

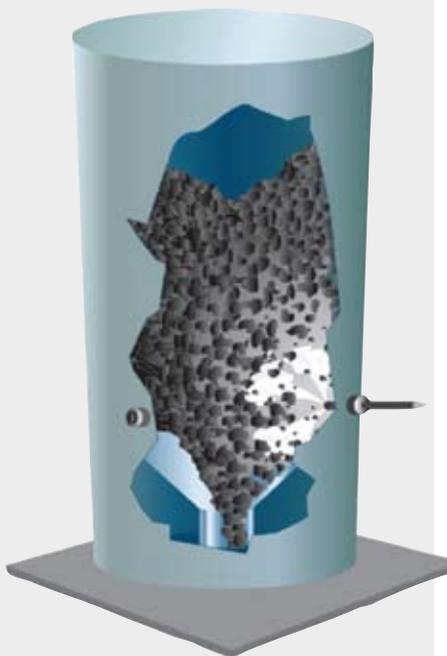


# CARDOXCO<sub>2</sub>

CARBON DIOXIDE BLASTER



# blast.



**PNEUMAT**  
SYSTEMS INC.

## Cardox Easily Clears Granite-Hard Materials from Bulk Storage Vessels

### SAFE, REUSABLE SYSTEM

Pneumat's proprietary Cardox blasting system is a safe, effective way to clear blockages and hang-ups from a bulk materials handling line. It powerfully but gently breaks rock, concrete and other materials that have become rock-hard. Storage vessel walls are not damaged in the process. Cardox is cost-effective and safe to transport. Tubes are designed to be filled, fired, rebuilt, filled and fired again.

### DESIGNED FOR USE IN HAZARDOUS ENVIRONMENTS

The gentle, hydraulic breaking force of Cardox was originally designed for use in coal mines, where volatile methane gas makes explosion a constant threat. Acting on natural cracks and weaknesses in the material, Cardox dislodges stuck material by instantaneously releasing liquid CO<sub>2</sub> at up to 34,000 psi. Cardox does the work—creating power without the high-velocity shock waves of an explosive—while you monitor the job safely, at a distance.

### CARDOX IS VALUED BY DIVERSE INDUSTRIES

Cardox is widely and safely used in feed mills and grain handling plants, where grain dust can be volatile and dangerous. It is safe and effective when used in preheater/precalciner systems, feeder systems, kilns, paper and pulp mills, waste handling sites and storage systems, among others. It works where other tools cannot—in high-temperature production areas and where hazardous, flammable or combustible materials are stored. The harder the material, the better Cardox works.

**It's too expensive not to fix the problem.**

» safer » faster » easier

# The tools you need to keep your product flowing.

## Cardox is simple to use.

### 1. CHARGE THE TUBE

To operate, a Cardox tube is charged with a critical amount of CO<sub>2</sub>. This is easily done with Pneumat's Rapid-Fill Station, which uses a positive displacement air-driven pump to fill tubes with exactly the right amount of CO<sub>2</sub>. No CO<sub>2</sub> is wasted, so a fifty pound CO<sub>2</sub> bottle lasts longer.



A QUIK-LOK SOCKET IS IDEAL WHERE PROBLEMS REOCCUR

### 2. PLACE THE TUBE

Cardox tubes must be inserted into the material they will dislodge. In areas where problems reoccur, a permanent Quik-Lok Socket Base and Plug provides quick, secure access. To use the socket, remove the plug, drill into the material, and secure the tube with the Quik-Lok Tube Clamp.



CARDOX TUBE SECURED THROUGH A PORTHOLE

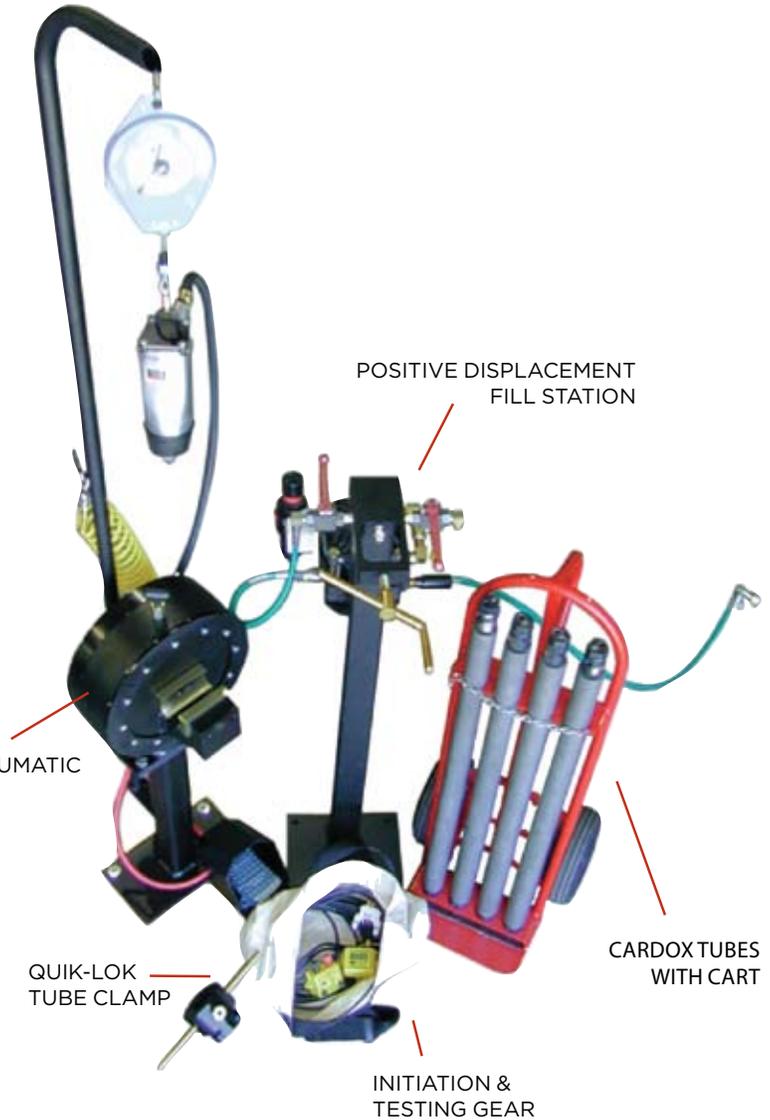
Cardox tubes can also be placed directly in the material to be dislodged through a porthole in the vessel. Pneumat's exclusive Threaded Head accepts our heavy-duty eyebolt for secure retention and retrieval of the tube. Another Pneumat exclusive: shafts can be added for easy placement in hard-to-reach areas.

### 3. FIRE THE TUBE

Once tubes are secured, a charge is initiated with Pneumat's Remote Energizer. This safe mobile unit allows operators to stay in safe positions at a distance while Cardox does all the work.

### 4. REBUILD THE TUBES

After firing and retrieval, Cardox tubes are torn down, rebuilt and recharged using Pneumat's 360° Air Vise. The Vise's ergonomic design makes the process safer, faster, easier.



- Non-explosive
- Safe in potentially explosive environments
- One blast moves tons of blocked material
- Use at operating temperatures
- No damage to vessel
- Re-usable
- No vessel entry necessary
- No exposure to flying debris
- Regularly certified & tested for safety

  
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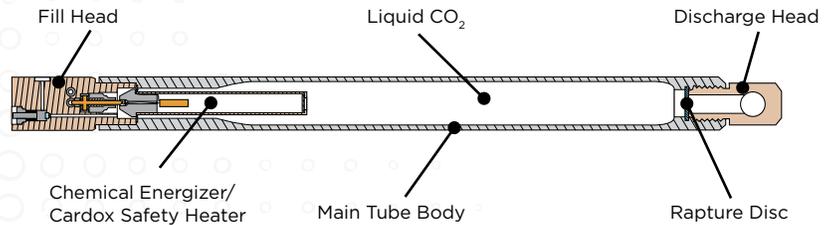
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# safe, gentle blasting power

**We make Cardox.  
We use it.  
We know it works.**

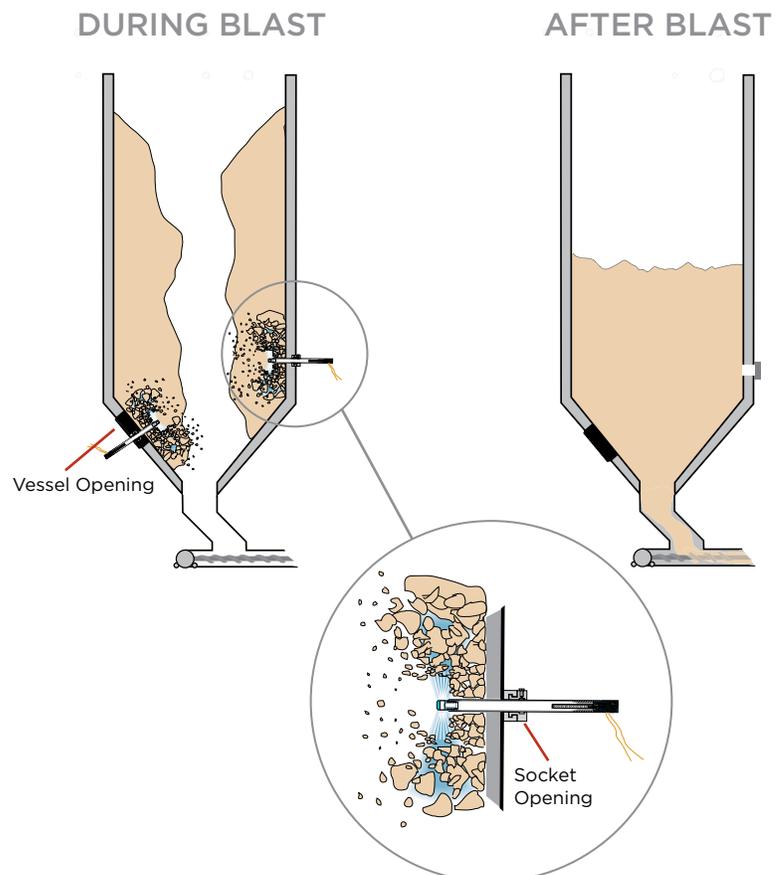
- Pneumat Systems manufactures, rents and sells Cardox. We've used it for years in diverse situations. We know the product and continuously advance its performance.
- When we say Cardox is effective, we speak with confidence. We've consistently seen it knock loose rock-hard deposits, move chunks blocking a discharge, and break up material in flat-bottom bins to start the "excavation" of hard, deteriorated product.
- Our mission is to help you eliminate persistent bulk material flow problems with great tools and effective service. We're ready to show you tools that work, train your personnel, or send TeamPneumat to tackle the jobs that others walk away from.



## HOW CARDOX WORKS

The heart of Pneumat's Cardox System is a reusable, high-strength alloy steel tube, which holds a charge of liquid carbon dioxide and a safety heater. When the heater is remotely initiated by a small electrical charge, the CO<sub>2</sub> reaches the shear pressure of the rupture disc (up to 34,000 psi). High-pressure CO<sub>2</sub> is instantly released through ports of the discharge head, creating a powerful force that dislodges tons of blockage in less than a second. Once fired, the Cardox tube is rebuilt with a new Cardox safety heater, shear disc and sealing washer and recharged with CO<sub>2</sub> for another use.

A Cardox cartridge cannot set off an explosion. Heat generated within the cartridge is automatically cooled by sudden expansion of carbon dioxide, and there is no flame.



  
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# Pneumat Products and Services

## Eliminate blockages in these and other bulk materials:

bone meal	gravel
bran	hydrated lime
cereal	paper pulp
chocolate	sand
chrome	sawdust
coke	slag
corn	soda ash
feed	sugar
fertilizer	sunflower meal
fish meal	wheat
flax seed	wood chips
flour	wood pulp
fly ash	

## Cardox is especially effective on:

catalysts	iron oxide
clay	minerals
clinkers	rape seed meal
coal	rice
coarse ore	refuge
concentrate	salt
distillers grain	soya meal
feed ingredients	wheat mids
finished cement	
gypsum	



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## An Arsenal of Professional Tools



### BINWHIP

Powered by hydraulics, the BinWhip is efficient, powerful and easy to control. Its cleaning heads deliver tremendous power, yet are safe and won't damage vessel walls. BinWhip eliminates the need for dangerous, confined space entry

by employees because it is used from the top of the vessel. It breaks down for easy transport from bin to bin, and its hydraulic Power Unit requires only a 440 Volt 3-phase electrical hook-up to operate.



### BINDRILL

BinDrill is the safe, effective way to break through bridged material in a bulk storage vessel. It is operated from the top of the vessel to maximize safety. Hydraulics give it the power to work through rock-hard materials.



### AIRFORCE

Air Cannon System  
The AirForce System is a permanent, automatic solution to persistent hang-ups in the bulk material production line. Regular blasts of safe, compressed air from AirForce Cannons cut down on material build-up, reduce hands-on work, and minimize day-to-day problems.



### CARDOX

Blasting System  
Our bulk material breaking system uses the power of rapidly expanding carbon dioxide to break stubborn, compacted material safely and quickly.

Every piece of Pneumat equipment comes with complete on-site training and a full one-year warranty.



TEAMPNEUMAT  
SILO CLEANOUT SERVICE

## A PROFESSIONAL TEAM

When the real costs of a built-up, ratholed, bridged or plugged silo are calculated, TeamPneumat's professional services emerge as the smart alternative. Our team gets the job done the first time, with the best tools available.

## UNMATCHED SAFETY

Pneumat Systems has never had a safety violation.

We exist to make bulk material maintenance less dangerous, and we succeed. Call us for help and we hit the road, ready to provide expertise that gets production back on track, fast.

## MAKE THE CALL FORGET THE PROBLEM

- Quick response
- Highly-trained personnel
- Safety first
- Proprietary, all-hydraulic tools
- Equipment designed, used & perfected by TeamPneumat
- Self sufficient crews, well-equipped
- Only a 3-phase electrical source-supplied by customer
- Efficient service delivery
- Customer may participate as desired
- On the job until it's finished
- No hidden costs

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