PERMANENT MAGNETIC SEPARATORS

DF HIGH SPEED DRUM

Dry Low Intensity Magnetic Separators (DLIMS) for automatic continuous concentration of magnetic ores, removal of magnetite from fly ash, purification of ground slag, foundry sand, cement and minerals.

ONLY FROM ERIEZ

Eriez now has the separator capable of dry treatment of finely ground iron ore, slag, fly ash and other difficult ferromagnetic concentration and removal problems. High strength, high capacity and a complete range of models and options are available in the Eriez DF High Speed Drum line. Adequate water supply considerations are a thing of the past with this equipment. Areas for exploration and development which formerly could not have been considered for magnetic treatment are now getting another look.

DF DRUM SEPARATORS

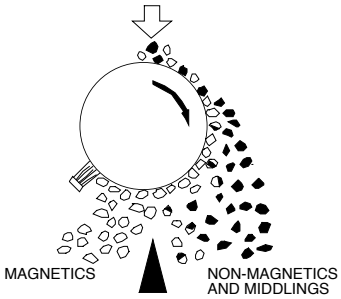


Figure 1. Operating Principle of DF Drum Separator

DF Drum Separators operate in a way similar to other drums but with some important differences. Older type, slow, agitating or radial field drums employ only magnetic attraction and gravity as the separating forces. Their capacity is limited due to the slow speed of rotation of the drum shell. The DF High Speed Drums employ high strength magnetic elements and high speed shell rotation. This makes it possible to introduce a third factor in the separation of materials – inertia.

To take maximum advantage of all these forces, Eriez engineered new, powerful magnetic circuits which permit high rotational speeds for the drum shell. Carefully balanced magnetic attraction, field depth and shell speed achieve an efficient, high capacity machine which effectively throws out fine non-magnetics and retains the magnetics.

SEPARATOR REQUIREMENTS VARY

Different applications require unique configurations of features and the Eriez line includes models for every purpose. Different magnetic elements and shell speeds are indicated for materials of various sizes and magnetic permeabilities. Eriez provides elements with a varying number of poles in axial (agitating) field design to produce high grade magnetic concentrates plus a high strength radial (nonagitating) field design for use where a clean, non–magnetic product is the most important consideration. A wide range of peripheral drum speeds variable from 300 to 1500 fpm (91 to 457 mpm) is provided to suit all applications. Capacity per unit of magnetic width varies from approximately 5 to 40 tph per foot (14.7 to 119.0 mtph per meter) and depends to a great extent on feed particle size, magnetic permeability and drum speed.

All DF Separator models require a feed with certain common characteristics. The magnetic fraction to be separated must be ferromagnetic and dry, and the feed size should be –1" (–25 mm). Selectivity increases when the products to be separated are within four Tyler mesh sizes. Moisture adversely affects separator performance but can be tolerated as long as the feed is free–flowing.

Capacity, grade and recovery are directly related to the peripheral speed of the drum. For high recovery of magnetics or purification of non–magnetics coarser than 1/8" (3mm), the Model DF-A10 or DF-R at a relatively slow peripheral shell speed is used. The DF-A25 is used at moderate speeds for cobbing or roughing concentration jobs. When a very high grade, finished magnetic concentrate is desired, the DF-A50 is used at a higher shell speed.

ORE PROCESSING

Some operations require the use of multiple stage treatment. For example, in iron ore benefication a first stage cobbing provides 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 finished high grade concentrate and a middling product. The middlings can be sent back for further grinding or can be recirculated without grinding.

Description of Feed	Magnetics in Feed	Particle Size Range		Drum Speed		Model	Capacity	
		in.	mm	fpm	mpm		tph/ft	mtph/m
1st Stage concentration of average grade magnetite ore	50% 50% 50%	–1+1/4 inch –1/4 inch –100 mesh	–25 mm+6 mm –6 mm –149 micron	400 700 1,000	122 213 305	DF-A10 DF-A25 DF-A50	15 – 40 10 – 35 5 – 15	45 – 120 30 – 105 15 – 45
2nd Stage concentration of magnetite rough concentrate	90% 90% 90%	–1+1/4 inch –1/4 inch –100 mesh	–25 mm+6 mm –6 mm –149 micron	800 1,200 1,500	244 366 457	DF-A10 DF-A25 DF-A50	10 – 30 10 – 15 5 – 10	30 – 90 30 – 45 15 – 30
Purification of primarily nonmagnetic material	Less than 5% Less than 5% Less than 5%	–1+1/4 inch –1/4 inch –100 mesh	–25 mm+6 mm –6 mm –149 micron	300 500 700	91 152 213	DF-R DF-R DF-R	15 – 30 10 – 25 5 – 10	45 – 90 30 – 75 15 – 30

Single Stage DF Separator removing ferrous contamination from slag for use in cement block manufacture.

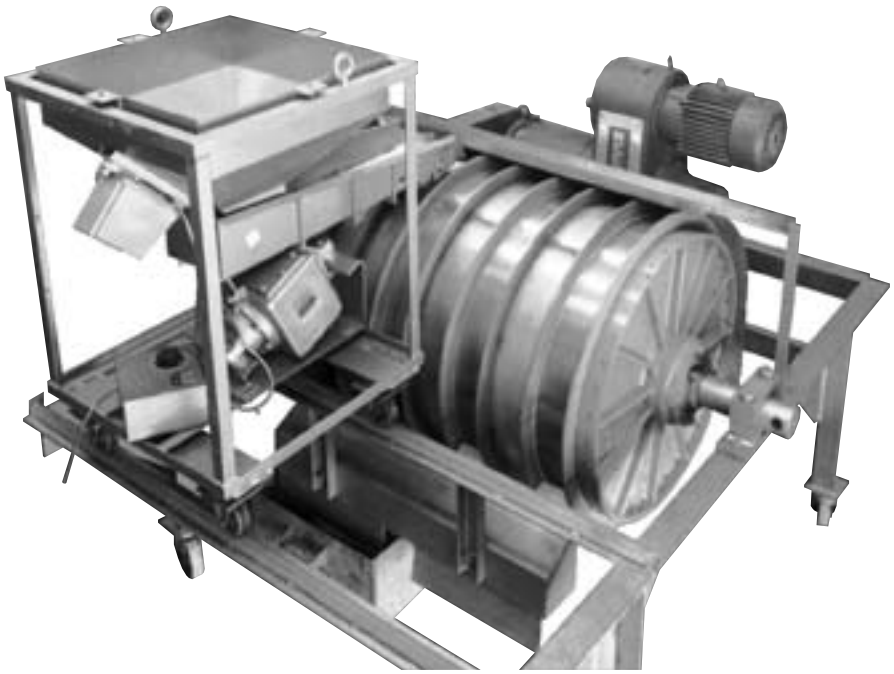
NO DC ELECTRICAL POWER SOURCE NEEDED

All of the DF Separator magnetic elements are of permanent magnetic construction which eliminates element maintenance and concern with electrical failures.

The standard drum shell for all DF Drums is 1/8" (3mm) thick 304 stainless steel with a 1/8" (3mm) thick abrasion resistant rubber cover. The extra high strength fields of the Eriez DF Separators permit the use of heavier 1/4" (6mm) rubber liners to give longer wear in severe applications where the maximum field strength of the separator may not be needed. Optional manganese steel covers are also available in place of the rubber covers. Housing end panels have abrasion–resistant rubber lining at product impingement points. For most applications, a vibratory feeder is recommended. Depending on the application, belt feeders are available as an alternate feed method.

FOR LABORATORY OR PILOT PLANT WORK

The special Eriez High Speed Drum Separator at left combines all models of DF Separators into one unit. Used to test a wide variety of materials, it offers a quick, efficient way to determine under controlled conditions which magnetic elements and speeds will provide the best separation for a particular product.



High Speed Drum Separator test unit combines the features of all DF models for quick and efficient sample testing.

SPECIFICATIONS

A		B		C		Drive Hp A-10 500fpm (152mpm)		A-10 1000fpm (305mpm)		A-10 1500fpm (457mpm)		*Shipping Weight	
in.	mm	in.	mm	in.	mm	hp	kw	hp	kw	hp	kw	lb	kg
6	152	16.5	419	40	1016	3	2.23	7.5	5.59	10	7.46	2700	1225
12	305	22.5	572	46	1168	5	3.72	7.5	5.59	15	11.18	3100	1406
18	457	28.5	724	52	1321	5	3.72	7.5	5.59	15	11.18	3800	1724
24	610	34.5	876	58	1473	5	3.72	10	7.46	20	14.90	4200	1905
36	914	46.5	1181	70	1778	5	3.72	15	11.18	25	18.64	5100	2313
48	1219	58.5	1486	82	2083	5	3.72	15	11.18	30	22.37	5800	2631
60	1524	70.5	1791	94	2388	5	3.72	20	14.90	40	29.82	6600	2994
72	1829	82.5	2096	106	2692	5	3.72	25	18.64	40	29.82	7600	3447
96	2438	106.5	2705	130	3302	7.5	5.59	30	22.37	50	37.28	8600	3901
120	3048	136.5	3467	154	3912	7.5	5.59	40	29.82	60	44.74	9700	4400
A		B		C		A-25 500fpm (152mpm)		A-25 1000fpm (305mpm)		A-25 1500fpm (457mpm)		*Shipping Weight	
in.	mm	in.	mm	in.	mm	hp	kw	hp	kw	hp	kw	lb	kg
6	152	16.5	419	40	1016	3	2.23	5	3.72	7.5	5.59	2700	1225
12	305	22.5	572	46	1168	3	2.23	5	3.72	7.5	5.59	3100	1406
18	457	28.5	724	52	1321	3	2.23	5	3.72	7.5	5.59	3800	1724
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96	2438	106.5	2705	130	3302	5	3.72	15	11.18	30	22.37	8600	3901
120	3048	136.5	3467	154	3912	7.5	5.59	20	14.90	30	22.37	9700	4400
A		B		C		A-50 500fpm (152mpm)		A-50 1000fpm (305mpm)		A-50 1500fpm (457mpm)		*Shipping Weight	
in.	mm	in.	mm	in.	mm	hp	kw	hp	kw	hp	kw	lb	kg
6	152	16.5	419	40	1016	3	2.23	5	3.72	5	3.72	2700	1225
12	305	22.5	572	46	1168	3	2.23	5	3.72	7.5	5.59	3100	1406
18	457	28.5	724	52	1321	3	2.23	5	3.72	7.5	5.59	3800	1724
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120	3048	136.5	3467	154	3912	5	3.72	15	11.18	25	18.64	9700	4400
A		B		C		R 500fpm (152mpm)				R 1000fpm (305mpm)		*Shipping Weight	
in.	mm	in.	mm	in.	mm	hp		kw		hp	kw	lb	kg
6	152	16.5	419	40	1016	3		2.23		5	3.72	2700	1225
12	305	22.5	572	46	1168	3		2.23		5	3.72	3100	1406
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96	2438	106.5	2705	130	3302	5		3.72		15	11.18	8600	3901
120	3048	136.5	3467	154	3912	7.5		5.59		20	14.90	9700	4400

*Shipping weights include largest motor

Dimensions and specifications are subject to change without notice.

Note: Some safety warning labels or guarding may have been removed before photographing this equipment

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