Flow Ezy Filters, Inc.
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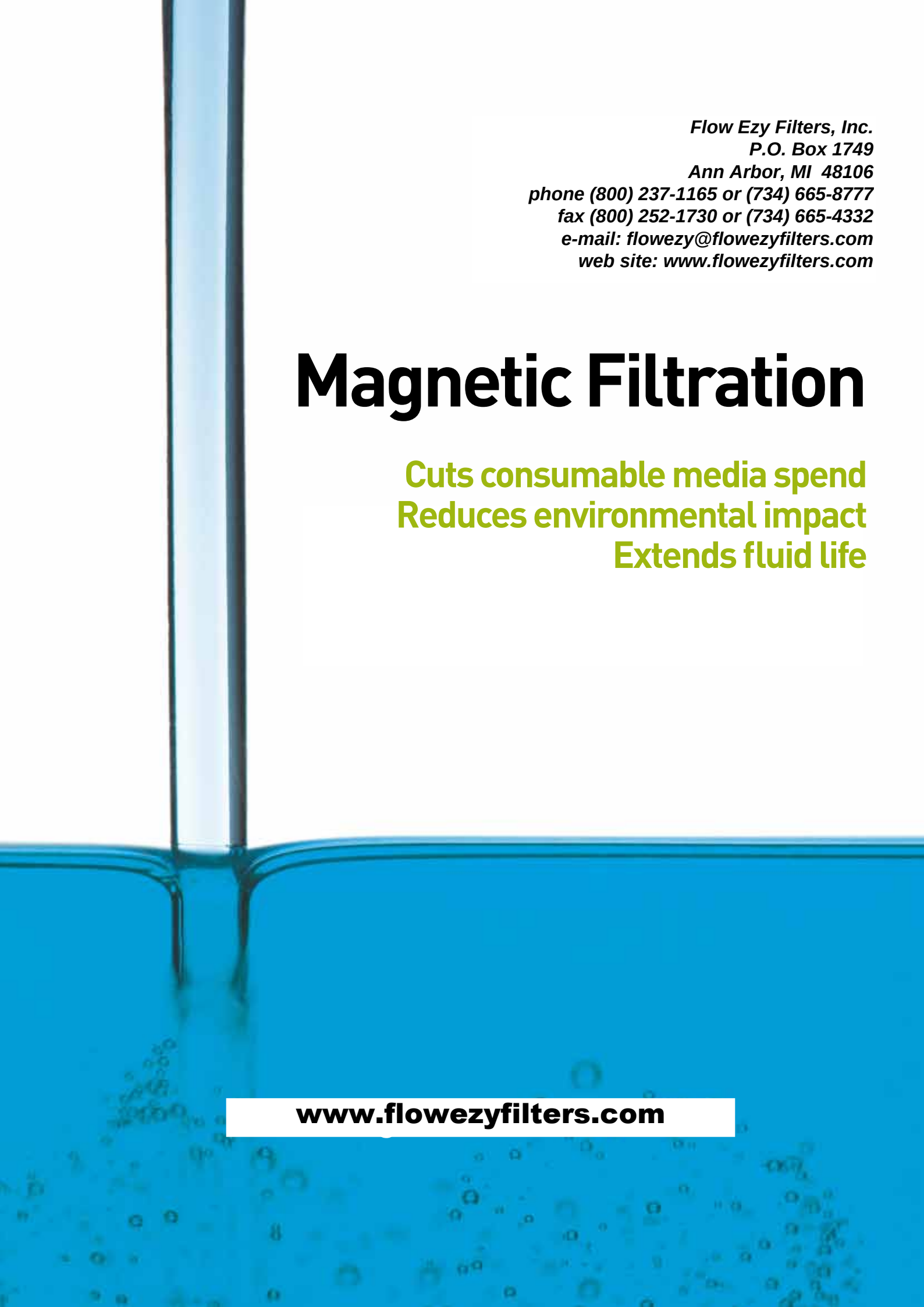
Magnetic Filtration

Cuts consumable media spend
Reduces environmental impact
Extends fluid life



www.flowezyfilters.com

Why use magnetic filtration?

Significantly lower operating costs

Longer lasting fluids
Magnetic filters remove particles smaller than one micron in size. Traditional barrier filters leave particles smaller than 5 microns circulating in the fluid. These particles significantly affect the performance of fluids and also act as a focus for bacterial build up.

NO consumables
Once installed there is nothing else you need to buy to ensure effective filtration over the filter's lifetime.

Minimal fluid loss
Contamination is removed from the filter as a semi-dry 'cake'. Fluid loss is considerably less than that of traditional filter media.

NO disposal costs
The cake itself can be recycled, eliminating specialist disposal costs.

Minimal running costs
Manually cleaned magnetic filters require no additional power. Self-cleaning filters only require a small amount of power for the cleaning process.

More environmentally responsible

Less fluid used
More efficient filtration means fluids retain their essential properties for longer giving extended fluid life.

Contamination can be recycled
Ferrous contamination is collected and can be easily recycled as a single material.

Reduced pollution
No contaminated filter media ends up in landfill.

Increased productivity

Maintain flow rates
High flow rates can be maintained without affecting filtration efficiency. Fluid does not flow through filter media so flow is uninterrupted. Flow rates are determined by your process requirements, not by your filter.

No back pressure up
Even when the filter is 'full' there is no blinding or risk of burst filters, reducing downtime.

Reduced wear
Particles that pass through traditional filters act as an abrasive, wearing parts, machinery and product. Magnetic filters remove these particles.

Fine filtration
Conventional filtration media 5 microns and below can strip oils of anti-foaming, anti-bacteria and other additives. Micromag enables sub-micron filtration without affecting the oil's characteristics.

Where to use magnetic filtration

Magnetic filtration can be used in almost any environment where ferrous, para-magnetic and grinding medium contamination of a liquid is a problem.

Metalworking / finishing
Liquids Coolants
Applications Grinding, milling, honing, lapping, fine finishing, Wire & EDM, laser cutting, CNC

Liquids Cleaning fluids
Applications Part washing, cleaning stations

Hydraulic systems
Liquids Fluid/oil
Location Hydraulic systems, test beds

Fuel storage and handling
Liquids Oil, diesel, petrol, bio-fuels
Applications Tank cleaning, storage inlet and outlet points, fuel dispensers

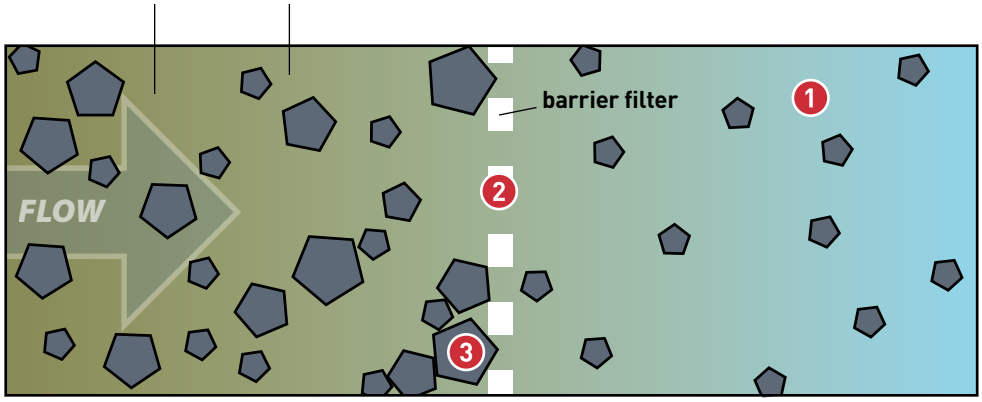
Gearboxes
Liquids Oil
Location General, gearbox maintenance

Heating systems
Liquids Hydronic fluids
Applications Domestic and industrial heating

Filters in action

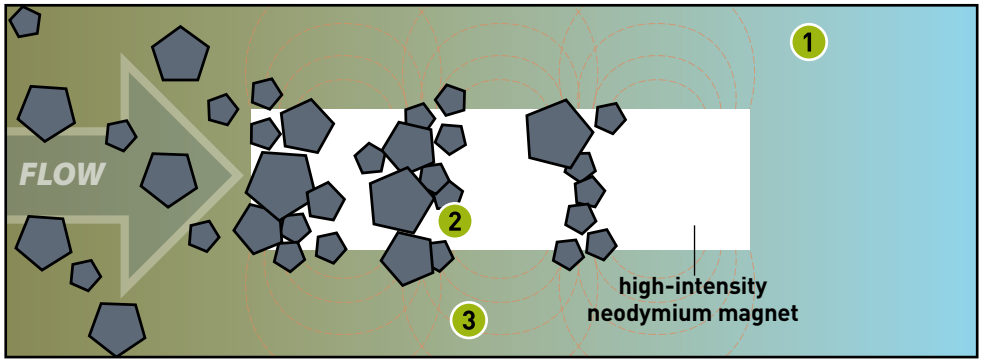
Barrier filtration

contamination particles | fluid



1. Particles smaller than media rating remain in the fluid reducing its efficiency and increasing wear on machinery and cutting tools
2. Once full, the contaminated media is disposed of along with fluid held in the filter medium
3. The filter becomes clogged causing blinding and back pressure

Magnetic filtration



1. All particles are removed
2. Once full, the contamination is removed from the magnet and can be recycled with little loss of fluid and can be recycled
3. Patented magnet configuration means that even when the filter is full, flow channels remain open so there is no blinding or pressure build up

CASE STUDIES Magnetic filtration in use

Reduced environmental impact

Elite Tooling installed a Filtramag magnetic filter on a Walter Helitronic Power Grinder, used for manufacturing carbide cutting tools, and were able cut consumable costs and sell removed contamination for recycling.

Increased production efficiency

Honda installed a Micromag on a bespoke machine used for manufacturing engine valve seats – where accuracy and finish quality is critical. Not only was part quality improved but the filter's minimal maintenance requirements meant that machine downtime was significantly reduced.

Significant savings made

Auto parts manufacturer ThyssenKrup was having to replace one pump per week in its de-greasing plant due to inefficient filtration. After installing an Eclipse Magnetics filter before the pumps this figure was reduced dramatically. The cost of the filter was paid back within weeks.

Magnetic filter range Product data

MICROMAG

Standard machine filtration. Smaller wash stations. Non-chemical environments.

Inline/offline filtration
Manually cleaned
Styrene Acrylo Nitrile (SAN)
Temp range: 41° to 122°F. S

Product number	Flow rate		Contam. capacity	Max. operating pressure	Connection
	US gallons/min.	gallons/min.		psi	" NPT
MM5/1.0	18	15	2.2	174	1
MM10/1.0	26	22	4.4	174	1
MM20/1.5	40	33	8.8	174	1½

FILTRAMAG

Higher flow, higher contamination. Applications with less magnetic contamination e.g. grinding medium, para-magnetic steel, carbide. Harsh chemical environments.

Inline/offline filtration
Manually cleaned
Full stainless steel construction
11000 Gauss high-inte[illegible]y
Temp ra[illegible]158

DISCONTINUED
See new style below

Product number	Number of cor[illegible]	[illegible]imum flow		Contam. capacity	Max. operating pressure
			gallons/min.	lbs	psi
FM1.5M/NPT	3	66	55	6.6	145
FM2.5/NPT	6	132	110	13.2	145

AUTOMAG

Higher flow, higher contamination. Non-stop operations. Harsh chemical environments.

Inline/offline filtration
Automated self-purging (air operated)
Full stainless steel construction
Temp. range: 41° to 158°F.
Multiple units can be grouped for higher capacity

Product number	Number of cores	Flow rate		Contam. capacity	Operating pressure
		US gallons/min.	gallons/min.	lbs	psi
AM6/NPT	6	119	99	3	145
AM12	12	238	198	6¼	145

AUTOFILTREX

Highest flow, highest contamination. Non-stop operations.

Product number	Flow rate		Contam. capacity	Max. operating pressure
	US gallons/min.	gallons/min.	lbs	psi
AF4	106	106	17½	145
AF8	211	211	35	145
AF12	317	317	52¾	145

Offline filtration system
Free-standing
Automated self -cleaning
Non-stop filtration
Full stainless steel construction (PTFE coated as an option)
Touch-screen programming
Supplied as a turnkey package
Temp range: 41° to 158°F.
Made to order.

Flow Ezy Filters
THE SOURCE FOR FILTRATION PRODUCTS

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High intensity magnetic filter

Filtramag+ is a high performance magnetic filter with full stainless steel construction which makes it suitable for use in a variety of industry sectors and applications.

- Patented design
- Easy installation
- Unique dual flow technology™ – maximises collection capability
- Operates at up to 290psi bar
- Removes both magnetic and non-magnetic contamination
- Minimal pressure drop
- In-line connections
- Ideal for use in harsh chemical environments

Dual flow techology™

Filtramag+ is the most efficient filter of its type. The dual chambered design means that fluid is exposed to the high intensity magnets for the maximum time thus ensuring almost 100% of contamination is removed on first pass through the filter. The patented magnetic circuit on the 4,000 gauss version design ensures that the filter can never block even in high contamination applications.

Magnetic core options

High intensity magnetic cores ensure particle filtration down to sub-micron size. For standard machining or wash system applications a 4,000 gauss magnetic core pack is available. For applications which involve lower magnetically permeable materials e.g. Cast Iron and Carbide or require an ultra-precise surface finish an 11,000 gauss magnetic core pack is available.

Benefits

Using fully filtered fluids, free from ferrous particles provides:-

- Improved surface finish
- Cost savings on disposable filtration media
- Extended fluid lifespan
- Reductions in waste disposal
- Longer lasting tools and machinery

Suitable fluids

Oil, coolants, fuel, ink, paint, chemicals.

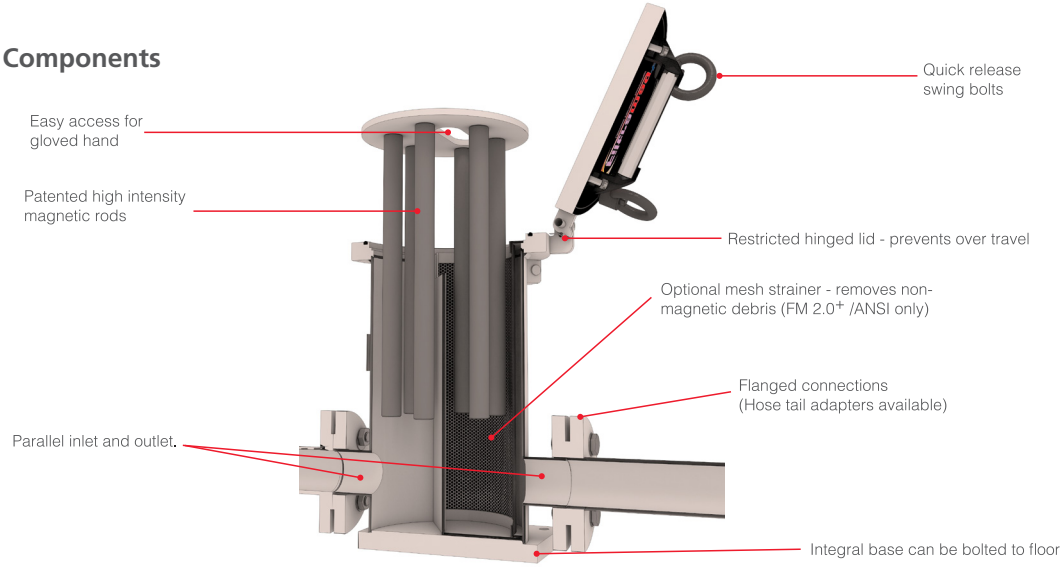
Suitable locations

Pre & Post fluid holding tank, machine or process

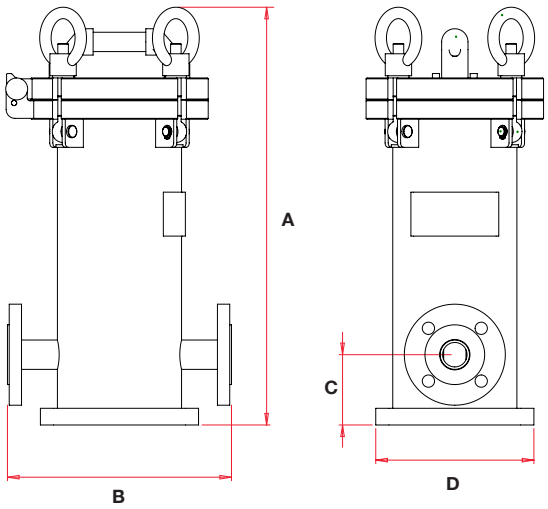
Typical applications

- With carbide or cast iron materials
- General machining operations
- Inks/paints
- Wash systems
- Diesel/gasolene
- Slurry/glazes

Filtramag+ Components



Technical Data



Product number	Max. flow rate	Contamination capacity	Max. operating pressure	Connection	Dimensions inches			
	Gallons	lbs	PSI	ANSI "	A	B	C	D
FM1.5^{+}/ANSI	66	6.6	290	1½	15.5	10	3.9	7.1
FM2.0^{+}/ANSI	132	13.2	290	2	17.4	13	3.9	9.8

Part Numbers (including spares)

Part Number	Description
FM1.5^{+}/ANSI	FM1.5^{+} unit with 4,000 magnet cartridge, cleaning tool & cleaning tray
FM2.0^{+}/ANSI	FM2.0^{+}/ANSI unit with 4,000 magnet cartridge, cleaning tool & cleaning tray
FM1.5^{+}/ANSI /11K	FM1.5^{+}/ANSI unit with 11,000 magnet cartridge, cleaning tool & cleaning tray
FM2.0^{+}/ANSI /11K	FM2.0^{+}/ANSI unit with 11,000 magnet cartridge, cleaning tool & cleaning tray
FM1.5^{+}/ANSI/MC	4,000 magnet cartridge for FM1.5^{+}/ANSI units
FM2.0^{+}/ANSI/MC	4,000 magnet cartridge for FM2.0^{+}/ANSI units
FM1.5^{+}/ANSI /MC11K	11,000 magnet cartridge for FM1.5^{+}/ANSI units
FM2.0^{+}/ANSI /MC11K	11,000 magnet cartridge for FM2.0^{+}/ANSI units
FM2.0^{+}/ANSI /MB0.5	Optional 0.5mm mesh basket for FM2.0^{+}/ANSI units
FM2.0^{+}/ANSI/MB1.0	Optional 1.0mm mesh basket for FM2.0^{+}/ANSI units
FM1.5^{+}/ANSI /VS	Spare Viton seal for FM1.5^{+}/ANSI units
FM2.0^{+} /ANSI /VS	Spare Viton seal for FM2.0^{+}/ANSI units

Magnetic Performance

Maximum Pressure 290psi

Magnetic Performance Standard option 4,000 gauss, high intensity option 11,000 gauss

Magnet material Rare earth neodymium iron boron
NdFeB

Magnet grade N35 (Standard option)
N45 (High intensity option)

Temperature 23 to 176F

Materials

Housing 304 Grade Stainless Steel

Lid 304 Grade Stainless Steel

Tube 316 Grade Stainless Steel

Surface finish External–powder coated

Sealing Viton O-ring

Mesh strainer 304 Grade Stainless Steel

Swing bolts High tensile steel

Cleaning Tool Stainless steel

Mesh strainer options (FM2.0^{+}/ANSI only) 0.02inches and 0.04inches aperture size

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Micromag

Compact magnetic filter

Removes ferrous contamination from all industrial fluids

Environmentally responsible – waste can be recycled

Efficient – collects all ferrous contamination

Economical – no consumables

Micromag compact magnetic filter

Highly efficient filtration

Sub-micron filtration efficiency: if the particle is magnetic, even partially, the Micromag will remove it.

Capable of removing abrasives and non-magnetic material by means of heterocoagulation.

Visual inspection of fluid being filtered and contamination collected.

Cost cutting

No consumables required, ever.

No loss of fluid due to changing oil sodden cartridges.

No pressure drop, even when fully loaded with contamination thanks to patent pending magnetic circuit design.

No maintenance required, only operator intervention to clean.

Reduced downtime, increased productivity.

Environmentally responsible

Contamination removed as material; which can be recycled – no need to dispose of dirty cartridges.

Fluids remain effective for longer so fluid use is reduced.

Micromag magnetic filters are used effectively in these applications:

- Grinding, honing & lapping machines
- Manual & CNC machinery
- Fine finishing operations
- Wire & EDM processes
- Laser cutting operations
- Injection moulding cooling & heating systems
- Industrial part washing
- Press brake lubricant
- Transmission
- Engines
- Post drill head operations
- Saw sharpening
- Pump protection
- Pre-filtration
- Quenching operations
- Domestic & industrial heating systems

in the following industry sectors:

- Machine tools
- Manufacturing
- Automotive
- Construction
- Aerospace
- Defence
- Recycling
- Hydraulic
- Marine
- Oil
- Transport
- Power generation
- Water
- Yellow & white goods
- Mining

HOW MICROMAG WORKS

Contaminated fluid enters the inlet port where it is equally dispersed by the unique tapered radial flow channels. These channels slow the fluid down.

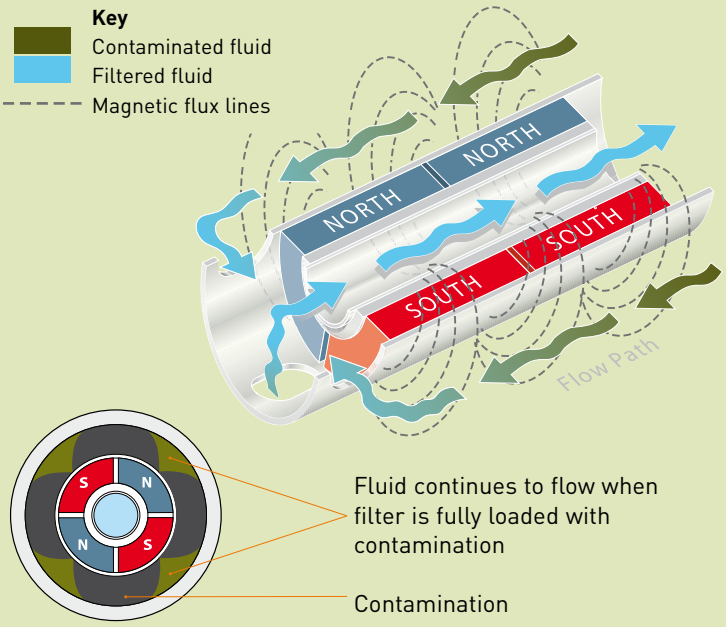
Fluid then passes down the outside of the centrally mounted 'rare earth' magnetic core where contamination particles are removed.

The geometry of the magnetic flux circuit ensures a controlled build up of contamination so the filter can never block.

The filtered fluid then flows through return slots at the top of the magnetic core and down through the centre, exiting through the outlet port.

Unmatched capacity

Micromag is compact in size but has massive holding capacity. No filter can match its capability with the units holding 900g, 1800g and 3800g of contamination respectively, resulting in less downtime and increased productivity.



CLEANED IN SECONDS

Using the supplied cleaning tool, a fully contaminated core can be cleaned in under 30 seconds leaving only metallic particles, which can be easily disposed of or recycled.

Contaminated core | Cleaning the core | Clean core

Product data

MICROMAG

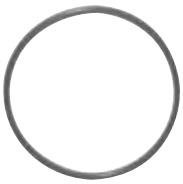
Standard machine filtration. smaller wash stations. Non-chemical environments.

Inline/offline
Manually cleaned
SAN bowl
Temp range: 41° to 122°F.

Product number	Flow rate		Contam. capacity	Max. operating pressure	Connection
	US gallons/min.	gallons/min.		psi	″ NPT
MM5/1.0	18	15	2.2	174	1
MM10/1.0	26	22	4.4	174	1
MM20/1.5	40	33	8.8	174	1½

Ancillary equipment

Core cleaning post



Viton 'O' ring

OTHER MAGNETIC FILTERS

Filtramag

Larger filter for higher contamination capacity and flow rates. Precision grinding machines and fine finishing operations. Arduous environments. Inline applications.

Automag

Automated self-cleaning filter requiring no user intervention. Inline applications.

Autofiltrex

Modular, stand-alone system. Automated self-cleaning, non-stop filtration. Offline applications. Delivers 'dry cake' contamination.

Automag

Self-purging, fully automated magnetic filter

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The benefits of automated magnetic filtration

No consumables required

Automag only requires small amounts of compressed air, which powers the process. It does not require filter cartridges, or any other filter media.

Fully autonomous

Let operators do what they're good at: operating expensive and critical machinery. Automag can run 24/7 continuously without the need for operator intervention.

No loss of fluid

Automag, when used with a purged fluid cleaning device, produces a dry ‘cake’ of contamination that can be recycled. Unlike cartridge filters no fluid is thrown away with contaminated filter media.

No line pressure increase

Even when fully saturated with contamination the Automag never builds up the backpressure that causes burst socks or cartridges. The Automag’s design ensures pressure is always maintained.

No maintenance

The only moving part in the Automag system is the magnetic core shuttle. The magnetic cores are encased in stainless steel tubes; fluid does not come into contact with any moving parts.

Sub-micron filtration

Automag removes sub-micron magnetic contamination, improving surface finish and overall machined accuracy.

PLC compatible

All Automags can be supplied with a fully programmed PLC that can communicate with machine tools or auxiliary equipment. This also allows multiple Automags to operate in parallel.

Automag self-purging magnetic filter

The Automag magnetic filter from Eclipse Magnetics uses powerful 'rare earth' magnetic material to improve the quality, efficiency and performance of manufacturing and finishing processes.

The fully automatic, self purging unit effectively removes all magnetic debris, down to sub-micron size, from cutting fluids and oils. This ensures clean fluid is available at the cutting face resulting in an enhanced surface finish and reduced final-inspection scrap.

The filter does not use consumables, unlike cartridge and bag filters, operates without user intervention and requires only a small amount of compressed air to operate the cleaning process. Running costs are extremely low.

Payback can be calculated in months rather than years.

Automag can also benefit many other manufacturing applications – from industrial part washing systems to vehicle pre-paint body washing stations and any other applications that rely on a clean supply of filtered fluid.

6 and 12 core units are supplied.

Automag magnetic filters are used effectively in these applications:

- Grinding, honing & lapping machines
- CNC machinery
- Fine finishing operations
- Industrial part washing
- Post drill head operations
- Circular saw sharpening
- Pump protection
- Pre-filtration
- Quenching operations

in the following sectors

- Machine tools
- Manufacturing
- Automotive
- Hydraulic
- Marine
- Oil
- Transport
- Water
- Yellow & white goods

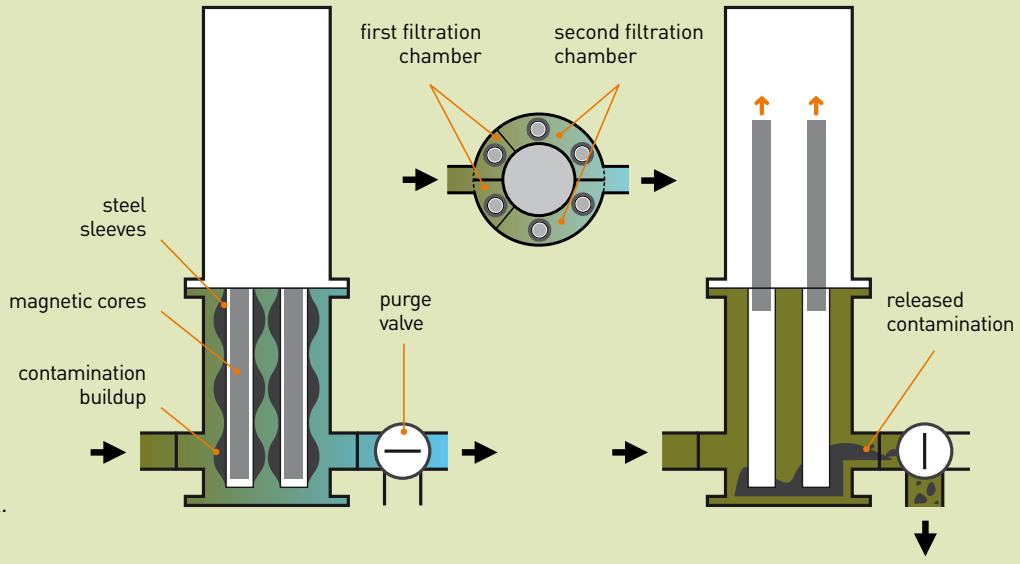
HOW AUTOMAG WORKS

Contaminated fluid enters the inlet port where it is dispersed into the first filtration chamber. The fluid passes around the high-intensity 'rare earth' magnetic cores where contamination particles are removed. The fluid is slowed and enters the second filtration chamber where it receives further filtration.

Contamination remains attached to the stainless steel sleeves of the cores. The filtered fluid exits through the outlet port to be re-circulated.

The geometry of the magnetic flux circuit ensures a controlled build up of contamination so the filter can never block.

The purging process is fully automated. The cores are raised from the sleeves and the purge valve is switched. Fluid is pumped through the filter washing the contamination from the unit.



In use Contamination is attracted to the sleeve of the cores. Cleaned fluid is re-circulated.

Purging Compressed air lifts the cores from the sleeves and the purge valve is opened. Contamination is released and washed away for collection.

Control panel
Cleaning cycle time and duration is controlled from the control panel or by PLC. From the control panel cycle time can be set to between 1–45 minutes, cleaning duration from 1–10 seconds. Timings are determined by contamination levels.

Fluid flow configuration
A unique two chamber flow configuration ensures that maximum filtration efficiency is achieved. Fluid is slowed in the Automag and evenly distributed around the magnetic cores.

Magnetic cores
The magnetic cores are made using 'rare earth' neodymium iron boron – currently the strongest permanent magnet material available. When configured with pole concentrators, high-intensity magnetic fields are generated which are capable of attracting even sub-micron sized particles.

Each core is housed inside a stainless steel sleeve. The cores are held together in a moveable 'shuttle' unit. Cleaning is triggered by a small amount of compressed air moving the shuttle up out of the these sleeves. The contamination, which has been held to the surface of the sleeve by the magnetic field, is then released, allowing it to be purged from the unit.

Purging
The purge valve is automatically opened as part of the cleaning process. This redirects the fluid into a contamination collection tank. A fixed amount of fluid is allowed through the Automag, purging the contamination into this tank where it can be recycled and reclaimed.

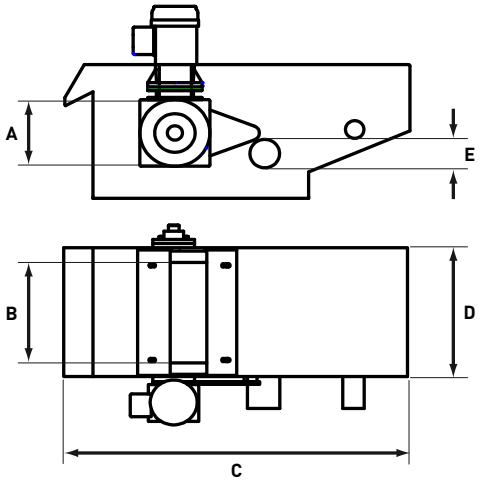
Magnetic coolant roller

The magnetic coolant roller should be used to separate the fluid and contamination output by the Automag's purging process.

Reduced fluid waste and disposal costs
The contamination is removed by the coolant filter in the form of a semi-dry metallic cake which can be recycled.

The extracted fluid can be re-used.

Product data



Part no.	A	B	C	D	E	Max flow	
						US gallons/min.	Gallons/min.
ECC15/300	5 7/8	11 3/4	17 3/4	13 3/4	2	47.5	39.5

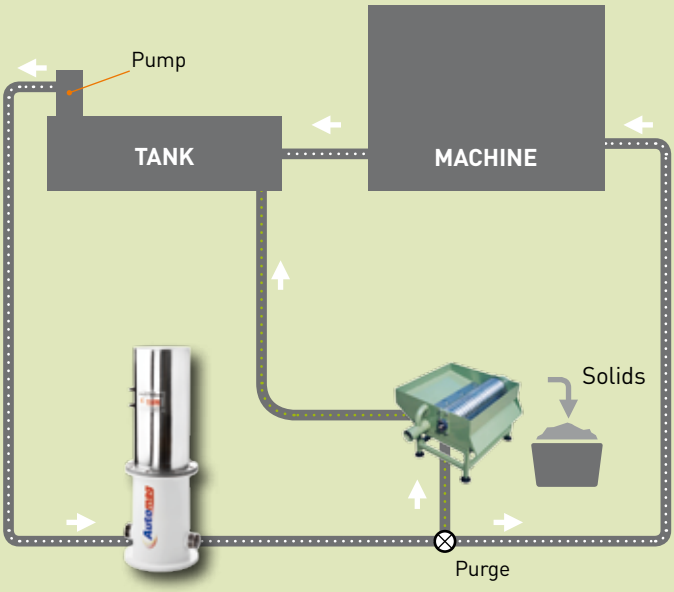
See Datasheet No.406

How it works
Contaminated fluid is fed into the inlet feed tray where it spreads evenly. The fluid passes the adjustable baffle plate and onto the magnetic roll which attracts and holds the contamination.
The contamination particles follow the rotation of the roll around to the cleaning scrapper blade. This wipes off any collected contamination allowing it to fall freely into a collection bin.

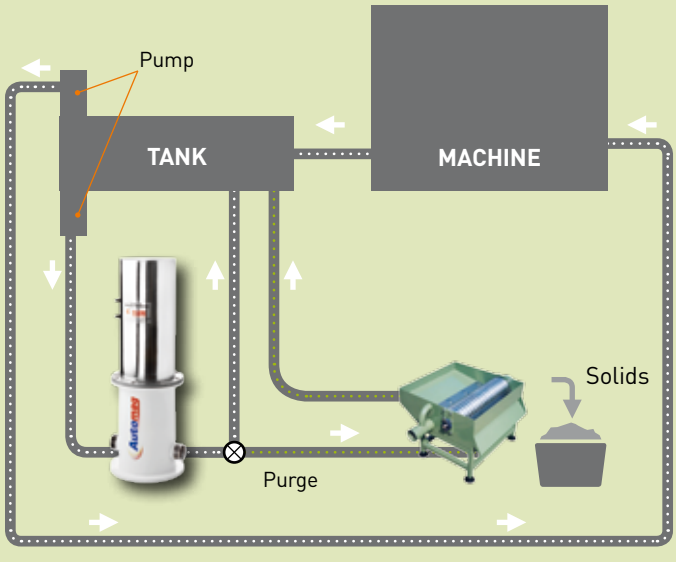
Cleaning is continuous.

Suitable for all neat and soluble oils.

ON-LINE OPERATION



OFF-LINE OPERATION



Product data

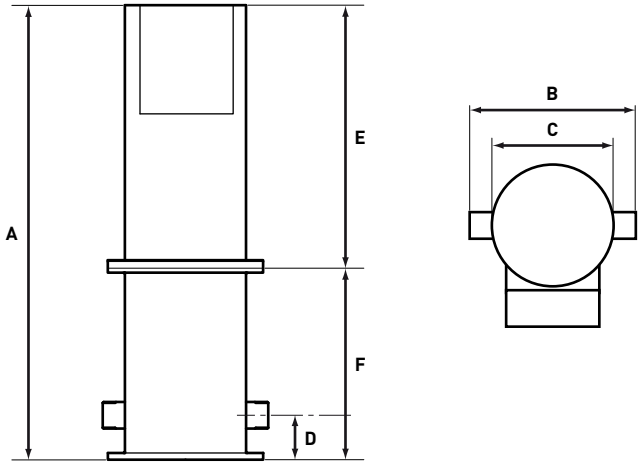
Higher flow, higher contamination.
Non-stop operations
Harsh chemical environments

Inline/offline
Automated self-cleaning (air operated)
Full stainless steel construction
Temp. range: 41° to 158°F.
Multiple units can be grouped for higher capacity
Ex stock

Product number	Number of cores	Flow rate		Contam. capacity	Max. operating pressure
		US gallons/min.	gallons/min.	lbs	psi
AM6/NPT	6	119	99	3	145
AM12	12	238	198	6¼	145

Dimensions in inches unless stated (nominal)

Product number	A	B	C	D	E	F	Port size
AM6/NPT	40	14¾	10⅞	4	22¾	17½	2″ NPT male
AM12	43⅞	24⅜	16	4⅛	26¼	16	3″ PN16 flange



OTHER MAGNETIC FILTERS

Micromag
Ultimate Filtration Technology

Compact, general purpose magnetic filter. Most machining applications.

Filtramag
Ultimate Filtration Technology

Larger filter for higher contamination capacity and flow rates. Precision grinding machines and fine finishing operations. Arduous environments.

Autofiltrex 4
Ultimate Filtration Technology

Modular, stand-alone system. Automated self- purging, non-stop filtration for highest capacity applications.