Stucco Aeration Disc

Operation & Maintenance Manual

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Introduction

This manual contains **Original Instructions** written to assist in the maintenance of the Stucco Aeration Disc equipment. For information regarding normal operation please refer to the Area Operator's Manual. Maintenance should only be performed by qualified, trained personnel.

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1 Safety Overview

1.1 General Safety Precautions for Machine Operations and Maintenance

All safety requirements listed below are those generally applicable to this equipment but are not intended to be all-inclusive. They are intended for qualified, experienced personnel who can understand the maintenance and hazards of machinery operation. Types of components may require other precautions as determined by the customer's own safety policies. These precautions should be included in the comprehensive safety program for the installation.

These general safety precautions apply to all electrically or mechanically powered equipment and should be observed, as appropriate.

This equipment has been constructed using the highest standards of workmanship with industry accepted state-of-the-art techniques, components and designs. It has been inspected and tested as thoroughly as possible prior to shipment for proper operation and defects in workmanship. However, this equipment, like any other, may develop problems due to normal wear, abuse, or unforeseeable circumstances. The equipment therefore requires proper operation and maintenance. In the course of performing these functions, personnel will be required to work on or near the equipment. The following precautions are given to avoid injury to these personnel.

Warning:

As with many types of equipment, parts of this machine may start moving as soon as the pneumatic circuits are pressurized or electrical connections are energized, which may result in injury to personnel or damage to the machine.

Never put yourself at risk.

Many pieces of equipment have the potential to cause serious injury or even death. Be sure to understand the safety concerns related to a piece of equipment before undertaking or performing any maintenance or clean out procedure. Work with your supervisors to address any safety concerns prior to undertaking work.

1.2 Stucco Aeration Disc Safety Guidelines

Warning:

Never insert any foreign objects into the operating equipment openings.

DO NOT remove the polyester "Airslides" or "Airslide Boxes" while the Stucco Silo is not empty. Doing so would cause large quantities of stucco to flow out of the Silo. This would cause a potentially dangerous working situation. Lockout all sources of energy before opening the "Airslide Boxes" and changing the polyester "Airslides."

DO NOT put your hands or arms through the Aeration Disc into the Stucco Silo when the Stucco Silo is full or discharging.

DO NOT try to clear any jams or plugs while the equipment is in operation.

1.3 Set-Up Safety

Avoid locating equipment in environments for which it was not designed (wet, extreme temperatures) or environments which may create a dangerous operating condition such as an explosive atmosphere (gas, dust).

Avoid the use of unauthorized or substitute parts and materials in servicing the equipment. Substitute parts or materials could produce a hazardous operating condition.

Use only materials of adequate size and strength to suit the flows and pressures which will be present in the operating system. Use safety factors in selecting materials for strength to allow for shock and over-pressure conditions should they occur.

1.4 Start-Up Safety

Ensure all pneumatic and electrical connections which may have been removed, replaced, or disconnected during an equipment shutdown have been reconnected securely before starting any equipment.

Return all valves (manual and control system operated) and movable machine members which may have been changed from their normal start-up condition during shutdown back to their normal start-up condition before starting any equipment.

Ensure that all personnel, product, etc., are clear of machinery prior to starting any equipment.

1.5 During Operation

Ensure that all “Airslide Boxes,” “Airslides,” and pipes are secured in position while the Stucco Aeration Disc is in operation.

1.6 Shutdown Safety

Prior to performing any work on the Stucco Aeration Disc, LOCK OUT ALL SOURCES OF POWER!

2 Equipment Overview

The Stucco Aeration Disc is used to aerate the stucco in the Stucco Silo. Air is pumped through 4 small “Airslide Boxes” and 16 large “Airslide Boxes” into the Stucco Silo. Each of these “Airslide Boxes” have a polyester fabric that prevents the stucco in the Silo from falling into the “Airslide Boxes” and getting into the air system. The “Airslide” is also used to disperse the flow of air evenly into the stucco and aerate it effectively. When aerated, the stucco can flow easily like a liquid through the discharge chute in the middle of the Aeration Disc. This prevents the stucco from clumping together and blocking the discharge chute.

The Stucco Aeration Disc includes (8) integrated “Lifting Lugs” for safe and easy installation.

2.1 Major Components

The Aeration Disc has six major components when dealing with maintenance and repairs. The key features of the Stucco Aeration Disc are; the “Small Airslide Box,” the “Large Airslide Box,” the “Manual Shut-off Valves,” the “Stucco Silo Discharge Cute,” the “Air Piping” and the “Main Air Manifold.”

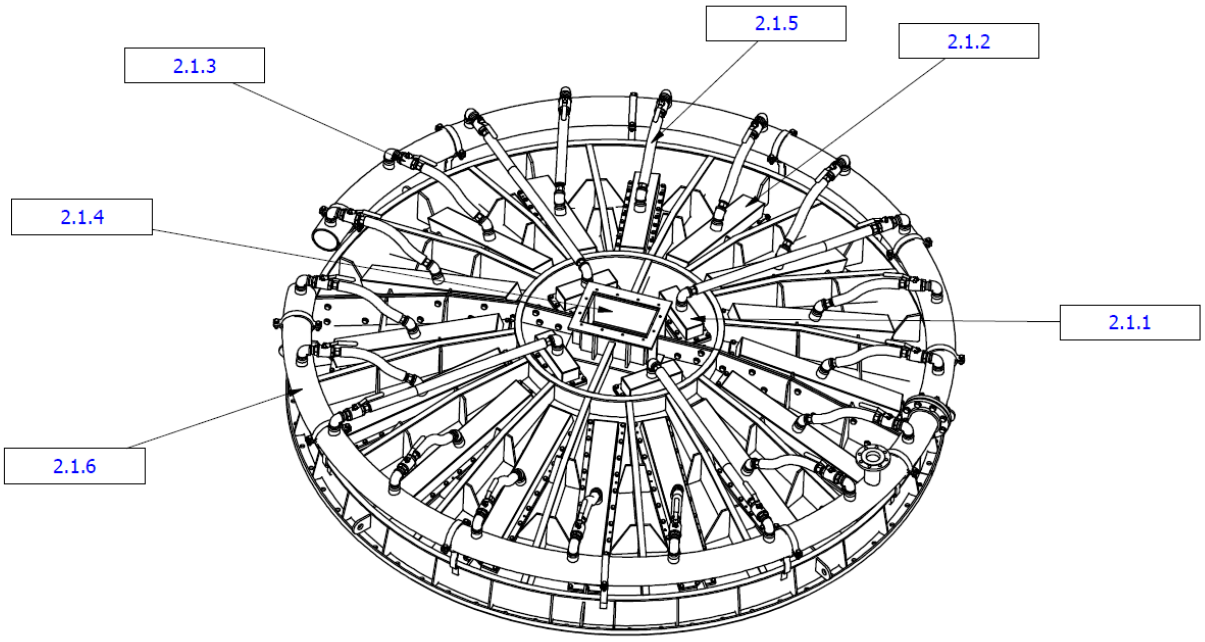

Figure 2.1: Part Identification - Angled Bottom View

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2.1.1 Small Air Slide

There are four “Small Airslide Boxes” close to the center of the Stucco Aeration Disc. Inside these boxes is a rectangular polyester fabric that prevents the stucco from flowing into the box but allows air to pass through. Hoses connected from the “Main Air Manifold” connect into each “Small Airslide Box.” Air flows through these pipes, into the “Small Airslide Box,” through the fabric and then into the Stucco Silo where it aerates the stucco.

2.1.2 Large Air Slide

There are sixteen “Large Airslide Boxes” arranged in a circular pattern on the Stucco Aeration Disc. Inside these boxes is a rectangular polyester fabric that prevents the stucco from flowing into the box but allows air to pass through. Pipes connected from the “Main Air Manifold” connect into each “Large Airslide Box”. Air flows through these hoses, into the “Large Airslide Box”, through the fabric, and then into the Stucco Silo where it aerates the stucco.

2.1.3 Manual Shut-Off Valve

Each of the twenty hoses that lead to an “Airslide Box” has a manual shutoff ball valve. If an “Airslide” gets clogged up, the “Manual Shut-Off Valve” can be turned to a “Closed” position and air won’t flow to that “Airslide Box.”

2.1.4 Stucco Silo Discharge Chute

The aerated stucco in the Stucco Silo is funneled down into the centre of the Aeration Disc. It then flows through the “Stucco Silo Discharge Chute” and into a rotary valve.

2.1.5 Air Piping

Twenty hoses connect from the “Main Air Manifold” to each of the twenty “Airslide” boxes. Each hose also has pipe fittings and a manually operated ball valve.

2.1.6 Main Air Manifold

The “Main Air Manifold” is a larger pipe that wraps all around the edge of the Aeration Disc. It is fed air by the Aeration Disc Blower. Twenty pipes are attached to this manifold and carry air to the “Airslide Boxes” on the Aeration Disc.

3 Installation

3.1 Receiving Your Equipment

As soon as the equipment is received, it should be carefully inspected to make certain the unit is in good condition and all items listed on the packing list are received. Even though the equipment is packaged at our plant, it is possible for it to be damaged in shipment. All damages or shortages should be noted on the Bill of Lading. Purchaser should take immediate steps to file reports and damage claims with the carrier. All damages incurred to the units in transit are the responsibility of the common carrier since it is the manufacturer's policy to make shipment F.O.B. its factory: i.e., Ownership passes to the purchaser when the unit is loaded and accepted by the carrier. Any claims for in-transit damage or shortage must be brought against the carrier by the Purchaser.

3.2 Pre-Installation

1. If there is any cleaning/power washing or painting to be done, it should be done before installation. To ensure accurate alignment and squaring, clean any surfaces of existing equipment that mates with the new equipment.

2. Prepare the Stucco Aeration Disc for installation by removing any shipping bolts/blocks, straps, plastic and clean off any rust protective coatings.

3. Review and train production personnel on the operation of the Stucco Aeration Disc.

3.3 Installing

At a minimum, installation requires the expertise of a millwright with alignment credentials.

3.3.1 Installation of the Equipment

1. Move the two halves of the Stucco Aeration Disc into place. Bolt and weld the two halves together. Weld the "Stucco Silo Discharge Chute" into place.

2. Move the assembled Stucco Aeration Disc into place. Adjust to the proper elevation (refer to the Gyptech supplied Installation drawing for application specific details).

3. The Stucco Aeration Disc should be securely mounted to the Stucco Silo using bolts and the mounting holes provided on the bottom of the Stucco Silo and the mounting holes along the edge of the Aeration Disc.

4. Mate and seal all inlet/outlet connections ("Stucco Silo Discharge Chute" and flanged pipe connection from "Main Air Manifold" to the Aeration Disc Blower) to surrounding process equipment (refer to the Gyptech supplied installation drawing for application specific details.

5. Seal purchased "Airslides" into the "Airslide Boxes."

6. Ensure that all fasteners connecting the Stucco Aeration Disc and the Stucco Silo are torqued to specification.

7. Coil wrap hoses to ensure there are no pinch points on the hoses. Mark all wiring, conduits, and pneumatic lines before installation. Mark all electrical drawings as per any field additions or changes, etc.

8. Air System:

    - Only clean, dry air should be used
    - The “Main Air Manifold” has a 3” air supply inlet.
    - There are also 1.5” air supply hoses leading into every “Airslide Box.”
    - Inlet air flow should be 3-6 ft^3/min per square foot of “Airslide” material.

3.3.2 Electrical Installation

1. Upon completion of electrical connections all covers should be kept closed and secure at all times. Disconnect power before opening areas where electrical terminations exist.

2. Connect any electrical, water and pneumatic lines to existing equipment that were disconnected for the Stucco Aeration Disc installation.

3. Reinstall any guards and covers that have been removed during installation.

4 Maintenance

The following refers specifically to the basic Gypsum Technologies Stucco Aeration Disc. The instructions below may not encompass any customization or optional components on your machine.

In order to prevent premature failure of the equipment, the following preventative maintenance procedures are recommended. It is recommended that maintenance work be done by qualified trained millwrights only. The following procedures are not intended to be in-depth technical procedures but a simple step-by-step guide for skilled maintenance personnel.

Warning:

When performing any maintenance work always lockout all sources of energy (electrical, pneumatic, mechanical, electromagnetic, chemical, thermal, hydraulic, etc.).

4.1 Preventive Maintenance Schedule

The following table summarizes the optimal maintenance intervals.

4.1.1 6 Months

Task	Notes
Manually check if air is flowing through each “Airslide”. For each “Airslide” turn the “Manual Shut-Off Valve” leading to it to the “Open” position and then turn all other “Manual Shut-Off Valves” to the “Closed” position.	When you check each “Airslide”, see if stucco continues to flow at the typical rate. If the stucco stops flowing or flows more slowly it could mean that that “Airslide” has been clogged up. If it is suspected that an “Airslide” is clogged up, make a note of it and keep its “Manual Shut-Off Valve” turned to the “Closed” position.
Inspect all “Manual Shut-Off Valves” and all piping to check for air blowing out of leaks.	If air leaks are found, they should be fixed. Some leaks can be fixed by adding Teflon tape to leaky pipe connections. Other leaks can be fixed by replacing damaged components.
Check for loose, missing, or damaged fasteners.	Walk around the Stucco Silo and Stucco Aeration Disc to visually see if any fasteners are missing, loose or damaged. Tighten or replace bolts as necessary.
Check the “warp tape” or rope between the Stucco Silo and Stucco Aeration Disc for degradation or for stucco spilling out.	If stucco is leaking out of the gap between the Stucco Silo and Stucco Aeration Disc, then efforts should be made to seal the connection better. See Section 5.1 for suggestions.

4.1.2 Every Five Years.

Task	Notes
Whenever the “Stucco Silo” stops discharging stucco or is discharging at an abnormally slow rate replace all polyester “Airslides” with new ones.	If all “Manual Shut-Off Valves” are tested in the open position and the Stucco Silo seems to still be discharging slowly, then it is most likely that all of the “Airslides” are fouled and need to be replaced.

4.2 Maintenance Procedures

4.2.1 Replacement of the Polyester Airslide Material

Under each “Airslide Box” is a rectangular polyester fabric. The fabric needs to be replaced when it gets so clogged up that air cannot get through it. The replacement procedure is as follows:

1. Purchase new fabric, have “Airslide” fabric and RTV silicone at hand.
2. Empty the Stucco Silo of all stucco.
3. Turn off the Aeration Disc Blower, turn the Butterfly Valves around the Aeration Disc to a “Closed” position and turn the “Manual Shut-Off” valves for the “Airslide Boxes” to the “Closed” position.
4. Lock out and tag out power to the Aeration Disc Blower and any equipment that can feed stucco to the silo.
5. Bring in scaffolding or mobile platforms to provide safe access.
6. Remove the piping attached to the “Airslide Box”.
7. Remove all the bolts holding the “Airslide Box” onto the Stucco Aeration Disc. Be careful, as the old silicone may hold the box in position. Keeping some bolts in place loosely, cut the silicone in the flange to free the “Airslide Box”, then finish removing bolts and box.
8. Remove the old polyester fabric.
9. Clean off all old silicone from the flange.
10. Place the new fabric flat on top of the wire mesh in the “Airslide Box”.
11. Ensure that none of the fabric is stuck on top of the flanges of the “Airslide Box”. This could prevent an effective seal when the “Airslide Box” is reattached to the Stucco Aeration Disc. Also make sure that there are no holes where the air could escape around the “Airslide”.
12. Seal the fabric into the “Airslide Box”. Can use RTV silicone.
13. Reattach the “Airslide Box” to the Stucco Aeration Disc. Apply RTV silicone between the Aeration Disc and the “Airslide Box” flanges to achieve an airtight seal.
14. Reattach the piping back into the “Airslide Box”.
15. Repeat steps 6-13 for all of the “Airslides”. All fabric should be replaced at the same time.
16. Turn the “Manual Shut-Off” valves to the “Open” position, the Butterfly Valves to the “Open” position, and turn on the Aeration Disc Blower.
17. Monitor blower pressure and check for any leaks.

4.2.2 Replacement of the “Manual Shut-Off Valves” and Piping

Hoses, Ball Valves, and pipe fittings connecting the “Main Air Manifold” to the “Airslide Box” might fail periodically. To replace, shut off the Aeration Disc Blower. Unscrew and replace the necessary part and then turn the Aeration Disc Blower back on.

5 Troubleshooting

5.1 General

Problem	Possible Cause(s)	Possible Solutions
Poor polyester fabric life.	Environmental Factors	High temperatures, moisture content, and dust composition will affect fabric life
	Poor Installation	If the fabrics are not sealed and installed correctly in the “Airslide Box”, then a hole might exist between the Stucco Silo and “Airslide Box”. Air will tend to go through this hole and not disperse evenly. This prevents the stucco from aerating properly. The fabric should be replaced and reinstalled properly.
Stucco not discharging or discharging at an abnormally slow rate through the “Stucco Silo Discharge Chute”.	Most polyester fabrics have been clogged up and the stucco is bridging over the chute.	Replace all fabrics.
Stucco spilling out of seal between Stucco Silo and Stucco Aeration Disc	There are leaks in the “warp tape” or rope seal between the Stucco Silo and Stucco Aeration Disc	Try cleaning and spraying the leak with water. The water will react with the stucco and cause it to harden. The hardened stucco might end up sealing the leak.
		Clean the leak and chip away any hardened stucco. Add more silicone to try to fill up and stop the leak.

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