SM-225

Installation, Operation and Maintenance Instructions

Automatic Easy to Clean Magnetic Grate in Housing

ERIEZ MAGNETICS HEADQUARTERS: 2200 ASBURY ROAD, ERIE, PA 16506–1440 U.S.A.
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and INSPECTION APPLICATIONS

Table of Contents

Automatic Easy to Clean Magnetic Grate in Housing

Typical Automatic Easy to Clean

General Information

Introduction

This manual details the proper steps for installing the Automatic Easy to Clean Magnetic Grate in Housing.

Careful attention to these Installation Requirements will assure the most efficient and dependable performance of this equipment.

If there are any questions or comments about the manual, please call the factory at 814/835-6000 for assistance.

⚠ Caution – Strong Magnet

This equipment includes one or more extremely powerful magnetic circuits. The magnetic field may be much stronger than the Earth's background field at a distance several times the largest dimension of the equipment.

• If you use a heart pacemaker or similar device, you must never approach the equipment because your device may malfunction in the magnetic field, with consequences up to and including death.

• To avoid serious pinch-type injuries caused by objects attracted to the magnet, keep all steel and iron objects well away from equipment. Do not allow hands, fingers and other body parts to be caught between the equipment and nearby steel or iron objects.

• Keep credit cards, computer discs and other magnetic storage devices away from the equipment because the magnetically stored information may be corrupted by the magnetic field.

• Keep electronic devices, such as computers or monitors, away from the equipment because exposure to the magnetic field may result in malfunction or permanent damage to such devices.

Contact Eriez if you have a question regarding these precautions.

⚠ Caution

Safety labels must be affixed to this product. Should safety label(s) be damaged, dislodged or removed, contact Eriez for replacement.

Description

Eriez Automatic Easy to Clean Magnetic Grate in Housing (Auto ETC) is designed to remove fine-particle ferrous contamination and tramp from a dry free-flowing product under gravity flow.

The "Auto ETC" consists of a dust-tight stainless steel product housing with a pneumatically operated cleaning drawer. During the cleaning cycle, the contaminants are discharged outside the product area. The discharge chute is located under the safety housing, which covers all moving parts.

The processing steps are as follows:

1. Product flow with contaminants (2-3 hours to start)
2. Ferrous material collect on the tube magnets
3. Product shut off before cleaning cycle
4. Activate grates with push button marked "OUT"
5. Air cylinders push magnet grates out of product area
6. Tube scrapers follow tubes to scraping area
7. Tube scrapers stop and scrape metal off
8. Ferrous contamination falls outside product area
9. Cleaning is finished in about 5 seconds
10. Push "IN" button to return magnet to product area

"Ferrous" is iron containing material.

"Tramp" are particles up to 1/2 inch in any dimension.

Two air cylinders drive the drawer in and out. A filter/regulator controls the speed the drawer moves, and a double acting solenoid valve controls the direction of travel of the air cylinders and drawer.

The unit requires a 60 to 80 psi air supply and a 120 / 60 VAC control to activate the double solenoid valve.

Installation

Receiving the Auto ETC

After carefully uncrating the unit, notice that there are two sections, the unit itself and the control panel. Two pneumatic hoses should connect them. The hoses were used to test the unit at our Facility and can be used as-is or new hoses or piping can be used to locate the panel further from the unit. The push button station may also be remotely located.

Threaded lifting/mounting holes (3/8-16) are located on top of each cylinder-mounting block.

Flange Mounting

The grate housing is designed to be flange mounted to the pipe, chute or ductwork. The unit must be rigidly attached and supported to resist the 50 lb. weight shift of the magnet drawer from the product housing.

Mounting Location

Select a location in the system where the product will free fall through the grate magnet, such as a section below a product shut off valve, delumper or other area where product will not back-up into the grate. Standard unit height is 11-1/4 inches (286mm) flange.

Air Supply and Connections

A 60 to 80 psi air supply is required to the 3/8 NPT port connection at the filter regulator.

Connect 3/8 tubing from the solenoid valve to the right angle connectors on the product housing. No specific tube to fitting connection is critical at this point because these connections can be easily reversed after wiring the control to the solenoids, if necessary.

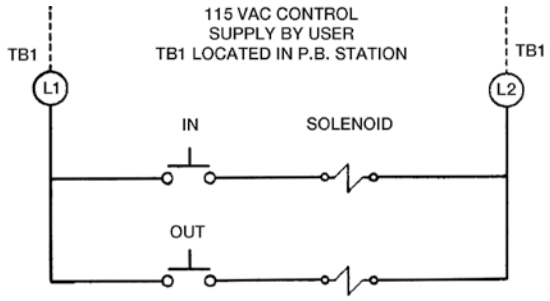
Electrical Control to Solenoid Valve

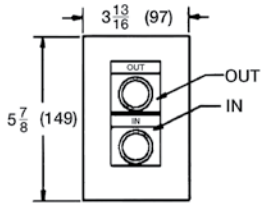
This is a double solenoid valve, 120 / 60 VAC.

A signal is required to each solenoid in turn to "spool" the valve in each direction. The solenoid requires a momentary signal and should not be continuously energized.

A certified electrician should complete this connection.

BELOW IS THE PUSH BUTTON CONTROL SCHEMATIC:





PUSH BUTTON STATION
NEMA-4/13, 3 1/4 (82) DEEP
ERIEZ NO. 2N-9900579

Ferrous Discharge Options

The ferrous (scrap) discharge area is located under the safety housing flange. Space must be provided so that scrap discharge can clear the safety housing and not back up into the unit. Continuation of the 45-degree angle deflectors to a collection point is the most common method of eliminating this waste. Typical scrap collection methods include:

- A tray or hopper. Analysis can be conducted on scrap amount and sources.
- A bucket, bag or barrel for periodic disposal.
- A conveying system for removal to a remote location.

Operation

IMPORTANT: The product flow must be shut off before the cleaning cycle is activated.

The pressure regulator is pre-set at the factory to cycle the air cylinders smoothly. Adjust the air pressure based on your product and cycling load. A smooth, steady cycle is better than one that slams the drawer in each direction.

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Each individual user can determine the cleaning cycle frequency. The factors that determine the time between cycles are the amount of ferrous contamination in the product and how magnetic the contamination is (how well it will be held by the magnet). The cleaner the magnet surface, the more efficient the magnet will be.

Between batch operations is an ideal time to clean the magnet. Connecting the control in conjunction with the shut off valve or other device upstream is ideal.

Visual Determination

To visually determine the cleaning cycle, an access door is located on the product housing opposite the safety housing. Two Destaco clamps hold the door closed.

After the product flow is stopped and before starting the cleaning cycle, examine the ferrous build-up on the magnet tubes. Open the door and blow the product from the tubes. The ferrous material will appear as rings around the magnet. The unit is ready to clean if the build-up is between 1/8 inch and 1/4 inch.

Cycle Time Adjustment

Contamination levels or convenient cycling times can also determine cleaning cycles.

For example:

Very light contamination	8 Hours (each shift)
Average contamination	2-3 Hours
Heavy contamination	30-60 Minutes

Note: Heavy burdened tube magnet saturation may cause a decrease in separation efficiency. On the flip-side, however, cleaning too often might result in losing too much product scraped from the top of the tube magnets. Cleaning too often will also cause premature part wear.

Maintenance

⚠ Warning

This unit contains moving parts. Turn off and lock out electrical power and pneumatic supply before opening safety housing.

Examinations

If properly cared for, the permanent magnets should never lose strength and require no maintenance. They do require periodical visual examination, necessary especially with highly abrasive products.

The air cylinders should be examined every month under normal operating conditions. No lubrication of the air cylinders or drawer is required.

Examine the product housing and ferrous discharge areas for product build up, as necessary based on your product. Product build up is the most likely cause of product leaking or the grate not completing the cycle.

Gasket Replacement

If product escapes from the tube scraper area while the magnet drawer is in the product area, then examine the gasket around the magnet drawer opening.

To examine or replace:

1. Shut off product flow
2. Cycle drawer "OUT"
3. Lock out, tag out pneumatic and electrical supply
4. Remove top of safety housing, (4) screws
5. Locate magnet drawer stop assembly
6. Remove (6) 3/8-16 attached bolts
7. Slide stop assembly to far end of magnet tubes
8. Examine/replace gasket

Tube Scraper Bar Replacement

The other wear item is the tube scraper bar. Note that the tube scraper is not a tube wiper and that a cleaned tube will have a minor amount of product and ferrous remaining at the end of the cycle. When an excess amount (1/32 to 1/16 inch) of ferrous remains on the tubes, then the scrapers should be replaced.

To examine or replace:

1. Complete the (8) steps above for replacing gasket and also replace gasket while in this process.
2. Remove the bar from the end of magnet tubes closest to the product housing. Each tube magnet has a socket hex screw.
3. Remove white plastic bar (on some units, this may be an aluminum bar).
4. Examine split rings. If they are still snug on the tube magnet, they are still good. (Note that the rings do the scraping and should last for years. The white plastic bars that "sandwich" the split rings contain the product and isolate the ferrous material during cleaning.)
5. Remove split rings and examine second white plastic bar.
6. Replace components as necessary. Bars and split rings may be purchased separately, if required.
7. Reassemble the stop assembly. The bottom bar must be flush with the inside of the housing channels on each side. The top of the middle bar must be flush with the inside of the upper housing channels.

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