

Installation, Operation and Maintenance Instructions



DF HIGH SPEED DRUM

**MODELS DF-A10, DF-A25,
DF-A50, DF-R**

ERIEZ MAGNETICS HEADQUARTERS: 2200 ASBURY ROAD, P.O. BOX 10608, ERIE, PA 16514-0608 U.S.A.
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and METAL DETECTION APPLICATIONS

Introduction

This manual details the proper steps for installing and operating the Eriez DF High Speed Drum.

Careful attention to these 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 High Speed Drum assistance.

Installation Instructions

Magnetic drums with high peripheral shell speeds were developed to satisfy a need for a dry magnetic separator capable of processing large volumes of relatively fine ferromagnetic particles (-1") (-25mm). Units previously available did not provide high capacity or efficiency. The DF High Speed Drum is a highly efficient unit for processing large volumes of material and producing high grade concentrates or removing very fine highly magnetic particles for purification.

Eriez DF High Speed Drum Separator consists of a rotating drum shell within which is a permanent magnetic element attached to a stationary support and shaft. The magnetic element covers a 210° arc. Depending on the application the drums are furnished with an A10, A25, or A50 agitating magnetic element or with an R radial nonagitating magnetic element. A 1-1 1/2" (38mm) diameter hole is drilled through the shaft at the side opposite the motor drive for positioning of the magnetic element.

The shell is made from 1/8" (3mm) thick #304 stainless steel and has a 1/8" (3mm) thick abrasion resistant rubber liner. Drum heads are high strength

aluminum alloy castings. Bearings are completely sealed oversized antifriction type for durability and trouble free operation.

A rectangular shaped dust tight housing with provision for dust collector connections is furnished within a heavy steel angle iron superstructure. Housing end panels have 1/4" (6mm) thick abrasion resistant rubber lining to reduce wear. An adjustable splitter is furnished to separate the magnetic and nonmagnetic fractions.

For periodic inspection of the housing interior and the drum shell, a large removable inspection panel is provided.

A feeder is normally required for efficient operation of the DF drum. An Eriez vibrating feeder is recommended for most applications. A belt feeder is available depending on the application.

A variable speed TEFC motor and drive is furnished as standard for all applications. The drive consists of a chain and sprockets with an oil tight chain guard.

Operating Instructions

MODELS DF-A10, DF-A25, DF-A50

A predetermined drum speed is selected to begin operation. Normal speed range in FPM:

DF-A10	300 - 1000	(90-300 mpm)
DF-A25	500 - 1500	(150-450 mpm)
DF-A50	500 - 1500	(150 - 450 mpm)

The material to be processed is introduced to the drum by a feeder that evenly distributes the material over the top vertical centerline of the drum.

As the material is fed onto the rotating drum, the magnetics are immediately influenced by the alternating polarity magnetic element which causes the magnets to flip end-over-end (180°) as they pass from pole to pole. This flipping action agitates free the nonmagnetics. Centrifugal force, which is directly related to the speed of the drum, discharges

the nonmagnetics as they are agitated free into the nonmagnetic product hopper.

In some applications composite grains are present. These are not completely magnetic nor completely nonmagnetic. Their presence necessitates the use of a special middling hopper that would require the second product to be discharged from the drum. The magnetic portion is discharged near the end of the magnetic element into the magnetic product hopper.

MODEL DF-R

Normal speed range in FPM - 300-1000 (90-300mpm)

Feed is brought to and introduced to the DF-R drum in the same manner as for the DF-A models. The DF-R is designed for maximum removal or recovery of magnetic particles from a product. Normally for

this type of application, agitation is neither required nor desirable. The magnetic particles are attracted to the drum surface and held fast by the strong radial element while centrifugal force ejects the nonmagnetic particles. When the magnetics traveling with the shell reach the end of the magnetic element, they are released down the magnetic discharge chute.

APPLICATION AND CAPACITY DATA

The DF drum has been designed for high capacity dry separation of fine particles. The basic criteria of application include:

1. Particles to be separated or concentrated must be ferromagnetic (strongly magnetic).
2. Feed should be free flowing.
3. Material to be processed should normally be -1" (-25mm) plus 20 microns.

Normal particle size ranges:

DF-A10	-1" + 1/4"	(-25mm + 6mm)
DF-A25	-1/4"	(-6mm)
DF-A50	-1/16	(-1.5mm)
DF-R	-1"	(-25mm)

The capacity of the DF drum depends to a great extent on the particle size and drum speed since the material is treated at preferably a single particle

depth on the shell. Consequently, particle size, peripheral speed and magnetic susceptibility affect the capacity. Capacity per foot (300mm) of magnetic width varies from approximately 5 TPH to 40 TPH (4.5 to 36 MTPH).

Grade and recovery are directly related to the peripheral speed of the drum. For high recovery of magnetics or purification, the Model DF-A10 or DF-R at a relatively slow peripheral shell speed is used. When a very high grade magnetic concentrate is desired the DF-A50 is used at a higher shell speed. The DF-A25 is used at moderate speeds for "cobbing" or "roughing" operations. (Selectivity increase when the products to be separated are within four Tyler mesh sizes.)

Some operations require the use of multiple stage units. For example, in iron ore beneficiation the initial stage would provide a high recovery, low grade concentrate with minimum loss of magnetics in the tailings. The magnetic concentrate from the first drum is recleaned on the second stage to produce a high grade concentrate and a middling product. The middling can be sent back for further grinding or can be recirculated without grinding.

Normally it will be necessary to make some adjustments in shell speed, feed rate and splitter location to attain optimum conditions.

Maintenance

The Eriez DF High Speed Drum is a heavy duty unit designed to be as maintenance free as possible. Periodic inspection of the unit is necessary to locate any areas of unusual wear. In certain abrasive applications extreme wear due to the high shell speeds can take place and is not unusual.

ABRASION RESISTANT RUBBER LINERS

Rotate the drum slowly to locate any worn spots in the rubber liner and also inspect the housing end panels to determine if excessive wear has taken

place. If worn spots are noticed, replace the liner.

BEARINGS

Readily accessible grease fittings are provided on both hubs for bearing lubrication. Lubricate approximately every two weeks with Lubriplate #70 grease, or equivalent, through these grease fittings. The drum cannot be operated while performing lubrication.



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