SHI Group
Sumitomo Heavy Industries Finetech

GOOD DESIGN
Good Design Award Recipient

FINE MAG series

Magnetic Separator

K / KD / KS / KSD
F / FD / FS / FSD

FINE MAG series

Sludge Removal Capacity - Wringing Out Performance
Increasing the Gap with Competitors.

NEW MAGNETIC SEPARATOR

- Maintains stable performance over the long-term.
- Highly efficient filtering accuracy.
- Extends the life of coolant.
- Tank cleaning frequency reduced.
- Works to prevent machine tool breakdowns.
- Reduction in the cost of running secondary filtering devices.
- A wide line-up capable of dealing with almost any processing and material types.
- Meets CE, CCC and UL standards.

Drive System: Durability improved! (PAT.)

This is different!

- Reexamining the frame construction has led to the prevention of sludge and hard object mixing. Resistance to wear has been largely improved.

Magnetic Drum Surface: Special hardening treatment! (PAT.)

This is different!

Magnetic drum is not scratched.

- Initial performance is maintained over the long-term. (Both purity and sludge water content.)
- Squeeze roller also is not scratched.

Squeeze Roller: Forced drive method employed.

This is different!

As the squeeze roller does not slip, the coolant recovery capacity has been increased substantially.

Magnetic Field: Original magnet arrangement based on analytical technology.

This is different!

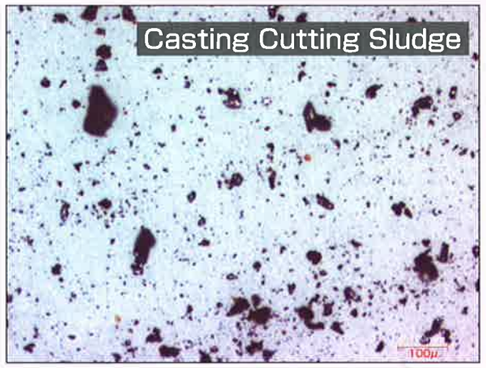
Purity (adhering power) has been improved based on a scientifically developed high dimensional magnet arrangement.

Secondary Filter Type Model KS • Model KSD

Merits of Introduction

When cutting casting, more than 90% of the large-volume, very fine mud-like sludge (less than 100μ) is recovered (weight ratio).

In cutting casting, as in grinding, a large volume of very fine mud-like sludge is generated.
If this fine sludge is not removed, it negatively impacts the machine tool, pumps, blades, etc.



Because mud-like sludge is very fine (less than 100μ), it can not be removed by drum filter chip conveyors.

If the FINE MAG is used for secondary filtering…

Result 1

- Machine Preventative Maintenance, Operation Ratio is Improved.
- Tertiary Filter Life Greatly Increased.
- Product Defects Ratio Reduced
- Blade Life Increased.
- Maintenance Free

Result 2

Recovery Ratio: More than 90%* (weight ratio)
Consumption Parts: Unnecessary
Recovered Sludge Condition: Dry
High Pressure Cyclone Pump: Unnecessary
>>Energy Reduction (CO_2 Reduction)

*In the case when the entire amount is filtered.

Shaving Processing Type Model KS • Model KSD

Merits of Introduction

Due to the P-Roller and Specially Arranged Magnetic Drum, the amount of chips that embed into the squeeze roller has been reduced.

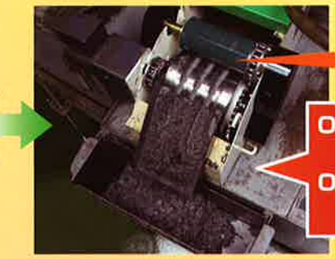
Shaving Chips Actual Example

Using a Squeeze Roller for Steel Grinding ●●●●●●●●●● Using a P-Roller

*Made from special material and the use of a deformation prevention function makes the P-Roller resistant to chip embedding.

Oil Content Ratio 41.3%
Oil Quantity 0.4L/Day

Factory cleanliness

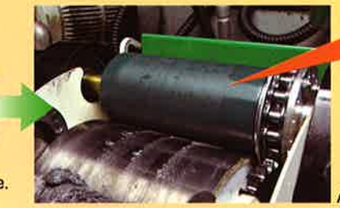


Oil Content Ratio 22.9%
Oil Quantity 0.2L/Day

Chips embedded in roller.

Marvelous durability.

After 3 months of use.



No chips embedded in roller.

After 1 year of use.

Oil build-up in the sludge box.

Excellent squeezing result.

Oil does not build-up in the sludge box.

Results from Customers that use the P-Roller and Newly Arranged Magnetic Drum. (KS-4-1PX)

- Monitoring Time: From 03/2008 to 09/2008 (6 months)
- Monitoring Location: N Co., Ltd.
- Processing Conditions
  - Processing: Shaving
  - Machine: KS-4, 1-PX
  - Material: SCM420
  - Module: 1.5
  - O.D.: φ74.2
  - Coolant: PM715 (Yushiro Chemical)
  - Chip Volume: 0.002kg/piece
  - Processing Quantity: 600pcs/day

Merits of Using P-Roller + Newly Arranged Magnetic Drum 0.002kg x 600 pieces = 1.2kg/day (Sludge discharge quantity from one day.)

- Current: KS-4 (Current rollers)
  1.2kg x 0.413 (Oil Content Ratio) = 0.5kg/Day
  0.5kg x 0.8 (Specific Gravity) = 0.4L/Day
  (Oil retained quantity from one day.)
- Improved: KS-4 (P-Roller)
  1.2kg x 0.229 (Oil Content Ratio) = 0.3kg/Day
  0.3kg x 0.8 (Specific Gravity) = 0.2L/Day
  (Oil retained quantity from one day.)

- 0.4L x 20 days x 12 months = 96L/year
- 0.2L x 20 days x 12 months = 48L/year
- 96L - 48L = 48L (year)

- P-Roller Fine Mag (1 unit): 48L/year
- Discharged Oil: 1.8L/Day x 250 days = 450L/year
- Cutting Oil Price: JY280/L

TOTAL = 500L/year x 1 machine = JY140,000 Savings

* Demonstration machines are available. Any customer interested in becoming a monitor should please contact our nearest office.

NEW MAGNETIC SEPARATOR

FINE MAG Series: Product Lineup

A Complete Lineup, with Powerful Support

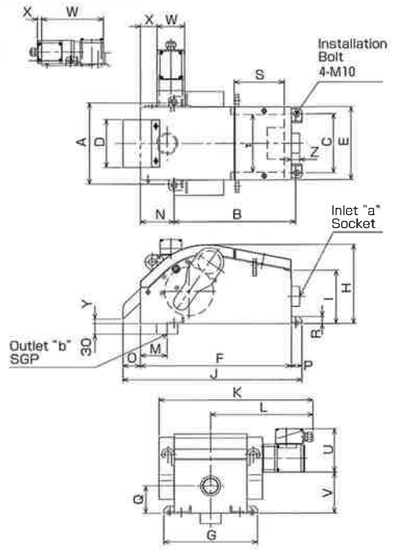
Model K • Model F (Magnetic Drum Dia.: φ140mm)

Standard Type (Fine Chips)

Features

- The Model K utilizes rare earth magnets, which have 10 times the magnetic energy of ferrite magnets.
- The Model F utilizes ferrite magnets.

24 · 36 Motor Position



Model KS • Model FS (Magnetic Drum Dia.: φ140mm)

Cutting Secondary Filtering • Shaving Process Type

Features

- A highly efficient design based on the analysis of magnet arrangement and shape which allows for improved adhering power.
- Reduction in the amount of chips sticking in the squeeze rolls, improving squeeze efficiency.
- Improvement of blade life leads to improvement in product quality.

Uses

- Filtering of fine sludge that contains cutting chips of casting, etc.
- Filtering of shaving coolant.
- Filtering of Magnetic sludge found in recovered coolant from a centrifugal separator.

Model 4 - 36 (Common for type K • F • KS • FS)

Size	Flow Volume (L/min) Water Soluble	Motor W	Dimensions (mm) A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Pipe Dia. Inlet a	Outlet b	Weight (kg)
4	40	25	233	348	169	138	209	433	269	227	157	513	441	293	77	100	50	30	78	20	143	166	124	118	80	48	13	23.5	1 1/2	2	25
6	60	25	289	348	225	194	265	433	325	227	157	513	497	321	77	100	50	30	78	20	143	222	124	118	80	48	13	30	2	2	29
8	80	25	345	348	281	248	319	437	379	260	191	517	551	348	88	104	50	30	110	20	138	276	124	151	80	57	30	30	2	2 1/2	35
12	120	25	457	348	393	361	432	449	492	270	201	529	664	404	95	116	50	30	110	20	138	389	124	161	80	69	28	30	2 1/2	3	47
18	180	25	625	348	561	526	600	449	660	270	201	529	832	488	95	116	50	30	110	20	138	555	124	161	80	69	28	30	3	3	68
24	240	25	620	460	492	478	586	580	666	353	268	685	736	391	110	144	65	40	120	20	141	526	124	183	201	26	29	30	3	4	88
36	360	25	844	460	716	692	800	580	880	368	283	685	950	498	110	144	65	40	139	20	140	739	124	198	201	26	44	30	4	4	117

Sludge Box Dimensions (mm)

Model	Width	Depth	Height	Weight
4-6	326	204	162	0.5kg
8	384	220	238	0.9kg
12	508	266	225	1.3kg
18	704	290	173	1.6kg
24	600	200	200	5.5kg
36	900	250	250	14.5kg

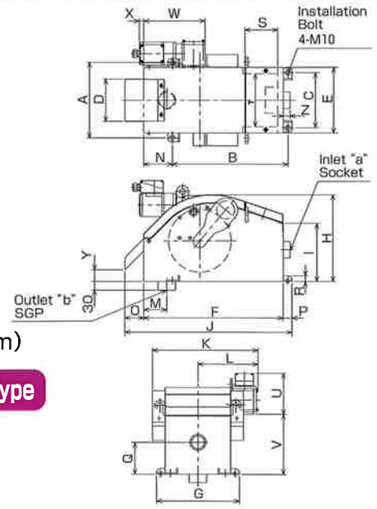
* Made from plastic for Models 4-18, and made from metal for Models 24, 36.

Model KD • Model FD (Magnetic Drum Dia.: φ216mm)

High Filter Accuracy Type

Features

- By expanding the size of the magnetic drum, compared to the standard type, the large type has improved filtering performance.
- Ideal for the fine chip sludge from lapping and honing, as well as for the difficult-to-adhere magnetized sludge that comes from induction hardening.



Model KSD • Model FSD (Magnetic Drum Dia.: φ216mm)

High Filter Accuracy • Cutting Secondary Filtering • Shaving Process Type

Features

- With a large magnetic drum, filtering efficiency is improved in comparison to the KS/FS series.

Model 4 - 24 (Common for type KD • FD • KSD • FSD)

Size	Flow Volume (L/min) Water Soluble	Motor W	Dimensions (mm) A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Pipe Dia. Inlet a	Outlet b	Weight (kg)
4	40	25	260	398	190	146	226	480	286	299	206	575	364	207	80	99	65	30	110	20	112	183	140	208	212	15	40	23.5	1 1/2	2	37
6	60	25	316	398	246	202	282	480	342	299	206	575	420	235	80	99	65	30	110	20	112	239	140	208	212	15	40	30	2	2	42
8	80	25	370	377	300	256	336	480	396	299	206	575	474	262	88	120	65	30	110	20	112	293	140	208	212	15	40	30	2	2 1/2	50
12	120	25	483	377	413	368	449	490	509	299	206	585	587	318	95	130	65	30	110	20	112	406	140	208	212	15	30	30	2 1/2	3	64
18	180	25	650	377	580	534	616	490	676	299	206	585	758	406	95	130	65	30	110	20	112	572	140	208	222	5	30	30	3	3	82
24	240	25	844	460	716	692	800	580	880	353	268	685	950	498	110	144	65	40	140	20	140	739	124	183	201	26	29	30	3	4	117

* Made from plastic for Models 4-18, and made from metal for Model 24.

Sludge Box Dimensions (mm)

Model	Width	Depth	Height	Weight
4-6	326	204	162	0.5kg
8	384	220	238	0.9kg
12	508	266	225	1.3kg
18	704	290	173	1.6kg
24	900	250	250	14.5kg

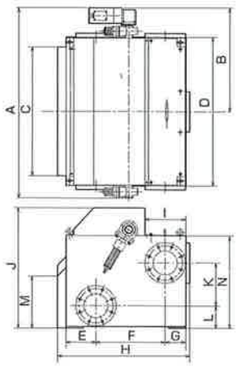
* Made from plastic for Models 4-18, and made from metal for Models 24.

Model SMK • Model SMF (Magnetic Drum Dia.: φ319mm)

High Filter Accuracy Type

Features

- Large processing type for 500L/min - 1000L/min.
- Two models: Rare Earth (SMK), and Ferrite (SMF).
- 1,500L/min - 2,000L/min processing models are also available. Please contact us for details.
- Models to cope with rough and large chips are also available.



Model 50 - 100 (Common for type SMK • SMF)

Size	Flow Volume (L/min) Water Soluble	Motor W	Dimensions (mm) A	B	C	D	E	F	G	H	I	J	K	L	M	N	Pipe Dia. Inlet a	Outlet b	Weight (kg)
50	500	60	1105	603	753	868	175	403	120	772	240	700	250	130	302	540	5	5	282
75	750	60	1385	743	1032	1148	175	420	120	787	250	700	250	130	303	540	5	5	382
100	1000	60	1609	855	1257	1372	190	425	135	822	290	735	270	145	338	575	6	6	450

*Please indicate one location (each) for Inlet and Outlet. Flanges other than those indicated will be optional.

Sludge Box Dimensions (mm)

Model	Width	Depth	Height	Weight
50	1000	300	300	27.0kg
75	1300	300	300	34.0kg
100	1400	300	300	36.0kg

* Made from metal

Model K Rare Earth Magnet

10 Times the Magnetic Energy

Rare earth permanent magnets are used, which compared to ferrite magnets, have 10 times the magnetic energy. Removal of difficult magnetized sludge, or high viscosity coolant is possible.

Actual Example Example using a **Model K-36**

- Secondary filter became unnecessary.
- Cleaning frequency of tanks cut in half.
- Life of coolant doubled.

Work : Drive Shaft (SCr420)
Coolant : Oil-Based
Machine : Gear Grinder

Model F Ferrite Magnet

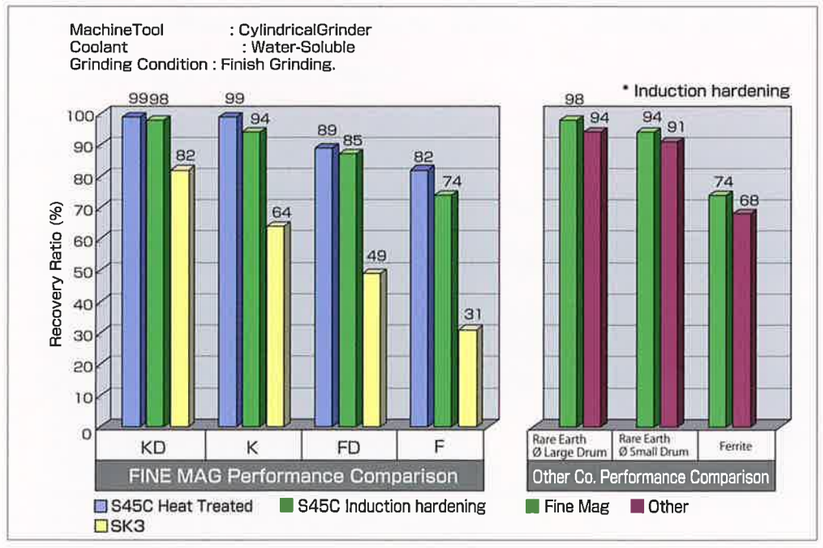
An economical, general-purpose type. Improved adherence power due to an efficient design (magnet arrangement and shape). Works well with all sludge except difficult magnetized sludge.

Actual Example Example using a **Model F-4**

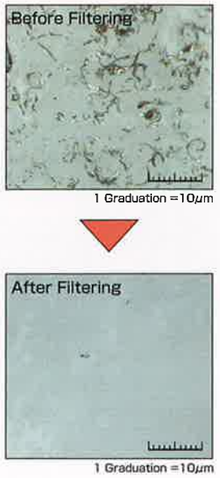
- Abrasive Stone life is doubled.
- Secondary filter changeover frequency halved.
- Product scratching eliminated.

Work : Machine Parts (S65C)
Coolant : Water-Soluble
Machine : Cylindrical Grinder

Sludge Recover Ratio Table

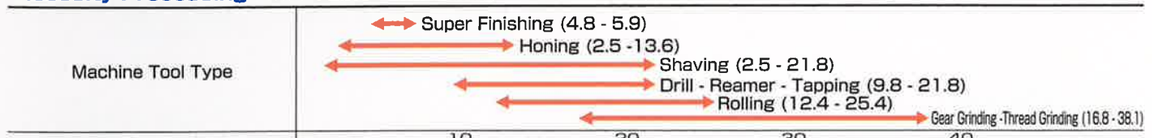


Model KD Actual Example



Viscosity Processing Flow Table

When using oil-based coolant, please refer to the following table (in the case of 40℃.)



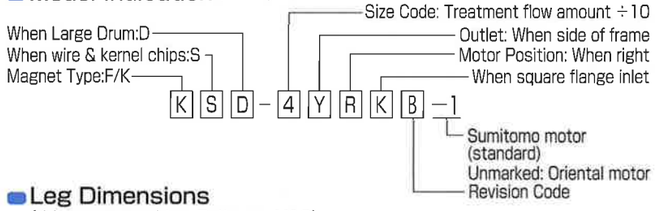
Model		Processing Flow (L/min)			
K-4, KS-4		30	20	15	10
K-6, KS-6	KD-4, KSD-4	40	30	20	15
K-8, KS-8	KD-6, KSD-6	60	40	25	20
K-12, KS-12	KD-8, KSD-8	80	60	40	30
K-18, KS-18	KD-12, KSD-12	120	90	60	45
K-24, KS-24	KD-18, KSD-18	180	120	80	60
	KD-24	240	160	105	80
K-36, KS-36		270	180	120	90

Machine Selection (Based on Use)

Type			Compatible Machine Tools	Sludge	Coolant	Recovery Ratio
Model	Magnet	Drum Diameter				
K, KD	Rare Earth	φ140, φ216	Lapping, Honing, Finish Grinding	Fines	Oil Based	94~99%
KS, KSD	Rare Earth	φ140, φ216	Shaving, Groove Grinding, Gear Grinding, Thread Grinding, Cutting Secondary Treatment	Needle, Wire, Kernel	Oil Based	94~99%
F, FD	Ferrite	φ140, φ216	General Grinding	Fines	Water Soluble	82~95%
FS, FSD	Ferrite	φ140, φ216	Shaving, Groove Grinding, Gear Grinding, Thread Grinding, Cutting Secondary Treatment	Needle, Wire, Kernel	Oil Based	82~89%

Please contact us regarding any other type of sludge.

Model Indication (Example)



Leg Dimensions

(4 legs per machine. Bolts are M12)

Model	1E	2E	1KE	2KE
Height Adjustment Range	145~222	245~422	200~300	300~450 (mm)

Options

P-Roller, Legs

Standard Specifications

- Outlet: Bottom of frame
- Motor Position: Left (when looking from scraper side)
- Motor Voltage: AC200V, 50/60Hz 3ph
- Motor: Current value rating

25W・4P
200V 50/60Hz:0.25/0.22A(CE・UL・CCC対応)
220V 50/60Hz:0.26/0.23A(CE・UL・CCC対応)
60W・4P
200V 50/60Hz:0.46/0.42A
220V 50/60Hz:0.46/0.41A

- Reduction ratio: 1/1000 Models 4-36 (Common among all machines.)
- Reduction ratio: 1/900 Models 50-100 (Common among all machines.)
- Accessories: One sludge box.

Special Specifications

- Different Electrical Voltages: 300V - 400V - 415V - 440V 50/60Hz
- Square flange Outlet

*Regarding others, please contact us.

Note of Caution

- To use correctly, please read the Operators Manual before using any of the machines.

* The data of this catalog is just one example based on test results. Actual results may different depending on conditions.

Detailed information can be found regarding the *FINE MAG* at our FINE MAG specific website : http://www.finemag.jp/

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*Finetech reserves the right to make changes to machine specifications without prior notice.

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