

# SILO SOLUTIONS

**REMOVES BUILD-UP**  
**RECLAIMS LOST MATERIAL**  
**RESTORES FLOW RATES**

**AIRMATIC**

284 Three Tun Rd. Malvern, PA 19355  
215.333.5600  
infocenter@airmatic.com  
airmatic.com

## WHY SILO SOLUTIONS FROM AIRMATIC?

Since 1944, AIRMATIC has specialized in helping Customers throughout the New England and Middle Atlantic States eliminate problems with the flow of powders and bulk solids held in storage vessels. Through our Service Group, our crews not only install and maintain Air Cannons and Vibrator Flow-Aid Systems to prompt and maintain product flow, but also provide mechanical and acoustic vessel clean-out services to remotely, and safely, clear build-up and blockage obstruction in silos, bins, bunkers, stacks, industrial chimneys, railcars, pipes, and tanks. Our vessel cleaning services, generally referred to as Silo Cleaning, are used in manufacturing, mining, construction, and agricultural facilities on a wide range of bulk materials to: (1) Remove Product Build-Up; (2) Restore Flow Rates; (3) Recover Design Capacity; (4) Prevent Cross-Contamination; (5) Reclaim “Lost Material”; (6) Eliminate Combustion-Generating “Hot Spots”; and (7) Decommission Storage Vessels at Facility Conversions or Shut-Downs.

- **Removes Product Build-Up**
- **Eliminates “Hot Spots”**
- **Reclaims “Lost” Material**
- **Restores Flow Rates**
- **Recovers Design Capacity**
- **Prevents Cross-Contamination**

Whether the flow obstruction is caused by materials that cling, arch, bridge, or tunnel in silo, bin, and hopper applications, or build-up / block-off in pipe and stack applications, AIRMATIC's Silo Cleaning Services are increasingly chosen because we can select from an arsenal of clean-out technologies, our SILO SOLUTIONS Tool Kit, developed by Airmatic and our franchise partner, MARTIN ENGINEERING, the world leader in enhancing material flow for 75 years.



## OUR SILO SOLUTIONS TOOL KIT:

- Prevents hazardous confined space entry by enabling our trained Technicians to remotely operate the controls
- Reduce the risk of damage to vessel linings, walls, and bottoms, a problem prevalent with other clean-out methodologies
- Eliminate environmental waste issues because no water or chemicals are used
- Eliminate potential contamination by burst or leaking hoses from hydraulic-driven equipment — our mechanical and acoustic cleaning technologies are compressed-air driven.
- Allow the vessel to stay “on-line” during clean-out (based on plant policy) which can be especially important during production periods.
- Preclude the risk of fire through the use of non-sparking equipment.

## MARTIN HD BIN WHIP TOOL

A compressed-air driven (plant air 85-100 PSI), remotely-controlled, heavy-duty, reversing motor equipped with application specific, specially designed flails and cutting edges (the Whip Head) mounted to a modular, articulating boom which is used to dislodge stubborn materials without damaging the vessel's lining, walls, or bottom. The Whip Head is lowered from the vessel's topside access port / inspection hatch opening, and precisely positioned, based on the type of flow obstruction. With the Whip Head in place, our trained Technicians remotely control, from outside the vessel, the operating speed, 360° boom movement, and draw rate based on material characteristics and equipment load-out capabilities. As the agglomerated material is undercut, it falls from its own weight. The process continues safely

and efficiently until the vessel is completely empty or meets Customer expectations / requirements. The HD Bin Whip's easy-to-assemble components are compact and lightweight, so the highly mobile

Whip is easily transported, set up, and operated by one man. Suitable for explosive environments, the HD Bin Whip cleans up to a 30' radius from each 18" topside opening to a depth of 225'.



## BIN WHIP REQUIREMENTS

Maximum Vessel Diameter (with single center access opening)	60 ft
Maximum Vessel Height (to vessel discharge)	225 ft
Minimum Opening	18 in
Minimum Working Height	56 in
Cleaning Unit Weight (overall)	850 lbs
Reel & Hose (by sections)(121.1kg)	267 lbs
Air Unit	122 lbs
Boom Modules	150 lbs
Compressed Air Requirement	100 cfm @ 90 psi
Electrical Requirement	120 VAC (for lights)
Roof/Top Load Rating	> 50 PSF

### Non-Combustible Material\*

High Grade Steel Chain  
100 CFM @ 90 PSI

### Combustible Material\*

Nylon Rope w/UHMW Knuckles  
Brass Chain 100 CFM @ 90 PSI

**Pneumatic Controls** allows precise positioning of cleaning head to remove material without risk to vessel.

**Double Wire Braid Hose** supplies strength for control. Air Motor provides powerful whip action to remove even the most stubborn build-up from walls.

**Cleaning Flails** – urethane-coated Rope Whips with knuckles, or brass or steel chain based on stored material.\*

**Hose Reel** separates from boom assembly for ease of transportation and set-up in tight quarters.

**Modular Boom** extends to 30ft, allowing cleaning of vessels up to 60ft in diameter from a single, central opening.

AIRMATIC may require an outage for equipment set-up or vessel cleaning, depending on your operation and material. AIRMATIC may require lift equipment to raise silo cleaning apparatus to the top of the vessel.

## BIN DRILL TOOL

A hydraulic-driven, remotely-controlled drilling rig used to bore a flow channel through a ridged, arched, or completely blocked vessel so that bulk material dislodged by the HD Bin Whip, the Sonic Horn, or the combined use of these Tools during the cleaning process has a pathway to the discharge. The Bin Drill's platform is clamped over the vessel's topside access port / inspection hatch opening, and, using multiple lengths of bolt-connected drill shaft, application-specific, graduated drill bits are rapidly and efficiently fed into the flow obstruction until a sufficient flow channel has been opened. The components of the highly mobile Bin Drill are constructed of compact, lightweight, spark-proof materials, and are easily transported, set up, and operated by one man. The highly efficient power unit includes portable controls that enable our trained Technicians to precisely manage the drilling operation from outside the vessel. Suitable for explosive environments, the Bin Drill has been used on vessels up to 200' deep.



## PROBLEM

Bridged or arched material creates a "no flow" condition.

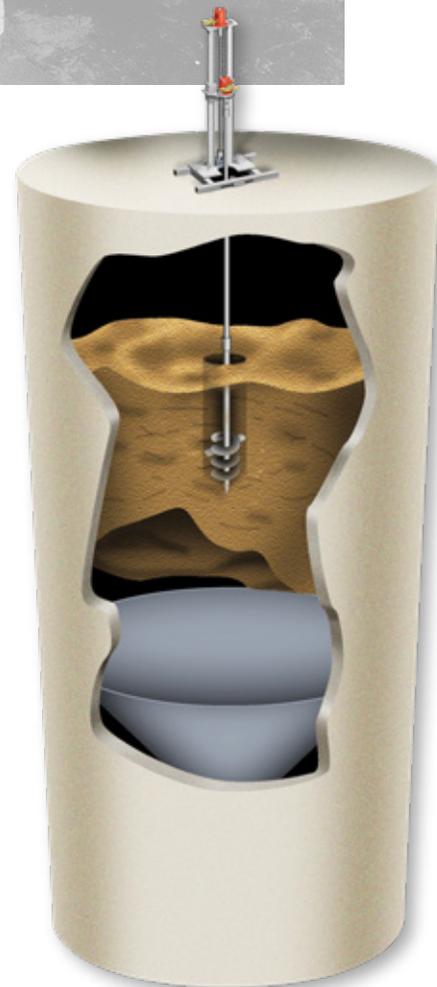
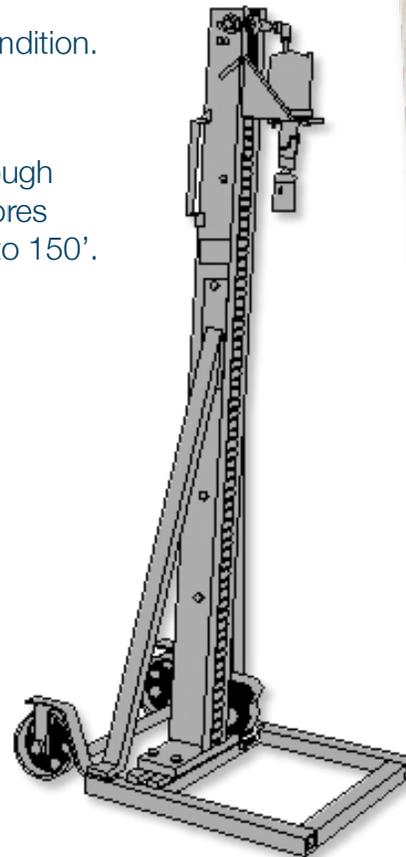
## SOLUTION

The Bin Drill Tool opens a flow channel through tough clogs. The powerful hydraulic action of the Drill bores through blockages, clearing a path to depths up to 150'.

## BIN DRILL REQUIREMENTS

Minimum Opening	18 in
Overhead Clearance	6 ft
Roof/Top Load Rating	> 50 PS
Electrical Requirements	230/460 VAC 3 HP

**Contact us today or simply complete our Application Data Sheet and let us know when to contact you!**



Bin Drill Tool

## ACOUSTIC CLEANER TOOL

A compressed-air driven (plant air: 85-100 PSI) Sonic Horn that produces deep penetrating, low-frequency, high-energy sound waves. The sound waves are produced by the compressed air flexing a titanium diaphragm in the Horn's sound generator. The sound waves are then magnified as they are emitted through the Horn's bell, and travel at > 1100 ft/sec in a 360° radial pattern. The Sonic Horn is mounted to or suspended in the vessel at strategic locations, and then air pressure and volume are controlled remotely from outside the vessel. Alternating sound waves, repeating 60-420 times per second, produce a range of fundamental frequencies that cause dry particulate deposits to resonate and become fluidized. Once fluidized, gravity causes the material to flow freely to the discharge.



Acoustic Cleaner Tool

- Removes Product Build-Up
- Eliminates “Hot Spots”
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Because Sonic Horns operate at frequencies higher than the resonance frequency of steel, ceramic linings, concrete, etc, they do not cause vibrational damage to the vessel or surrounding structure. Suitable for explosive environments, Sonic Horns have not only been used for vessel cleaning, but also for maintaining air preheaters, precipitators, SCR reactors, heat exchangers, filters, boiler tubes, baghouses, draft fans, and ductwork.

## CHUNKBUSTER CARTRIDGE TOOL

A specially-designed, high-strength steel tube filled with liquid carbon dioxide (CO<sub>2</sub> as used in fire extinguishers) which, when remotely energized, converts the liquid to expanding gas creating an instantaneous pushing force (the CARDOX System). One or more tubes with discharge nozzles are mounted to the vessel at point-specific build-up locations. The tube, which houses a replaceable chemical heater and rupture disc, is filled with liquid carbon dioxide. When energized by a small electrical charge, the chemical heater converts the liquid carbon dioxide to gas, causing it to expand in volume by 600%. Pressure builds up then pops the disc, releasing a heaving mass of CO<sub>2</sub> gas which generates an instantaneous pushing force of up to 40,000 PSI through the discharge nozzle to rapidly dislodge the most rock-solid blockages. The CARDOX Tubes can be reused by replacing the heater and disc, and recharging the CO<sub>2</sub>. The System is certified as a non-explosive device, making it suitable for virtually any type of vessel.

## PROBLEM

Lumps of material block the discharge.

## SOLUTION

The Chunkbuster Cartridge Tool safely and effectively dislodges blockages using the powerful force of expanding CO<sub>2</sub> gas. It uses non-explosive generators to cause rapid expansion of CO<sub>2</sub> gas to fracture lumps, chunks and compacted material, opening the discharge and restoring flow.

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Chunkbuster Cartridge Tool



## SKILLED, PROFESSIONAL SUPPLIER

### SERVING NEW ENGLAND & MIDDLE ATLANTIC STATES

With our 40 years of silo cleaning experience, first as a sales agent for MARTIN Silo Cleaning Services (25 years), and now as the MARTIN® Authorized Service Provider in the Northeastern States (15 years), we understand the need for professional service that meets your need for prompt response (even when it's not an emergency), and productive, trained service crews that not only recognize the importance of safety procedures and compliance with plant policies, but also the need to meet or exceed your expectations. Every crew member is trained in safety and held responsible and accountable for a safe work environment. AIRMATIC adheres to contract standards set by federal and state governing authorities, and as a member of ISNETWORLD and BROWZ LLC, we meet the safety, procurement, sustainability, quality, and regulatory guidelines set by review and verification processes.

Our Application Specialists are experienced professionals who know your industry and appreciate the importance of helping you find ways to reduce operating costs and increase productivity within your budget and time frame. They'll walk you through the information gathering process, prepare a quotation for the service, schedule the work to meet your requirements, and manage your project to its successful completion.

Each Technician is trained in safety and is held responsible and accountable for a safe work environment. In addition to our own 35-point safety, operation, and maintenance checklist, our Service Work meets standards set by:

- Occupational Safety & Health Administration (OSHA)
- Mine Safety & Health Administration (MSHA)
- OSHA Confined Space Trained
- ISNETWORLD - A Contractor Safety Compliance Verifications Organization
- Joseph A Homes Safety Association - A Mining Industry Health & Safety Organization
- Pennsylvania Governor's Occupational Safety & Health Association
- BROWZ LLC - A Contractor Safety Compliance Verification Organization
- Equipment Manufacturers Annual Certification Training
- Avetta LLC

## MATERIALS CLEANED

- Animal Feeds
- Aragonite
- Boiler Ash
- Borax
- Catalysts
- Cement
- Chemicals
- Clinker
- Coal
- Cullet
- Detergent
- Dusts
- Fertilizer
- Flour
- Fly Ash
- Grain
- Gypsum
- Kaolin
- Lime
- Nitrates
- Ore Fines
- Ores
- Pelletized Fly Ash
- Pet Food
- Plastic
- Salt
- Sand
- Soda Ash
- Sugar
- Magnesium Oxide
- Potash
- Sludge
- Soybean Meal
- Wood Chips & Pellets

## VESSELS CLEANED

- Bins
- Bunkers
- Chutes
- Flue-Gas Stacks
- Industrial Chimneys
- Hoppers
- Railcars
- Pipes
- Silos
- Tanks

Allow AIRMATIC to help you gain increased productivity, decreased downtime, and a safer, cleaner work environment. Put our SILO SOLUTIONS Tool Kit to work keeping your bulk solids storage and processing vessels free flowing and operating at design capacity. Whether you have an "EMERGENCY" silo cleaning need or want to discuss a PREVENTATIVE MAINTENANCE PROGRAM tailored to your Plant's needs, we're ready to help.

# **AIRMATIC**®

**WE'LL HANDLE IT.**

**AIRMATIC** founded in 1944, is a woman-owned Industrial Distributor, with installation and maintenance capabilities, offering equipment, machinery, and shop supplies to the Industrial, Construction, Utility, Government, and Commercial Markets. Our products and services are sold through three business units:

The **MATERIALS MANAGEMENT GROUP** provides products and services to industries that convey, store, transport, and process powders and bulk solids from aggregates, cement, and chemicals to foods, grains, metals, power generation, and waste water treatment applications;

The **SERVICE GROUP** provides fabrication, installation, and maintenance services to improve bulk materials handling efficiency; mechanical clean-out services for silos and hoppers to eliminate material flow problems; and shop repair/rebuilding and modifications services of products sold by the Company.

The **TOOL GROUP** provides power tools, personal protective equipment, materials-handling equipment, shop equipment and MRO supplies used for production, fabrication, assembly, metal removal, maintenance, and storage in manufacturing, construction, utility, and commercial applications.

**Our Customers tell us that by choosing AIRMATIC to solve their problems, they gain increased productivity, decreased costs, and a safer, cleaner work environment.**

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