



## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

Thank you for purchasing the Model DA disc aerator flow-aid product as supplied by BlueLevel Technologies, Inc.. We realize you have a choice when purchasing disc aerators and we sincerely appreciate your business.



These instructions have been written to ensure the safe and successful installation and operation of the Model DA disc aerator. Please read and comply with all instructions before attempting installation.



Care should be taken when working with compressed air for this could result in eye or ear injury.



Before discarding shipping container, please inspect it thoroughly and verify that all parts ordered are accounted for. Sometimes smaller parts become stuck under carton flaps and other packaging materials.

In the event that information contained herein does not completely satisfy your requirements or answer your questions, you may contact our customer service and technical support team by telephone at 330-523-5215, or by fax at 330-523-5212. Alternately you may contact us by email at [bluelevel@blueleveltechnologies.com](mailto:bluelevel@blueleveltechnologies.com) or review the information at our website at [www.blueleveltechnologies.com](http://www.blueleveltechnologies.com).

Should your Model DA disc aerator ever require service either in or out of warranty, please contact us to obtain an RMA number prior to shipping the unit to us.

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## SAFETY TERMS & SYMBOLS



**WARNING:** Warning statements identify conditions or practices that could result in injury or loss of life.



**CAUTION:** Caution statements identify conditions or practices that could result in damage to this product or other property.

## RECEIVING AND STORAGE

Your Model DA disc aerator supplied by BlueLevel Technologies, Inc. meets the specifications as shown in this Installation, Operation and Maintenance instruction manual. However, damage may have occurred during shipment. Therefore, the disc aerator should be inspected when received. If any damage is found, it should be reported to the carrier. If the aerator is to be stored before installation, keep it in a dry area away from dust, dirt and water.

## WARRANTY

All Model DA aerators are covered by a one-year limited warranty.

## PRINCIPLE OF OPERATION

The Model DA disc aerator is a flow-aid device that is designed to introduce air into a body of dry powder material contained within a bin, hopper silo or other vessel while discharging the material from the vessel, thereby fluidizing the material and promoting its flow. This is an effective approach to promote and ensure material flow of powders. When a powder is first introduced into the storage vessel it is an aerated mixture of the material particulate and air. In this aerated state the material will flow readily. However, as the powder settles within the vessel the air escapes and the particulate packs. The de-aerated material will therefore behave like a single large mass rather than like a fluidized mixture. By using a series of aerators to replace the lost air, the material is fluidized and flow is promoted.

Use of a disc aerator product will provide best results on dry powdered materials in flat or conical silos, bins and hoppers. The installation should be PH neutral and the temperature should be less than 350° F (175° C). The disc aerators work best when the moisture content is LESS THAN 12-15%. Large particles such as gravel, feed, grain and pellets do NOT aerate. The disc aerator also does not work well in applications where the particles are interlocking such as wood shavings, shredded plastic or fiberglass. The disc aerator works best with a particle size of 60 mesh (250 micron, 0.0098", 0.250mm) or smaller. Specific materials that respond well to aeration include: Portland cement, fly ash, lime, carbon black, flour, diatomaceous earth, soda ash, gypsum, soap powders, pigments, bentonite, bran, detergents and many other materials.

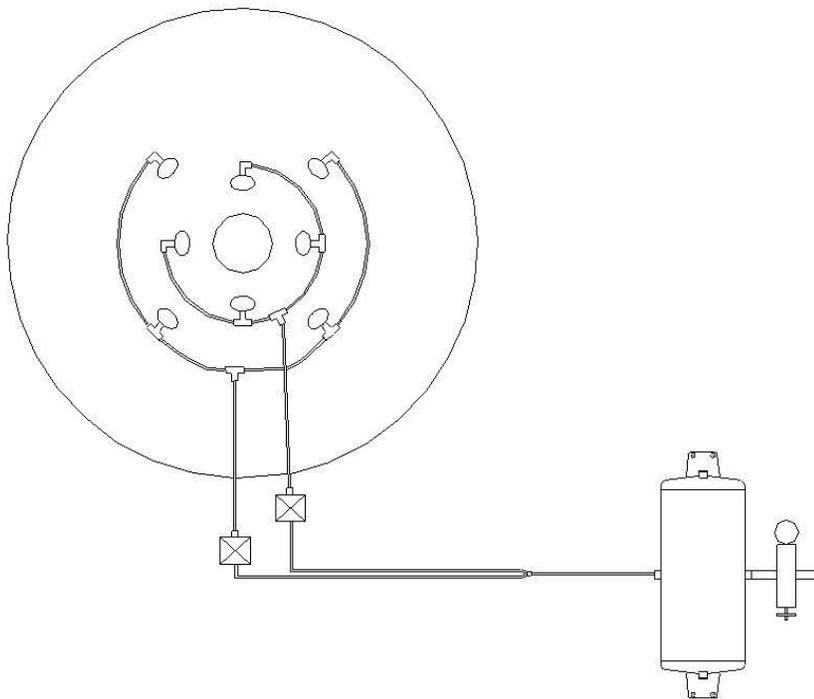
## MECHANICAL INSTALLATION

### Air Quality

The quality of the air supply to the Model DA disc aerators can affect their operation and longevity. The air supply should be clean and dry. A minimum of a filter and moisture trap should be installed on the aerator feed lines to prevent fouling. Consult with a supplier of air conditioning equipment to ensure your supplied air to the aerators is “clean and dry”.

### Air Distribution

Only operate the disc aerators while discharging material from the vessel to avoid creating air channels or voids. To ensure balanced air distribution it is recommended to use an air manifold to operate no more than four Model DA disc aerators together as shown below:



### Air Consumption

Pulsed air flow saves air and decreases the chance of air pockets and channeling to occur. Every material and application is unique, but typical air pulse sequencing is 2-3 seconds ON time with 7-20 second OFF time. Air capacity for the Model DA 4” diameter disc aerator with 1/2” NPT OD and 1/4” NPT ID air inlet stem is 10-20 CFM @ 20-30 PSI (15-20 m<sup>3</sup>/h @ 1-2 bar). The air consumption total CFM for your application can be calculated as follows:

CFM X # of Disc Aerators X Total ON-time (expressed in fraction of a minute)

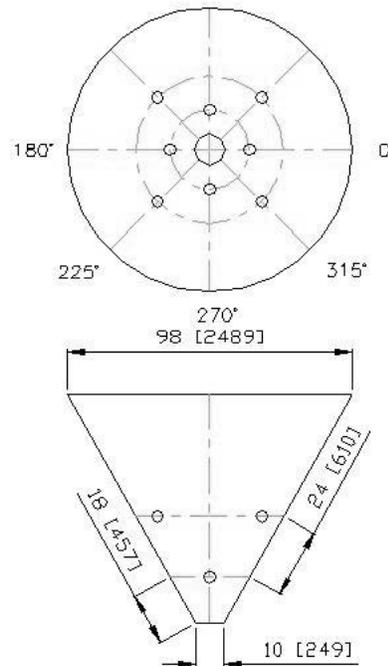
Example: Four (4) disc aerators with on-time of 20 seconds per minute (1/3 minute)  
10 CFM X 4 X 1/3 = 13.33 CFM

## Air Connections

A ½" NPT OD / ¼" NPT ID air stem is used to connect each disc aerator to its air supply. Each disc aerator will need to be connected to an air supply using this fitting.

## Location Guidelines

Aerate the bottom ⅓ – ⅕ of the vessel outlet cone section. The slope of the cone should be at least 45° for best results. On curved surfaces the mounting diameter needs to be greater than 16" to ensure proper sealing. Locate the first row of disc aerators 12"-18" from the discharge opening. Use enough units to space every 20-24" on this row. Subsequent rows should alternate to achieve complete coverage. Spacing on higher rows can be increased. See the following example:

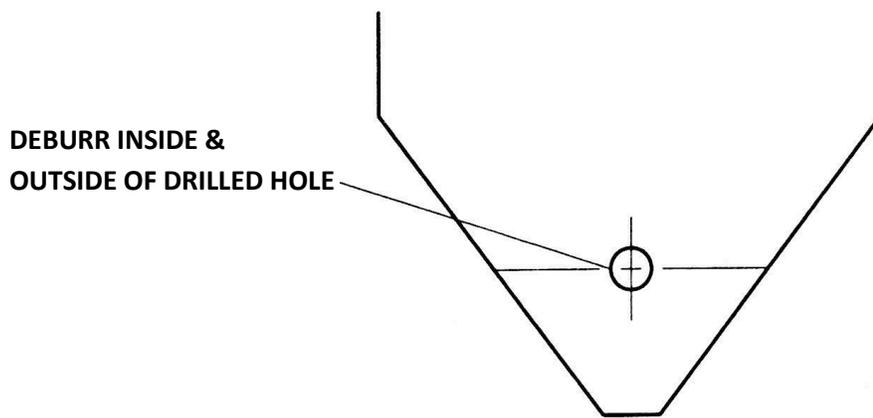


## Internal Installation

The Model DA disc aerator can be mounted from inside the bin. Alternately, the accessory external mounting kit may be used to allow for installation and replacement from outside of the bin. Refer to the section titled “External Installation”.

1. Drill a ⅞" (22mm) diameter hole through the bin wall for each aerator at their predetermined locations. The disc aerator is supplied with the hardware for use in mounting it from inside of the bin, including a washer and nut.

2. Deburr the inside and outside of the mounting hole. If not deburred damage to the disc aerator O-Ring will occur. Make certain that the area where the fluidizer will be mounted is free of debris or defects (dents, caked material, weld seams, etc.) to ensure proper sealing. Refer to below:



3. From inside the bin insert the disc and stem assembly into the hold.
4. From outside the bin put the flat washer and nut onto the stem.
5. Torque the nut to 25 ft-lbs. (35 N-m) for proper operation and performance.
6. Attach the air supply line to the stem.

### **External Installation**

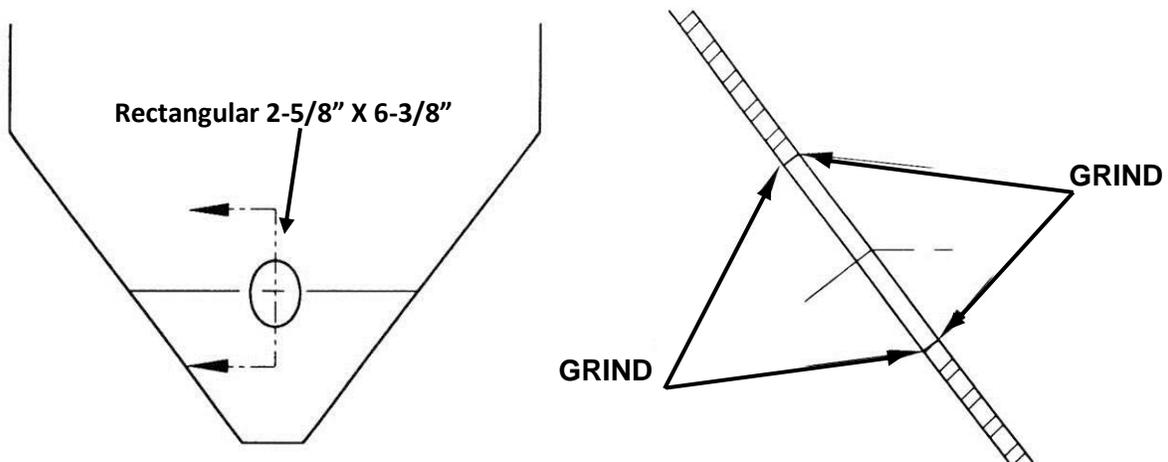
The Model DA disc aerator can be mounted and then subsequently replaced from outside of the bin. This eliminates the need for climbing in and out of the bin, a potentially difficult task. This requires the use of the Model DA disc aerator external mounting kit accessory item, BlueLevel part# 321000, for each disc aerator. This can simplify installation. Once the initial rectangular hole is cut, the aerator can be assembled with the external mounting bracket and installed on the bin within a couple of minutes. The external mounting kit accessory includes the disc aerator mounting bracket with gasket attached, clamp bracket and jam nut.

Refer to the below instructions for the overall assembly sequence of the aerator and external mounting kit.

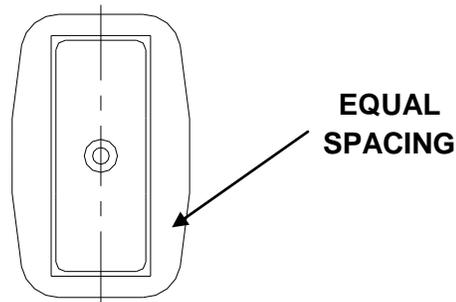
To install the aerator using the external mounting kit:

1. Cut a rectangular opening 2- $\frac{5}{8}$ " wide X 6- $\frac{3}{8}$ " high in the bin wall for each aerator. Cut the opening where each aerator location is desired.

2. Grind all surfaces of the cut opening – **the inside hopper wall must be smooth and free of any burrs or slag.**



3. Assemble the Model DA disc aerator to the external mounting kit mounting bracket with gasket (gasket will face internal bin wall) using the thinner mounting nut (jam nut) provided with the external mounting kit. Insert the external mounting bracket with disc aerator assembly into the bin through the cutout and make sure the plate is centered with equal spacing around the rectangular opening for proper sealing.



4. On the outside of the bin attach the clamp bracket to the disc aerator and mounting plate assembly using the washer and larger clamping nut provided with the disc aerator assembly.
5. Torque clamping nut to 20 ft-lbs. (27 N-m).
6. Attach the air supply line to the disc aerator.

## TECHNICAL DATA

Disc:

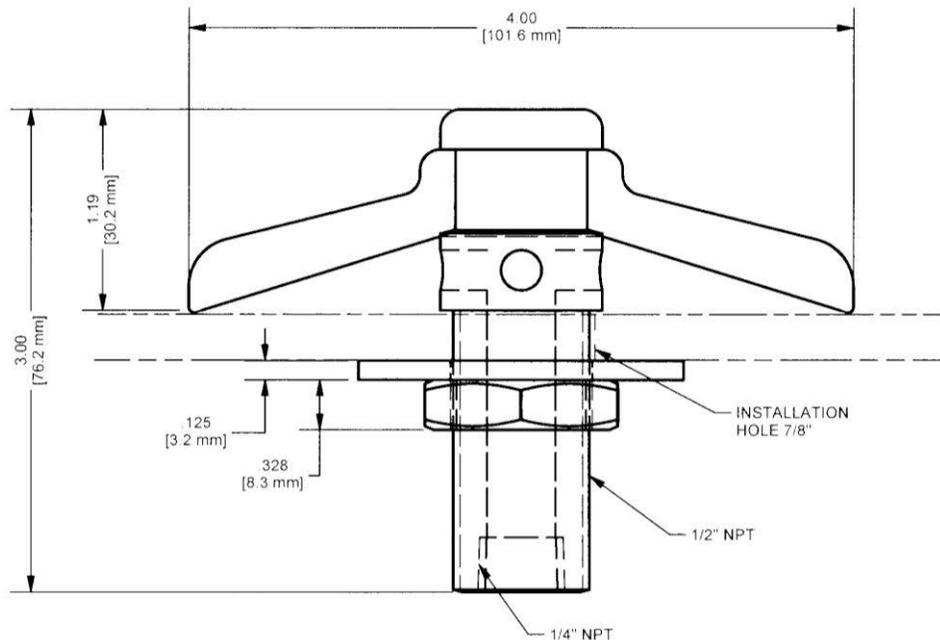
Colors:	Blue (Standard); White (Optional)
Size:	4" Diameter
Operating Temp:	-60° F to +350° F (-50° C to +175° C)
Fluidizing Method:	Aeration Sweeps Bin Wall and Disc Vibration
Airline Connection:	1/2" NPT External; 1/4" NPT Internal
Airflow Required:	10-20 CFM @ 20-30 PSI (15-30m <sup>3</sup> /h @ 1-2 bar)

Materials of Construction:

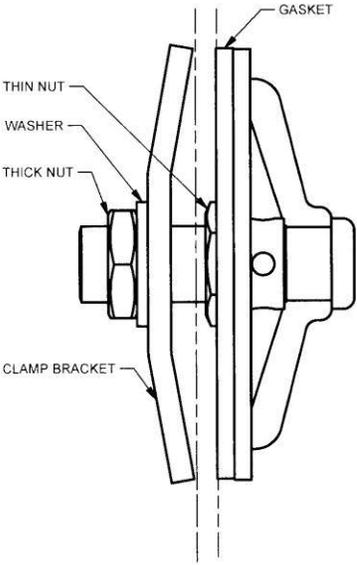
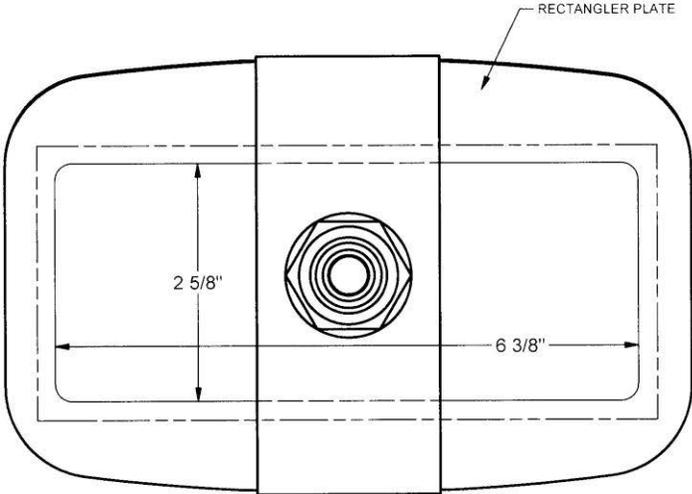
Disc:	FDA Approved Silicone
Air Inlet Stem:	Zinc Plated Steel
O-Ring	Buna-N
Mounting Hardware:	Zinc Plated Steel
External Mount Kit:	
Brackets/Nut:	Zinc Plated Steel
Gasket:	Neoprene; -70° F to +200° F (-55° C to +93° C)

## DIMENSIONS

### Disc Aerator



External Mounting Kit Assembly









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