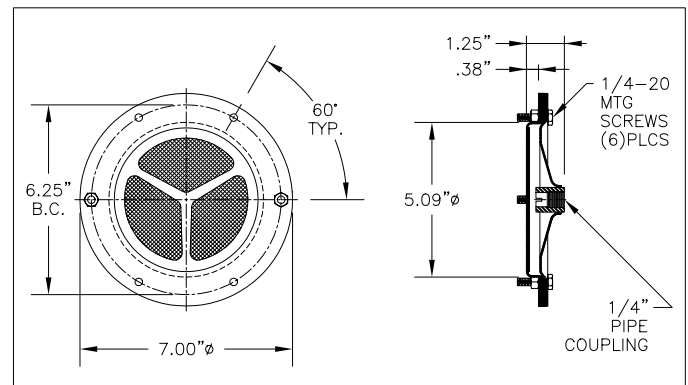
##### Air Volume

Depending on the number of air pads installed, a large volume of air may be required. Small quantities of air pads can be operated from a compressor. Large quantities are more economically operated from a positive displacement blower system.

##### Air Supply

The air pad is most effective when operated continuously, as noted in the operating principle section. It is critical that the air pad be operated whenever there is a rise in pressure within the storage vessel. Such conditions typically occur when a vessel is filled via a pneumatic conveying process. The operating pressure of the air pad must exceed the interior vessel pressure to prevent possible material back flow problems.

Operating pressure is typically 3-5 psid with air consumption of 4-6 scfm per air pad. In certain demanding applications, pressures of up to 80 psid can be used. See Figure 3 for air consumption rates.



Mechanical Dimensions

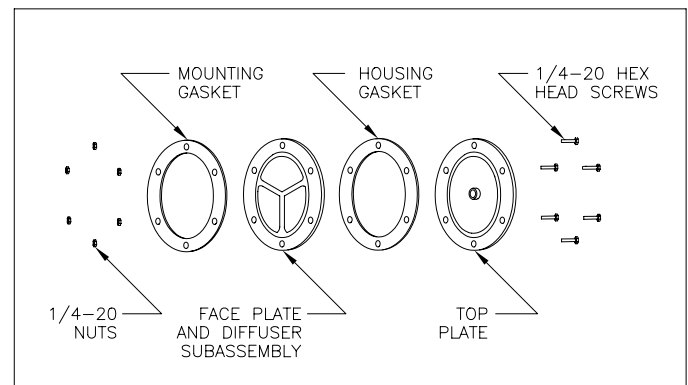


Figure 1: Air Pad Assembly



Monitor Technologies LLC

## MECHANICAL INSTALLATION

### Mounting

Refer to Figure 1 for correct assembly order.

The flat, low profile design of the air pad does not allow easy mounting on round vessels with diameters of less than 4 ft. Applications involving round vessels of less than 4 ft. in diameter should use Monitor's evasser bin aerator.

The air pad is supplied with six 1/4-20 mounting nuts and bolts. Use of this hardware will require access to the vessels interior to secure the 1/4-20 nuts. Alternatively, 1/4-20 self tapping screws can be substituted to eliminate the need to access the vessels interior.

A 5-1/16" diameter through hole and six 1/4-20 bolt holes are required to mount the air pad. See Figure 2.

### Location

The air pad is often located near the discharge opening, where most flow problems originate. The effective radius of each air pad is approximately 10 inches. Space the air pads so the entire troublesome area is influenced by the pads air. Knowing the origins of a flow problem is most beneficial for efficient application. Once the location of an obstruction is known, a small number of air pads can be installed to fluidize and eliminate the footing of the flow obstruction. Application engineers are available to assist in selecting the number and location of aeration equipment best suited to solve your individual needs.

### Air Connections

A 1/4" pipe coupling is provided for the air supply connection. Each air pad will need to be connected to a compressed air source via this fitting. Multiple air pads should be fed from a properly sized air manifold. The air manifold will ensure each individual air pad is fed a reasonably uniform air pressure and volume. See Table 1 for typical piping requirements. If necessary, a commercial plumber can be contracted to implement such a system.

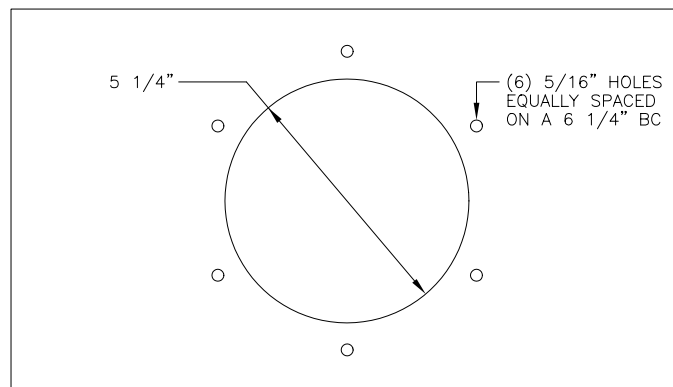


Figure 2: Cut-Out Dimensions

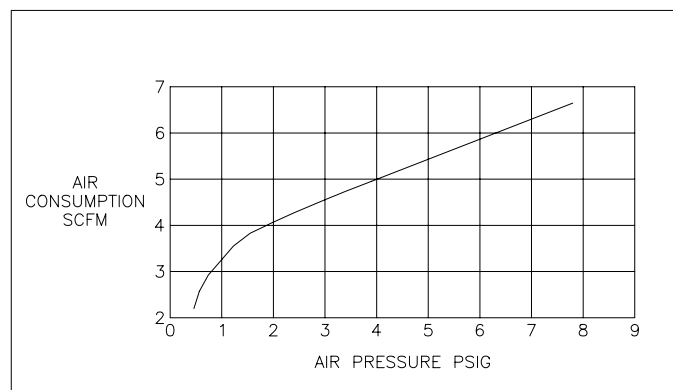


Figure 3: Consumption Chart

MANIFOLD PIPE SIZE	NUMBER OF AIR PADS
3/4"	1-4
1 1/4"	5-10
1 1/2"	11-15

Table 1

## WARRANTY

Monitor Technologies LLC warrants each air pad 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.

## SPECIFICATIONS

Construction:	T316 Stainless Steel
Housing Gasket:	Cork and Nitrile
Mounting Gasket:	Klingersil® (gypsum compound)
Max Operating Temp:	250°F*
Max Operating Pressure:	80 PSIG

\*Operating temperature is limited by gasketing materials



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