



A Bunting® Magnetics Company

DISC SEPARATORS



www.mastermagnets.com

Master Magnets are a major global supplier of magnetic separators to the minerals and mining industry for the past 40 years. They are based in the United Kingdom at their manufacturing centre in Redditch, Worcestershire but have representation worldwide - supported by their recent merger with Bunting Magnetics of the USA.

DISC MAGNETIC SEPARATOR

The Disc Separator has a very lengthy history, with its original designs dating back to the early 1900s. Although manufacturing techniques have significantly changed and more advanced machines have now been incorporated, the basic design still remains virtually the same.

Typically, a Disc Separator will feature up to three high-intensity electromagnetic discs, each set at a different height from a feed conveyor. The first disc will be set the furthest from the feed material, in order to extract only the most magnetically susceptible particles. The second and third discs are set at lower gaps, increasing the magnetic force at each disc and therefore separating different grades of magnetic material. Magnetic intensity can also be further adjusted by varying the current of each coil to suit each client's specific mineral separation requirements.

Each disc incorporates its own magnet circuit with two energising coils giving excellent process selectivity at each disc edge. The discs have a toothed profile that ensures maximum field intensity and gradient allowing the separation of very weakly paramagnetic minerals such as monazite. The tilted disc mechanism aids the setting of the belt/disc gap and allows 2 mineral phases to be separated at each disc.

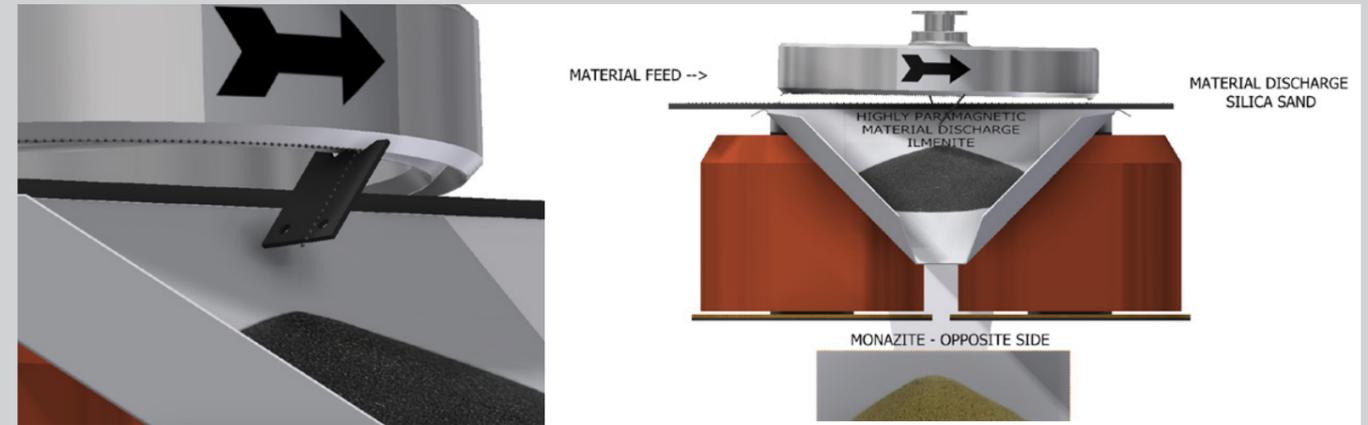


Process Variables on Disc Separator

Disc Rotation Speed • Belt feed rate • Magnet energising current • Operating gap between belt and disc

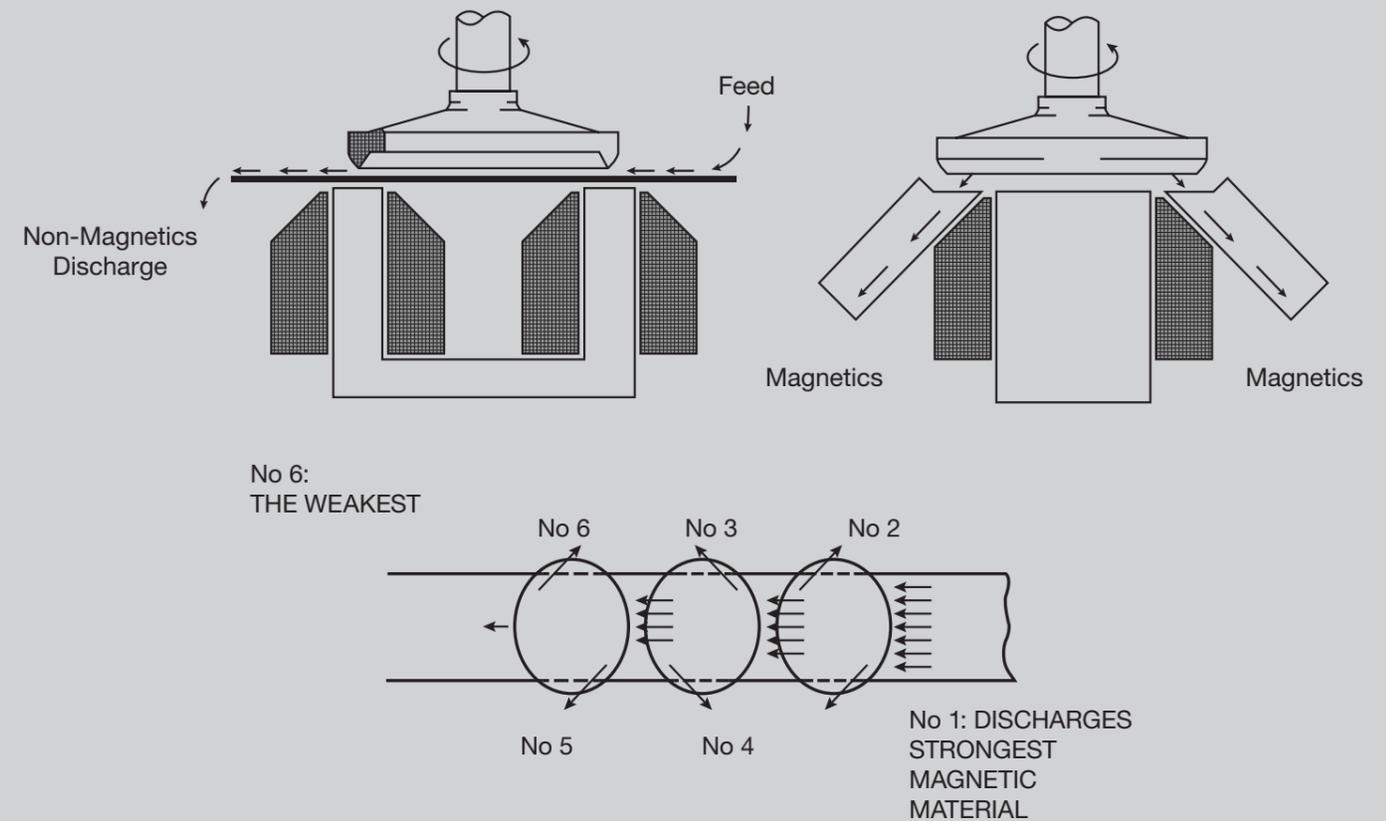
Feed material is discharged from a hopper onto a vibratory feeder tray. A mono layer of material is continuously fed between the rotating high-intensity magnetic discs, where magnetic particles are attracted to the high-gradient zones on the discs. These captured particles are then carried by the rotating discs to the discharge chutes where they are released. Scrapers that are mounted on each of the chutes ensure the total discharge of the extracted magnetic particles.

Any feed material that is non-magnetic will pass under each of the three discs and discharge at the end of the conveyor.



Key Facts: Disc Separator

Design permits smaller air gap between mineral and disc hence greater selectivity for mineral separation.
 Series of adjustable discs (incorporating grooves for field gradient concentration) revolving around a conveyor belt.
 Typical field strengths can be varied between 1000 Gauss to 14,000 Gauss. (1.4 T).
 Belt width: 350mm



Typical applications for the disc magnetic separator

Weakly magnetic minerals from high quality industrial minerals, silica sand, feldspar, nepheline syenite.
Processing of heavy mineral beach sands, (ilmenite, garnet, monazite and rutile)
Monazite/zircon separation, garnet concentration and purification
Wolframite/cassiterite separation.
Columbite-tantalite separation

Typical Processing Capacities: 350 mm belt width

Heavy Mineral Beach Sand	400-600 kg/hr
Garnet Upgrading	400 kg/hr
Tin ore processing	400-500 kg/hr
Purification of Silica Sand, Feldspar and Nepheline Syenite	400 kg/hr

CLIENT SAMPLE TESTING FACILITY

Master Magnets Ltd has a mineral processing testing laboratory based in the UK with experienced staff to ensure that the most suitable and cost-effective machinery is recommended for each application. Our testing laboratory houses a range of laboratory equipment, representing smaller scaled versions of our industrial product range allowing accurate scale up to industrial capacities. X-Ray Fluorescence and X-Ray Diffraction analysis are available for chemical assay and mineralogical identification to aid the development of a viable process route for each application.



If you require further information regarding Master Magnets range of magnetic separators or wish to have a sample evaluated please contact:

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