INDUSTRIAL MAGNETICS
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ROTODRAWER™ - ROTARY STYLE DRAWER-IN-HOUSING

INSTALLATION MANUAL

OVERVIEW & OPERATING PRINCIPLE

The RotoDrawer™ is a rotary style Drawer-In-Housing Magnet designed to rid ferrous metal from powder & bulk processed products that have difficult flow characteristics and a tendency to bridge and choke when using traditional, stationary tube style magnetic separators. The magnet is ideal for products that have a higher moisture content or particle size, such as flours, cake mixes or corn starch, and require a high degree of product purity

RotoDrawer™

The Rotary Style Drawer-In-Housing Magnet (RotoDrawer™) features a motorized, cylindrical configuration of Rare Earth magnetic tubes on a horizontal plane that continually rotate through a gravity fed product stream. The rotational design of the magnet, together with unique splitter bars, serve to break up any clumps of product and keep the product flowing through the housing while capturing any ferrous metal contamination and purifying the product.

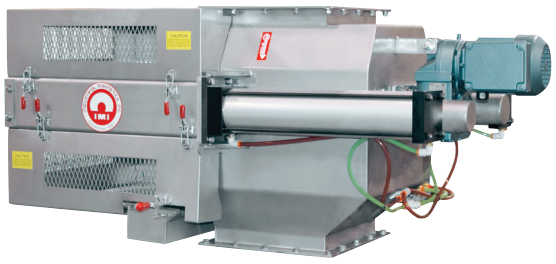
OPTIONAL CONFIGURATIONS

Rare Earth RotoDrawer™ is available in two different cleaning styles. The SimpleClean™ model features an innovative design that makes it easy for the operator to perform routine cleaning of the magnet. The magnetic drawer glides open and rotates into vertical orientation for easy removal and disposal of captured metal, preventing recontamination in the processing line.

The Self-Cleaning model automates the cleaning process and requires little to no operator intervention. Pnuematic cylinders open the drawer and pull the magnetic tubes through a seal plate that wipes the collected contaminants from the tubes. Debri is colleced into a catch pan for periodic disposal.

Standard sizes range from 8"x8" to 18"x18" inlets and outlets, with custom designs and sizes available to fit exact application requirements.

SimpleClean™



Self-Cleaning

900448 (05/23)

HEALTH AND SAFETY WARNINGS

MOTOR DRIVEN ROTATING EQUIPMENT

Rotating shafts, gears, sprockets and drawer components can present hazards when running, keep hands and feet clear; equipment should only be serviced by trained service personnel.

Electric shock hazard - observe all local plant Lockout/Tagout procedures before removing any guards or initiating service or cleaning activity.

GENERAL

Please be advised that in and around the application of magnetic equipment, there are potential safety concerns that can arise with sensitive medical devices:

- Pacemaker behavior can be affected when they are near strong magnetic fields
- Medical implants and external fixation systems can be influenced by magnetic fields
- Hearing aid behavior may be affected when exposed to strong magnetic fields

Any individual that carries the above equipment or other sensitive medical devices should use caution when they are around or handling magnets. For more specific information the wearer should contact their physician.

Beware of pinch points from sudden attraction and unexpected movement between magnets and ferrous metal equipment components or tools.

MAGNET DEGRADATION

The force of a permanent magnet can degrade over time and when subjected to external influences. The most common factors for loss of performance or failure include:

- Blunt force impact such as dropping or banging on a magnet which can cause fractures
- Temperatures exceeding the operating range of the magnet material
  - 180°F for neodymium material
  - 480°F for ceramic grade 8
  - High temperature options are available
- Exposure to electrical fields, like generators, lightning or welding ground circuits, can result in loss of magnetism

It is recommended that magnetic devices are audited annually. IMI can provide a Magnet Audit and Plant Survey to evaluate magnetic equipment performance and assist with compliance to global industry standards; Pull Test Kits are available for self-auditing plant activity.

INSTALLATION

The Rotary Style Drawer-in-Housing magnetic assembly is delivered ready to install.

The top and bottom flanges allow for the unit to be welded or bolted into the product flow. If the unit is to be bolted into place, either mild steel or stainless steel bolts can be used. If the flanges have not been pre-drilled by the factory for bolt installation, any drill bit suitable for 304 stainless steel will do a quality job. A minimum 3/8" diameter bolt is recommended.

The RotoDrawer™ must be installed to allow sufficient space for preventive maintenance and tramp metal removal. Allowance must be made for the drawer movement during the cleaning cycle and removal of the tramp metal catch pan.

The gear motor must be connected to a properly sized motor starter or other control furnished by others. Consult the nameplate of the gear motor for voltage and full load current data. A wiring diagram, showing motor connections, is located inside the motor terminal box.

Self-Cleaning Specifics

The air actuated Self-Cleaning unit requires 80 to 100 psi of shop air to operate. The filter regulator is located on one side of the housing assembly. The standard, electrically operated solenoid valve requires a 120 VAC/60 Hz single phase power source to operate. The solenoid is energized via a user supplied, normally open (NO) switch. A momentary push-button is typically used in many applications; pushing the button opens the drawer, cleaning the unit. Releasing the button removes power from the solenoid, allowing the drawer to close.

The cable from the solenoid contains three conductors: blue, brown & green/yellow. To be connected as follows:

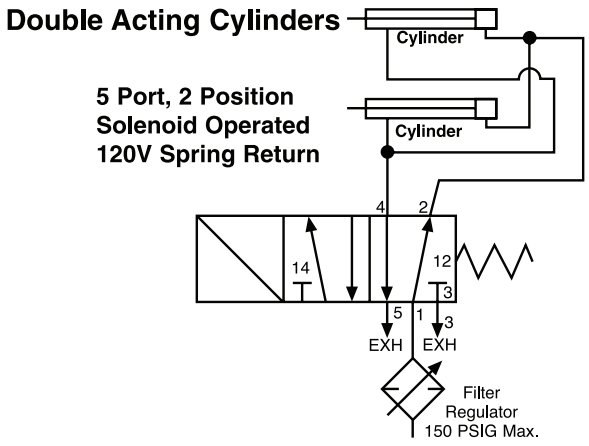
Brown - Connected to switched leg of 120 VAC supply circuit
Blue - Connected to neutral leg of 120 VAC supply circuit
Green/Yellow - Connected to ground bus of circuit

Solenoid Specifications: Coil -120V/60 Hz - 110V/50 Hz, 1.07 VA, Rated for continuous duty at 85%-105% of rated voltage. Enclosure rated for NEMA 4/IP65. Molded with three pin plug-in connector.

Cable - 6 ft lg., 3 conductor cord, equivalent to 20/3 SVT (.14 in. dia. (3.5mm) - .28 in. dia. (7mm)) O.D.

Coil Resistance: 6.6 MEGOhms cold, DC resistance, Measure with a Digital Multimeter (DMM) connected to brown & blue leads

Self Cleaning Pneumatic Schematic



Self Cleaning Electrical Schematic

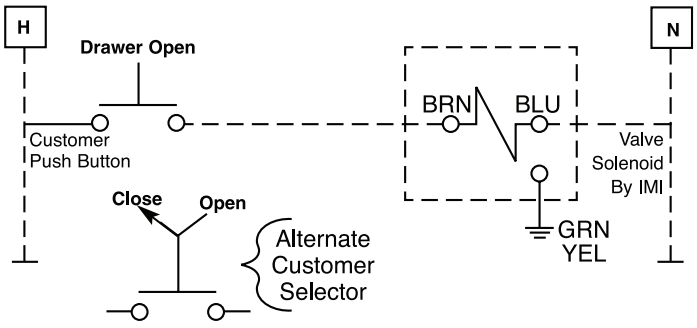
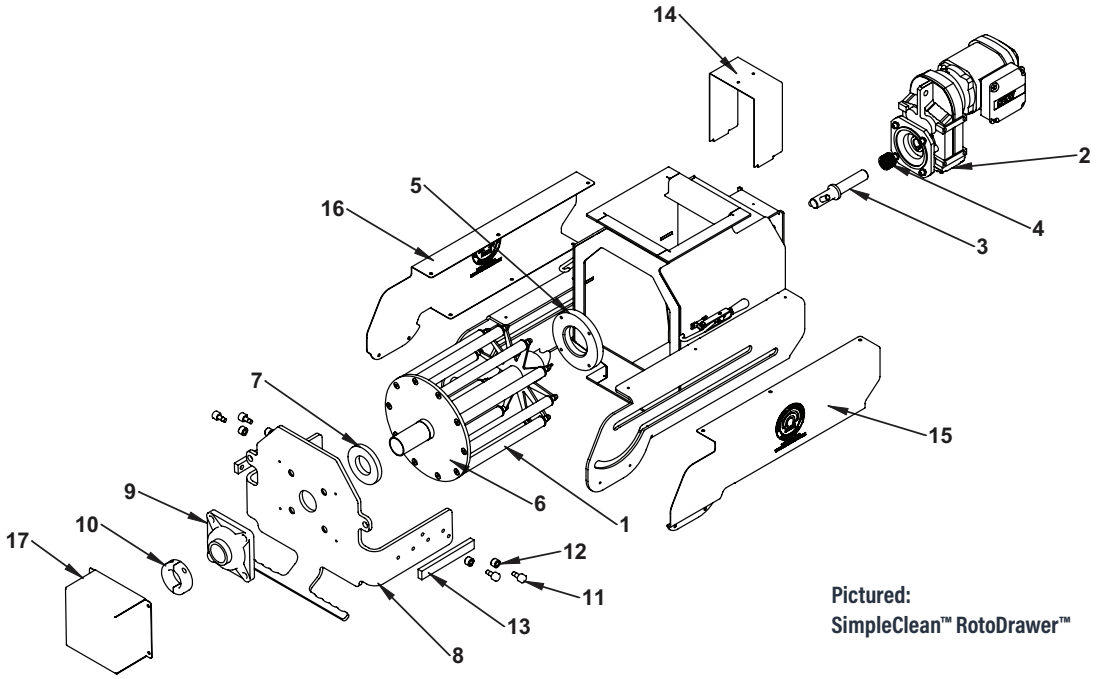


ILLUSTRATION & PARTS

——— SimpleClean™ (Manual) ———

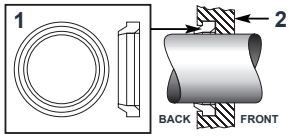
Ref. No.	Description
1.	Tube Assembly
2.	Gear Motor
3.	Driver and Key
4.	Driver Springs
5.	DE Bearing
6.	Tube Mount
7.	Tube Mount Spacer
8.	Magnet Door
9.	NDE Bearing
10.	Retainer Clamp
11.	Cam Follower
12.	Cam Follower Spacer
13.	Slack Plate
14.	Coupling Cover
15.	Track Cover
16.	Track Cover
17.	Bearing Cover



Pictured:
SimpleClean™ RotoDrawer™

——— Self-Clean ———

Ref. No.	Description
1.	Wiper Seal
2.	Seal Plate
3.	Tube Assembly
4.	Splitter Bars
5.	Tube Mounting Plate with Retaining Wire
6.	Drawer Cover
7.	Cylinder Bolts
8.	Cylinder Rods
9.	Cylinder
10.	Cylinder Mount
11.	Catch Pan
12.	Guard Assembly Clamps
13.	Guard Assembly Top
14.	Guard Assembly Bottom
15.	Rear Access Door & Clamp
16.	Gear Motor
17.	Rotator Shaft



Seal Plate Shown with Seal Installed

Pictured:
Self-Clean RotoDrawer™

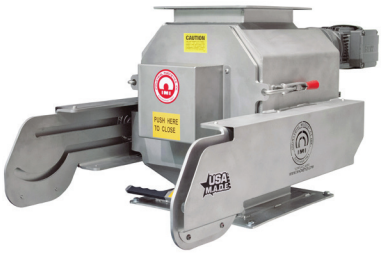
Not Shown

Door Gasket, Air Valve / Regulator Set, Tube Assembly Bolts

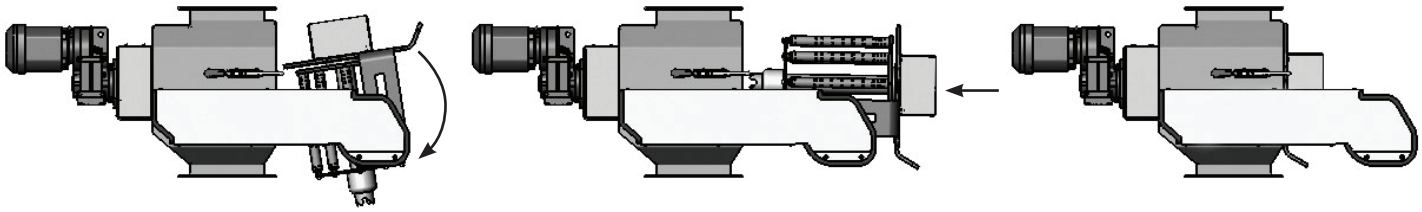
CLEANING GUIDELINES

Ensure that the product flow has been shut off and that the drawer assembly is empty of product. The recommended cleaning interval is at least twice in an 8 hour shift. However, cleaning is dependent on the amount of tramp metal being separated from your particular product. If you see heavy concentrations of metal, additional cleaning is necessary. The drive motor does not need to be turned off and can continue to run during the cleaning operation. Magnet is not to be cycled in an attempt to clean to either the open (cleaning) or closed (return to operation) position with any material being meter, choke or flood fed through the body of the unit. Magnet is only to be cycled for cleaning when upstream equipment cannot introduce material to the unit.

——— SimpleClean™ (Manual) Procedures ———



1. Ensure that the product flow has been shut off and that the drawer assembly is empty.
2. Release *door clamps* on side of housing.
3. Open door & pull drawer *Tube Assembly (1)* out using the *handle bars* on the *Magnet Door front plate (8)*.
4. Rotate the *handle bars* upward to place the *Tube Assembly (1)* in the cleaning position.
5. Use an air hose to blow the collected tramp metal off the *Tube Assembly (1)* or a rag/gloved hand to wipe the collected tramp metal down to the back end of the tubes where a non-magnetic area allows for most collected material to easily fall away or to be wiped off of the tubes.



6. Rotate the *handle bars* down to place the tube assembly into the operating orientation.
7. Place hands on the *Bearing Cover Box (17)* and push the *Tube Assembly (1)* back into the housing.
8. Re-clamp the door into the closed position.
9. Restart the product flow.

——— Self-Clean Procedures ———

1. Ensure that the product flow has been shut off and that the drawer assembly is empty of product.
2. Activate the air cylinders by energizing solenoid valve. This opens the drawer, sliding the tube assembly through the wiper seals located in the seal plate. The wiper seals clean the collected metal off the tubes while the drawer opens, by pushing it on to a non-magnetic section at the ends of the tubes. The metal then falls off the tubes and into the provided catch pan.
3. After the drawer is fully extended and stops, de-energize the solenoid valve. The air cylinders will then close the drawer for operation.
4. Restart the product flow.

IMPORTANT NOTE: COMPRESSED AIR MUST BE SUPPLIED TO THE FILTER-REGULATOR AT ALL TIMES TO ENSURE THAT THE DRAWER REMAINS IN THE CLOSED POSITION DURING BOTH OPERATION (PRODUCT FLOWING) AND IDLE TIMES. FAILURE TO SUPPLY COMPRESSED AIR DURING THESE TIMES CAN RESULT IN POSSIBLE PRODUCT ESCAPING THE UNIT AND/OR CONTAMINATES ENTERING THE PRODUCT FLOW AREA. CONSULT OUR ENGINEERING DEPARTMENT IF THE AIR SUPPLY CANNOT BE GUARANTEED AND THE DRAWER MUST REMAIN CLOSED.

CLEANING GUIDELINES

Ensure that the product flow has been shut off and that the drawer assembly is empty of product. The recommended cleaning interval is at least twice in an 8 hour shift. However, cleaning is dependent on the amount of tramp metal being separated from your particular product. If you see heavy concentrations of metal, additional cleaning is necessary. The drive motor does not need to be turned off and can continue to run during the cleaning operation. Magnet is not to be cycled in an attempt to clean to either the open (cleaning) or closed (return to operation) position with any material being meter, choke or flood fed through the body of the unit. Magnet is only to be cycled for cleaning when upstream equipment cannot introduce material to the unit.

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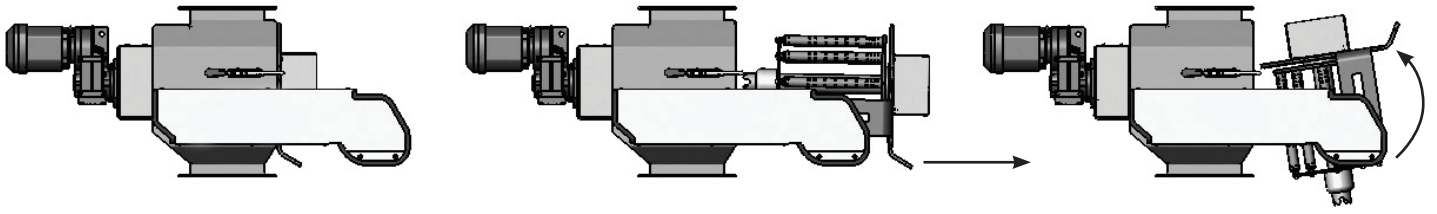

OPERATING POSITION | UN-CLAMP AND PULL TUBES OUT | SWING TUBES DOWN FOR CLEANING

1. Ensure that the product flow has been shut off and that the drawer assembly is empty.
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4. Rotate the *handle bars* upward to place the *Tube Assembly (1)* in the cleaning position.
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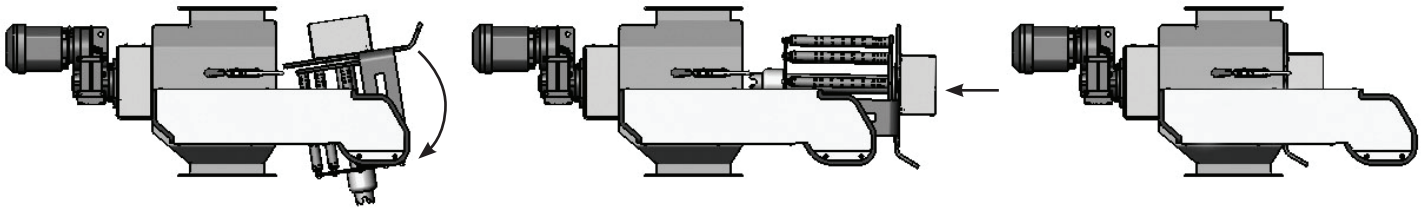

where a non-magnetic area allows for most collected material to easily fall away or to be wiped off of the tubes.

6. Rotate the *handle bars* down to place the tube assembly into the operating orientation.
7. Place hands on the *Bearing Cover Box (17)* and push the *Tube Assembly (1)* back into the housing.
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9. Restart the product flow.

———— Self-Clean Procedures ————

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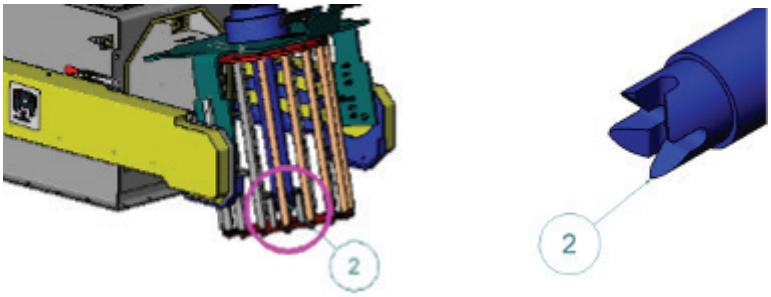
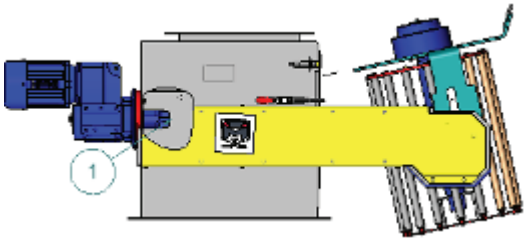
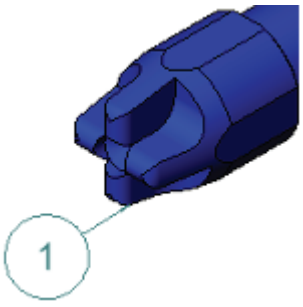
CLEANING GUIDELINES (DRIVE SPLINES)

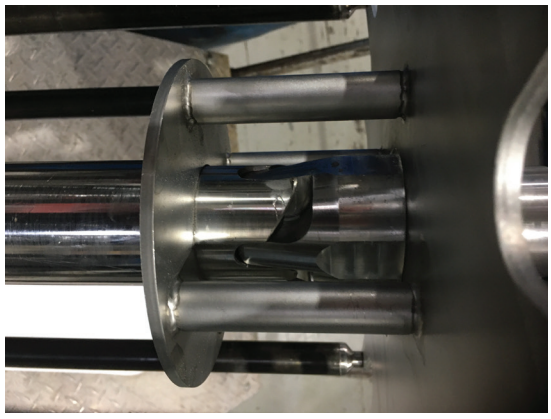
1. Turn off the power to the RDH and unplug It from the power source. (Following your company's lock of tag out procedure as required).
2. Following cleaning guidelines provided with your RDH for simple clean steps 1-5.
3. Use an air hose to clean both drive splines, one on the drawer tube assembly (2), and one on the motor end (1), being sure to remove any buildup on mating surfaces. In tough cases, a mild detergent solution may be required to remove any buildup. (See photo's below for dirty example, and clean example)
4. Inspect the RDH drawer for any signs of damage, such as cracks or chips. If the RDH drawer Is damaged, it will need to be services or replaced.
5. Once the unit Is clean, follow the cleaning guidelines for Simple Clean steps 6-8.
6. Verify drawer tube assembly Is fully closed and seal has no gaps to ensure the drive splines are fully engaged If not repeat steps 2-6.
7. Power on the RDH, and restart product flow.







DIRTY (NOT FULLY ENGAGED)

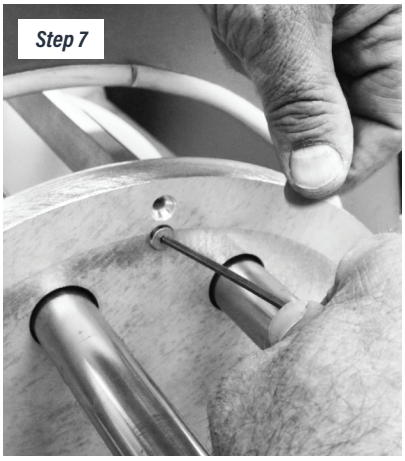


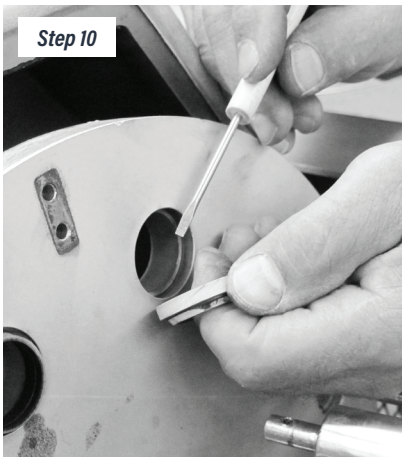
CLEAN (FULLY ENGAGED)

WIPER SEAL REPLACEMENT (SELF-CLEAN MODELS)

Wiper seals should be inspected for normal wear every three to six months to ensure the integrity of the seal is intact. To replace worn out or damaged washer seals:

1. Turn off power to the *Motor (16)* for safety.
2. Activate *Air Cylinders (9)* to open the drawer until it stops. For safety, turn off air supply to *Regulator Valve Assembly*. Disconnect supply tubing from all cylinder ports.
3. Remove *Guard Assembly (13 &14)*.
4. Remove bolts from the *Drawer Cover (6)* and slide the *Drawer Cover* down toward the end of the *Rotator Shaft (17)*.
5. Use Pliers or similar tool to remove the *Retaining Wire (5)* from the ends of the *Tube Assembly and Mounting Plate (5)*.
6. Slide the *Mounting Plate (5)* down toward the *Drawer Cover (6)* at the end of the *Rotator Shaft (17)*.
7. Remove the screws that attach the *Wiper Plate (2)* from the *Splitter Bars (4)*.
8. Slide the *Wiper Plate (2)* down toward the end of the *Tube Assembly (3)* without removing the *Wiper Plate (2)* from the *Tube Assembly*. **CAUTION: The *Tube Assembly* must be supported before removing the *Wiper Plate*. See next step.**
9. Use a non-ferrous wire or spacer to support the magnetic tubes and to keep them from being attracted to each other before removing the *Wiper Plate (2)*.
10. Once the *Magnetic Tubes* are supported, Slide the *Wiper Plate (2)* off and use a small flat head screwdriver or similar tool to push the *Wiper Seals (1)* from the *Wiper Plate (2)*.
11. Gently push new *Wiper Seals (1)* in.
12. After new seals are installed in the *Wiper Plate (2)*, reassemble the unit carefully by reversing the previous steps.





COMMENTS OR CONCERNS

We believe Industrial Magnetics, Inc. offers the finest Rotary Style Drawer-in-Housing available today. Great pride has gone into the design and manufacture of this unit. Any comments or concerns should be directed to our Customer Service Department at 1-888-582-0821. **We appreciate the opportunity to serve you!**