INDUSTRIAL MAGNETICS
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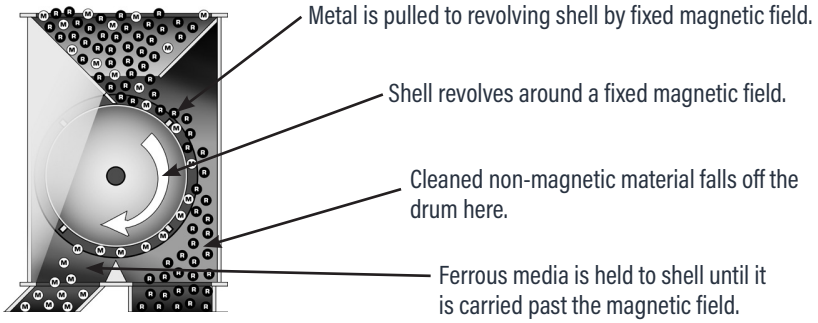
MAGNETIC DRUM SEPARATOR

INSTALLATION AND MAINTENANCE MANUAL

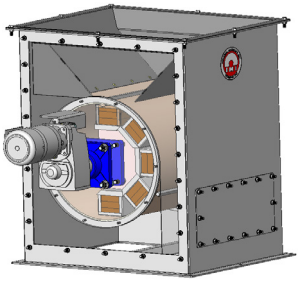
OPERATING PRINCIPLE

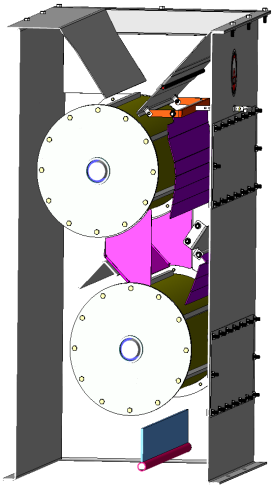
IMI Drum Separators are ideal for automatic ferrous metal capture in processing systems.
Material to be processed enters the top of the magnetic drum separator and flows across the surface of the drum. The drum rotates around a stationary powerful permanent magnetic field; ferrous metal is captured and held against the rotating drum surface by the magnetic field. Non-ferrous material falls free, while the ferrous metal is released when it rotates beyond a diverter and out of the magnetic field.
For the best separation results a vibratory feeder is often recommended to introduce a uniform product flow across the entire surface width of the drum.

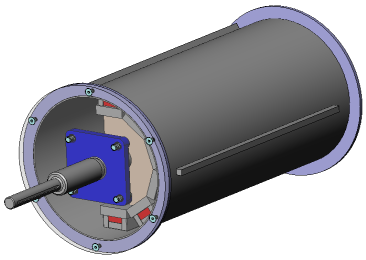


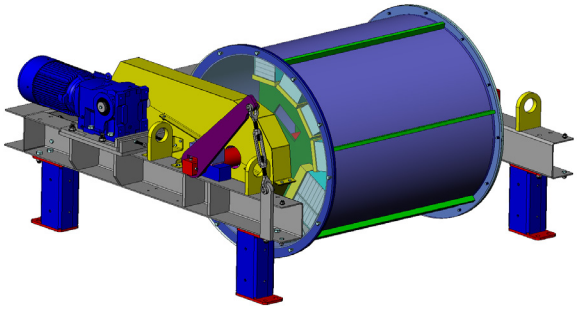
OPTIONAL CONFIGURATIONS

Due to the nature of their design, Drum Separators are continuously self-cleaning units. They can be configured as a complete unit installed in a housing, as a framed unit with drive included or as a drum only component. A dual-drum configuration is also available to provide a second pass for enhanced material separation.
These options allow for tailored integration into customer process lines to suit specific system requirements.









HEALTH AND SAFETY WARNINGS

MOTOR DRIVEN ROTATING EQUIPMENT

Rotating shafts, gears, sprockets and drum 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 GUIDELINES - DRUM IN HOUSING

The unit comes ready to install either by bolting or welding it into the product flow. If the unit is to be installed using bolts, it is recommended that a minimum 3/8" diameter stainless steel bolts be utilized. The unit must be installed to allow sufficient space to perform preventative maintenance and allow for collection and removal of the ferrous and non-magnetic material.
The unit is equipped with a 230/460 A.C. three phase motor ready to be hard wired to your manual starter or motor control center. For information on the motor and reducer refer to the manufacturer's manual.
This unit has been operated and adjusted at the time of manufacture. However, it may need some fine tuning to best meet your needs. The following steps will assist in adjusting the Drum Separator to work best in your application:

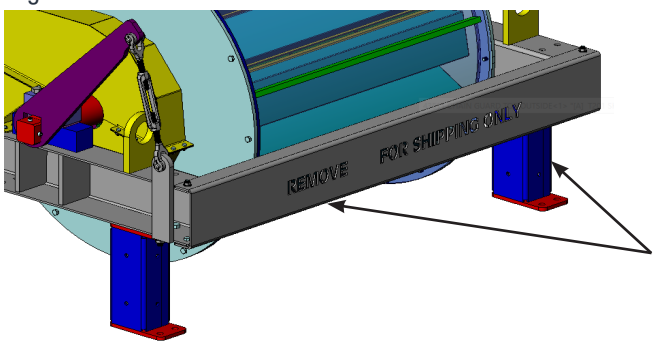
Magnet Adjustment
An arrow is engraved on one end of the stationary shaft to indicate the center of the magnet.

1. Loosen the clamp bolts *(item 4, see diagram on next page)* and rotate shaft until the arrow on the end of the shaft points to the 9 o'clock position *(item 6, see diagram on next page)*. Minor adjustments may be made either way from this position.
2. Pointing the arrow slightly down from the horizontal position will move the metal material toward the metal outlet.
3. Pointing the arrow slightly up from the horizontal position will move the metal material away from the metal outlet. The discharge diverter may be adjustable; a hand knob secures the diverter in the chosen location and can be loosened for adjustment.

If any questions arise during installation, please call sales/customer service at: 1-888-582-0821

INSTALLATION GUIDELINES - DRUM ON FRAME

The framed unit comes ready to install either by bolting or welding it into the product flow, to be mounted on local process equipment framwork. If the unit is to be installed using bolts, it is recommended that a minimum 3/8" diameter stainless steel bolt be utilized. The unit must be installed to allow sufficient space to perform preventative maintenance and allow for collection and removal of the ferrous and non-magnetic material.



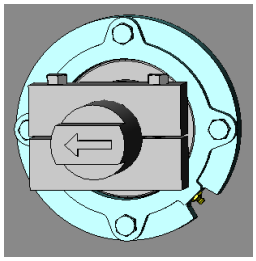
Remove shipping channel and legs for installation

The drum and drive are mounted to a framework that may include a temporary front shipping channel crossmember and leg suports which are in place for shipping only. These are to be removed at installation so that the unit can be located to and supported with existing plant equipment structure.
The unit is equipped with a 230/460 A.C. three phase motor ready to be hard wired to your manual starter or motor control center. For information on the motor and reducer refer to the manufacturer's instructions.
This unit has been operated and adjusted at the time of manufacture. However, it may need some fine tuning to best meet your needs. Refer to the **Magnetic Adjustment** procedure above in the Drum In Housing Installation section.

INSTALLATION GUIDELINES - DRUM ONLY

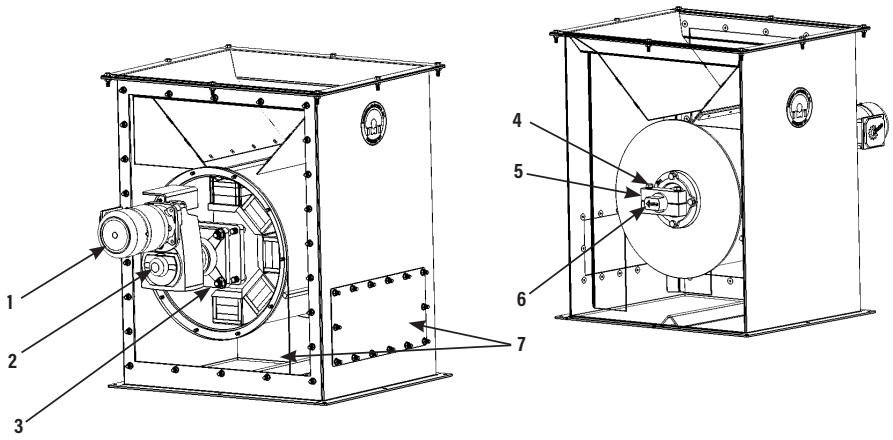
The Drum Separator provides automatic separation of ferrous and non-ferrous material. The unit comes ready to install into customers locking blocks, or the drum is equipped with lock block and bearing for mounting to customer frame.
The unit must be installed to allow sufficient space to perform preventative maintenance and allow for collection and removal of the separated material; ferrous and non-ferrous.
The drum shell is made of stainless steel with three wipers.
Larger drums also come with two locking collars. These are to be installed just outside the bearing housing on the journaled portion of the shaft.

Flats have been milled on one end of the fixed shaft. The flats must be at the 6 and 12 o'clock positions for correct magnet placement.



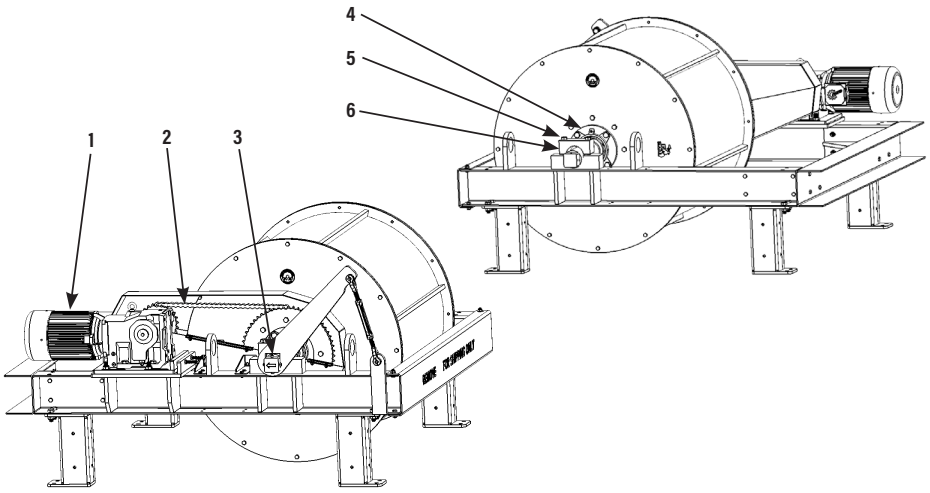
An arrow is engraved on one end of the shaft to indicate the center of the magnet.
On larger drums bearing hubs are provided with bolt patterns for connection of drive components.

PARTS ILLUSTRATION - DRUM HOUSING AND DRIVE



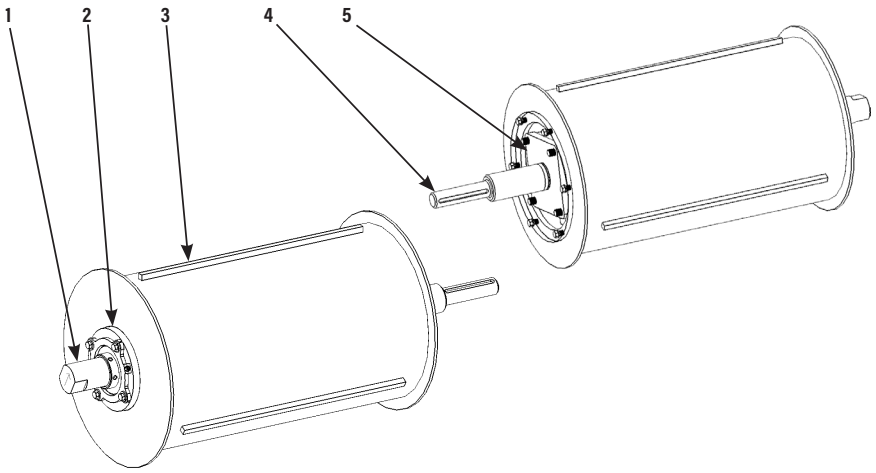
Ref. No.	Qty.	Description
1	1	Gearmotor 240/480 VAC 3PH
2	1	Drive Shaft
3	2	4-Bolt Flange Bearing
4	2	Clamp Bolt
5	1	Clamp Assembly
6	1	Fixed Shaft with Magnet Load Indicator
7	2	Access Doors

PARTS ILLUSTRATION - DRUM ON FRAME



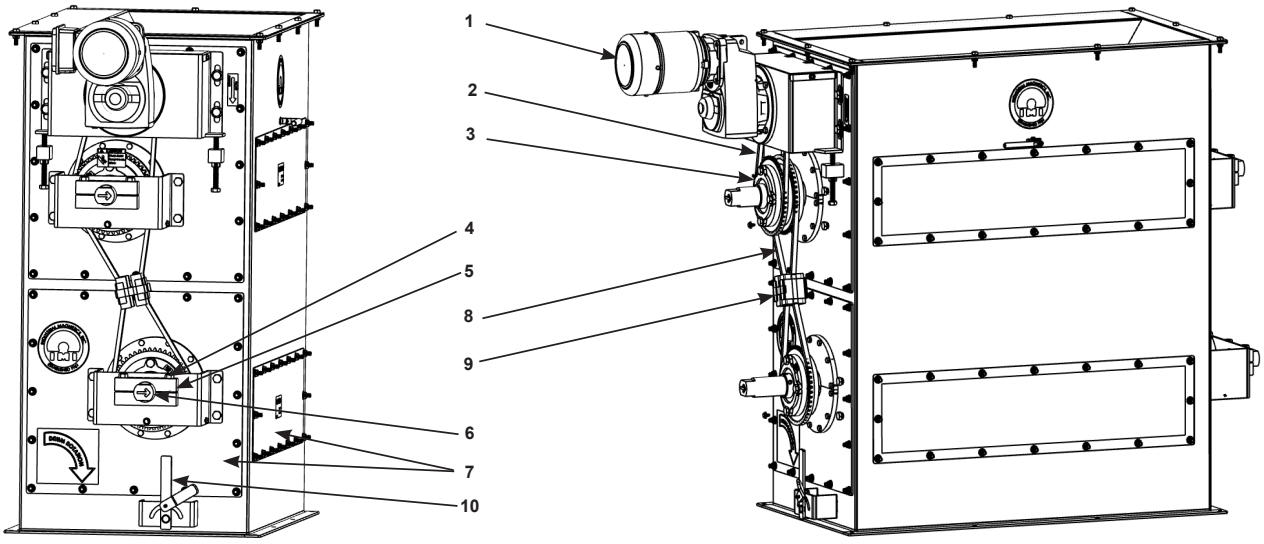
Ref. No.	Qty.	Description
1	1	Gearmotor 240/480 VAC 3PH
2	1	Drive Chain
3	1	Fixed Shaft with Magnet Load Indicator
4	2	4-Bolt Flange Bearing
5	2	Clamp Bolt
6	1	Clamp Assembly

PARTS ILLUSTRATION - DRUM ONLY



Ref. No.	Qty.	Description
1	1	Fixed Shaft with Magnet Load Indicator
2	1	4-Bolt Flange Bearing
3	1	Wiper / flights
4	1	Rotating Shaft
5	1	4-Bolt Flange Bearing - internal, lube-for-life

PARTS ILLUSTRATION - DUAL DRUM HOUSING

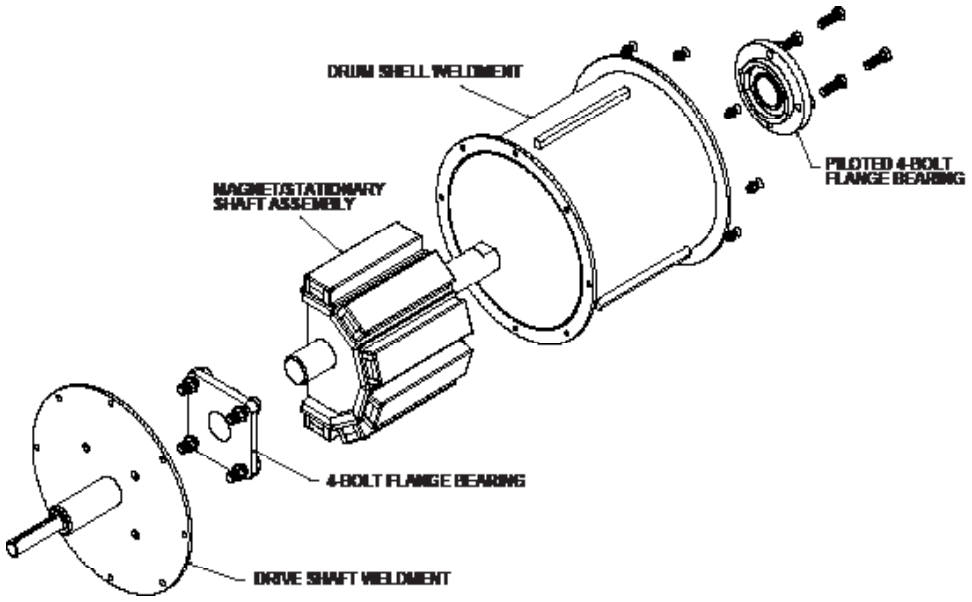


Ref. No.	Qty.	Description
1	1	Gearmotor 240/480 VAC 3PH
2	1	Drive chain
3	4	Pilot Bearing
4	8	Clamp Bolt
5	4	Clamp Assembly
6	2	Fixed Shaft with Magnet Load Indicator
7	4	Access Doors
8	1	Chain
9	1	Chain Tensioner
10	1	Adjustable diverter handle

REPLACING A DRUM AND/OR SHELL ASSEMBLY

Steps to remove the drum form the housing *(Read all steps before starting)*:

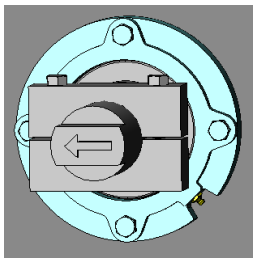
1. Remove the top inlet section of the housing. The unit may be equipped with an adjustable inlet from which the handle must be removed first.
2. Remove gear motor from unit.



3. Loosen the set screws in the bearing located on the outside of the housing.
4. The magnet drum must be supported before proceeding forward from here.
5. Slowly and carefully loosen the two bolts in the shaft clamp on the side of the housing. You will notice an arrow on the end of the shaft. The arrow points to the magnetic center, and can be adjusted up or down to improve separation performance. When loosening the clamp screws, due to the weight of the magnets, the shaft will spin quickly so that the arrow points down.
6. Remove the screws from the panel on the drive side of the housing and remove panel.
7. Carefully slide the magnetic drum out of the clamp side of the housing.

Steps to install the drum into the housing:

1. Carefully slide the magnetic drum into the side of the housing.
2. Insert the stationary shaft through the side wall onto the clamp assembly.
3. Us the flats on the end of the fixed shaft to rotate the magnet into operation position (arrow pointing at product side, horizontal).
4. Tighten clamp block.
5. Replace screws into drive side panel.
6. Reinstall gear motor.
7. Tighten the bearing set screws.



MAINTENANCE

DRUM:

The drum shell should be inspected daily for any dents, punctures or flight damage. If any physical damage is found it should be repaired immediately to avoid critical failure. Contact IMI for repair advisement for the specific identified concerns.

HOUSING AND BEARINGS:

The drum shell which contacts the ferrous material is made of stainless steel for low maintenance and prolonged operating life. The unit is completely enclosed to eliminate any possibility of jamming and problems associated with severe indoor or outdoor environments. The drum in housing separator has three bearings. One is located inside the drum assembly and supports the fixed shaft. This bearing is lubricated for life (if this bearing fails, please call the factory for instructions at the phone number below). A second bearing is located on the outside of the drum end plate and supports the drum on the fixed shaft. The third bearing is located on the outside of the housing, on the drive end. Bearings should be lubricated on a schedule consistent with the environment and other equipment being used at the plant. Multipurpose lithium base grease such as Lubriplate No. 930-2 is recommended. All bearings are flange mounted ball bearings; it is recommended that customers refer to lubrication guidelines found in current manuals at the manufacturer's website.

GEARMOTOR:

The drum is driven by a 240/480 VAC 3 phase gearmotor. It may be a parallel shaft or right-angle drive configuration; it may be foot mounted or flange mounted, and may be arranged direct-drive to the drum rotating shaft or with a chain-and-sprocket connection. The gearmotor for the chain and sprocked configuration is foot mounted to a base plate with jack screws for installation/removal and for chain tension adjustment. The gearbox lubricant level should be maintained on a schedule consistent with the environment and other equipment at the plant. It is recommended that customers refer to lubrication guidelines found in current manuals at the manufacturer's website for the proper lubricant and capacity.

TROUBLESHOOTING

DRUM WILL NOT ROTATE OR IS HARD TO ROTATE:

1. Inspect drum outer shell for visible dents or damage. If none proceed to step #2.
2. Separate motor and drive from drum.
3. Engage motor to see if drive will turn freely. If yes, go to step #4. If not service motor or drive.
4. With drive separated from drum, rotate drum by hand to check freedom of rotation. If drum turns hard check external and internal bearings and shaft for excessive wear.
5. To check internal bearing, shaft or magnet assembly support the drum from top or bottom. Remove motor, drive shaft and attached end plate by removing end plate bolts. Separate both from motor end plate on drum shell:
   A. Check Bearing
   B. Check Fixed Shaft
   C. Check magnet assembly to shell for signs of rubbing and internal wear.

METAL MATERIAL MIXED WITH NON-FERROUS MATERIAL:

1. Make sure magnet is adjusted with milled flats and arrow on shaft indicating magnet alignment. Milled flats should be at 6 and 12 o'clock positions.
1. Make sure material is spread evenly across the entire face of the drum during operation and is in as thin a burden depth as possible.

COMMENTS OR CONCERNS?

We believe Industrial Magnetics, Inc. offers the finest Drum Separators 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!**