Magnetic Filtration

Sub-micron filtration for industrial fluids in precision applications
When precision counts
Driving competitive edge into precision processes

Removes 100% of ferrous contamination*

Magnetic filtration operating principle

Magnetic filtration is the most effective means of removing problem ferrous particles from industrial fluids such as coolants, lubricants and wash solutions.

All the benefits of Magnetic filters are based on their ability to remove 100%* of ferrous particles including sub-micron particles from the process. Traditional filtration systems typically leave particles smaller than 5-10 microns circulating in fluid causing damage to process equipment and finished products.

Magnetic filtration systems are ideal for either new build projects or they can be fitted to enhance existing filtration systems.

Reduces reject rates to zero*

Magnetic filtration enables a cleaner cut or grind, improves surface finish and reduces reject rates.

Significantly lower operating costs

Longer lasting fluids - Extends fluid life by x10*

Magnetic filters remove particles smaller than one micron in size. Traditional barrier filters typically leave particles smaller than 5-10 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 - Cuts filter costs by up to 100%*

Unlike other types of filtration, once magnetic filtration is installed there is nothing else you need to buy to ensure effective filtration over the filter’s lifetime, which can be typically greater than 20 years.

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 expensive specialist disposal costs.

Minimal running costs - virtually zero

Manually cleaned magnetic filters require no additional power. Magnetic self-cleaning filters only require a small amount of power for the cleaning process.

Ideal for 24/7 operation

Fully automated magnetic filtration systems are ideal for continuous manufacturing lines.

Rapid return on investment - payback in 3 months*

Magnetic filtration is perfect for cost reduction and continuous improvement programmes providing a rapid return on investment through:

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

Even when the filter is ‘full’ there is no blinding or risk of burst filters, reducing downtime.

Reduced wear / precision finish

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

Fine filtration

Conventional filtration media, at 5 microns and below, can strip oils of anti-foaming, anti-bacteria and other additives. Magnetic filtration enables sub-micron filtration without affecting the oil’s properties, and can actually aid the effective control of bacteria.

* Subject to operating conditions.
A major consideration for any business is its responsibility to the environment. Magnetic filtration is a positive contribution to companies’ environmental policies and ISO14001 accreditation.

**Reduced waste**
Magnetic filtration requires no consumable or disposable products. It extracts 100%* of ferrous contamination, drastically reducing the use of disposable filter media. Less fluid is used as its effectiveness is maintained for longer.

**Recycled waste**
Ferrous particles are separated from fluid and filtration media so can be recycled rather than disposed of.
## Magnetic filtration

**Driving competitive edge in demanding applications**

### Automotive

- Magnetic filtration is widely used in the automotive industry within OEMs and tier 1 and 2 suppliers for the manufacture of powertrain and engine components.

**ADVANTAGES**
- High precision finish
- Reduced downtime
- 100% effective with cast iron particles
- Ideal for 24/7 operation
- Flow rates up to 5000 litres: multi-use to increase flow capacity.
- Can be retrofitted on existing systems
- Rapid return on investment
- Reduced waste – ISO14001

**TYPICAL APPLICATIONS**
- Ring & pinion gear lapping
- Turbocharger balancing machines
- Crank shaft gun drilling
- Valve face grinding
- Cam shaft grinding
- Cylinder liner honing
- Engine liner grinding
- Gear cutting and finishing
- Valve seal ring lapping
- Wash systems
- Fuel injector drilling and grinding
- Brake pad grinding
- Cast iron piston bushing milling

**Case study**
- **Company**: Bombardier (Austria)
- **Application**: Cast iron piston bushings
- **Process**: Milling and gun drilling
  - Filtramag removed sub-micron particles reducing abrasive wear on tools and parts. Tool changes and product reject rates were reduced to virtually zero.

### Bearings

- Magnetic filtration is used by some of the world’s largest bearing manufacturers to ensure sub-micron accuracy in the production of bearing components.

**ADVANTAGES**
- High precision product finish, concentricity and consistency
- Reduced downtime
- Sub-micron filtration
- Ideal for high volume processes
- Can be retrofitted to existing lines
- Rapid return on investment
- Reduced waste – ISO14001

**TYPICAL APPLICATIONS**
- Hub honing
- Ball grinding
- Super-finish/polishing
- Ring grinding
- Raceway grinding
- Wash systems

**Case study**
- **Company**: Tsubaki-Hoover (Poland)
- **Application**: Steel ball and rollers
- **Process**: Super-finishing
  - Micromag improved on 20 micron paper filters by extracting sub-micron ferrous particles. Surface finish was improved and reject rates fell dramatically.

### Wash systems

- It is vital that wash solutions are kept free from ferrous particles. Many wash systems have benefitted from installation of magnetic filtration which ensures the finished product is clean and complies with quality inspection.

**ADVANTAGES**
- Flow rates up to 5000 litres per minute
- Filters do not degrade in wash solutions
- Removes ferrous deposits from finished product
- Reduces reject rates

**TYPICAL APPLICATIONS**
- Rotary wash systems
- Transfer wash stations
- Degreasing equipment
- Multi-stage washers
- Spray wash stations

**Case Study**
- **Company**: Permoid (UK)
- **Application**: Automotive fuel tanks
- **Process**: Flushing rig
  - Reduced product reject rates to zero, reduced disposal and purchase of barrier filters by 95%.
High intensity magnetic filtration is the only option available to guarantee a high precision finish on tool cutting operations. It is widely used in the manufacture and refurbishment of high speed steel and tungsten carbide cutting tools. High intensity magnets ensure outstanding performance even with particles which have only 20% magnetic permeability.

**ADVANTAGES**
- Enables tolerances of < 1 micron
- Enables manufacture of "mirror" finish tools
- Can increase the value of tools by 300%
- 100% effective with low magnetic materials e.g. tungsten carbide materials
- Increases the equipment, value provides a solution for the customer.

**TYPICAL APPLICATIONS**
- Multi axes CNC machines
- Multi-axis vertical turning centres
- Grinding
- Honing
- Lapping
- Deep hole/gun drilling
- EDM machines
- Laser cutters

**Case Study**

**Company**
Pro-Cut Tooling (UK)

**Application**
Carbide cutting tools manufacture/repair

**Process**
Super-finish/grinding
Enabled manufacture of “mirror” finish cutting tools, reduced machine cleaning downtime by 75% and extended fluid life by 250%.
Give your business the edge…
A few of our many satisfied customers…

Borg Warner Turbocharger Balancing Machines
Product: Micromag / Filtramag
Maintenance Engineer “Before fitting Micromag we were changing filters every few days. We invested about £1200 in 4 MM5s we estimate this saves us around £28,000 annually in cartridge filter costs, not to mention the resultant downtime. Following the success we have now fitted Filtramags to our grinding machines which have cut our product reject rates to virtually zero.”

Milacron Machines Sub-Contract Machining
Product: Double AM12 Skid
Facilities Manager “The Double AM12 Skid has increased our efficiency. We work 24 hours a day and our 18 heads cut some big pieces of steel. Magnetic filtration has dramatically cleaned up our fluids and improved the surface finish we can offer. It extracts around 50Kg per day of ferrous waste and easily handles the flow and contamination generated by the multi-machine cell.”

Collison Goll Steel Stock Deep Hole Drilling
Product: Micromag
Plant Manager “Micromag has paid back in just a few weeks, previously we could only take out particles of 50 micron or over, which caused the fluid channels to get plugged and drills to crash. Now I have fitted Micromag, my purchase of drill bodies has fallen by 100%. I am planning to fit Micromag to all my machines.”

Leitz Group Grinding & Polishing of Cutting Tools
Product: Filtramag
Chief Maintenance Engineer “Filtramag has increased our fluid life by 20%, reduced our downtime and our product reject rates have fallen dramatically. Filtramag extracts approximately 12Kg of ferrous particles every week and has dramatically cut our costs in replacement paper filters and damaged pumps.”
**Scania**  
**Grinding and Honing Automotive Gears**  
*Product: Filtramag*

**Engineering Manager**  
“Magnetic filtration has been a great positive for our production. With the sub-micron filtration Filtramag offers, we have minimised our product reject rates and tool changes. In addition I estimate our oil lifespan has increased by about 30%.”

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**Cascade**  
**Heat Treatment of Fork Lift Parts**  
*Product: Automag AM12*

**Plant Engineer**  
“We had a real problem with downtime as our quenching tank regularly filled up with ferrous contamination – we had to halt production and clean out the tank. Automag has been a smart investment. The automated cleaning frees up my maintenance team and we will get rapid payback through reduced process downtime.”

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**NSK**  
**Super-finishing of Bearing Hubs**  
*Product: Micromag*

**Operations Manager**  
“When we used only barrier filtration we had a constant problem with ‘blinding’ of the honing stone due to a build-up of ferrous particles. Fitting Micromag has been a real positive step, we can now guarantee a uniform high quality finish and our reject rates are minimal.”

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**Honda**  
**Engine Valve Machining (UK)**  
*Product: Micromag*

**Engineering Manager**  
“Micromag’s outstanding filtration capability and short investment payback period exactly matched our needs. Since incorporating Micromag into our process our machine downtime has fallen dramatically compared to our previous filtration system and our filtration effectiveness is much better as we can extract the smallest particles.”
The patented, compact Micromag magnetic filter can benefit many different industries.

Contaminated fluid enters the inlet port where it is dispersed by the unique tapered radial flow channels. Fluid passes down the outside of the centrally mounted rare earth magnetic core which captures contamination particles along its length, resulting in excellent filtration efficiency.

The geometry of the magnetic flux circuit means that contamination builds up in a controlled way, ensuring that the filter can never block, irrespective of how much contamination is held. Channels remain open allowing fluid to continue to flow freely.

The filtered fluid flows through the return slots located in the upper section of the magnetic core, down through the centre and exits through the outlet port.

**Cleaning**
Using the supplied cleaning tool, a fully contaminated core can be cleaned in under 30 seconds. Only metallic particles are removed from the filter and these can be easily disposed. There are no dirty cartridges!

**Suitable Products**
Neat and soluble oils.

**Installation Location**
Pre- or post-pump, delivery line or pre-membrane cartridge.

**Benefits**
- Sub-micron filtration
- Large holding capacity
- High intensity rare earth magnetic material
- Clear bowl
- Suitable for all machining applications
- Environmentally responsible
- No consumables

**Category**
Medium pressure.
Performance

Maximum Pressure 174 psi
Magnetic Performance High intensity
Circuit Design Open
Magnetic Material rare earth neodymium iron boron
Magnet Grade N45 – Inspected & confirmed via hystergraph prior to use
Temperature 41 – 122F

Materials

Housing Styrene Acrylo Nitrile (SAN)
Lid Marine grade aluminum, anodised blue
Magnetic Core 304 Grade stainless steel
Sealing Nitrile O-ring

Options

Viton O-ring
Bowl spanner
Core cleaning post
Mounting bracket
Port adaptors

<table>
<thead>
<tr>
<th>Product number</th>
<th>Flow rate (Gallons/min)</th>
<th>Contamination capacity (lbs)</th>
<th>Max. operating pressure (psi)</th>
<th>Connection NPT (in)</th>
<th>Temperature range (F)</th>
<th>Construction</th>
<th>Dimensions (inches) A B C</th>
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<tbody>
<tr>
<td>MM5 /1.0</td>
<td>18</td>
<td>2.2</td>
<td>174</td>
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<td>41-122</td>
<td>SAN housing, aluminum lid</td>
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<tr>
<td>MM10 /1.0</td>
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<td>4.4</td>
<td>174</td>
<td>1</td>
<td>41-122</td>
<td>SAN housing, aluminum lid</td>
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<td>174</td>
<td>1½</td>
<td>41-122</td>
<td>SAN housing, aluminum lid</td>
<td>23.9 4.0 5.3</td>
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</table>
The Micromag HP/50 has all the same benefits of the standard Micromag but has been developed to suit high pressure through spindle-coolant applications, where the smallest of particles can damage seals, spindles and even reduce the efficiency of the cutting tool.

Micromag HP/50 can be installed anywhere in the fluid delivery system and will ensure that even sub-micron magnetic and para-magnetic particles are removed before they can cause any expensive damage.

For further information relating to the benefits and operation of the Micromag HP/50 please refer to the supplied standard Micromag brochure.

**Cleaning**
Using the supplied cleaning tool, a fully contaminated core can be cleaned in under 30 seconds. Only metallic particles are removed from the filter and these can be easily disposed. There are no dirty cartridges!

**Suitable Products**
Neat & soluble oils.

**Installation Location**
Pre or post pump, delivery line, spindle feed or pre membrane cartridge.

**Benefits**
- High pressure
- Sub micron filtration
- Large holding capacity
- High intensity rare earth magnetic material
- Suitable for all machining applications
- Environmentally responsible
- No consumables

**Category**
High Pressure.
Technical Data:

**Performance**

- **Maximum Pressure**: 725psi
- **Magnetic Performance**: High Intensity
- **Circuit Design**: Open
- **Magnetic Material**: Rare Earth Neodymium Iron Boron
- **Magnet Grade**: N45 – Inspected & confirmed via hystergraph prior to use
- **Temperature**: 32-284°F

**Materials:**

- **Housing**: Aluminium
- **Lid**: Aluminium
- **Tube**: 304 Grade stainless steel
- **Surface**: Finish Machined and anodised
- **Sealing**: Viton O-ring

**Options**

- Core cleaning post
- Mounting bracket
- Port adaptors

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<table>
<thead>
<tr>
<th>Product number</th>
<th>Flow rate (gallons/min)</th>
<th>Contamination capacity (lbs)</th>
<th>Max. operating pressure (psi)</th>
<th>Connection (NPT in)</th>
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<th>Construction</th>
<th>Dimensions (inches)</th>
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<td>4.4</td>
<td>725</td>
<td>1</td>
<td>32 – 284</td>
<td></td>
<td>A 14.3, B 4.6, C 4.9</td>
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<tr>
<td>MM20/HP/50 NPT</td>
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<td>8.8</td>
<td>725</td>
<td>1½</td>
<td>32 – 284</td>
<td></td>
<td>A 24.6, B 4.6, C 4.9</td>
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</table>
The Micromag HP/80 follows on from the standard Micromag and has all of the same incredible benefits. This unit was developed to suit high pressure through spindle coolant applications, where the smallest of particles can damage seals, spindles and even the efficiency of the cutting tool.

Micromag HP/80 can be installed anywhere in the fluid delivery system and will ensure that even sub micron magnetic and paramagnetic particles are removed before they can cause any expensive damage.

For further information relating to the benefits and operation please refer to the supplied standard Micromag brochure.

**Cleaning**
Using the supplied cleaning tool, a fully contaminated core can be cleaned in under 30 seconds! Leaving you with only the metallic particles, which can be easily disposed of, no dirty cartridges!

**Suitable Products**
Neat & soluble oils.

**Installation Location**
Pre or post pump, delivery line, spindle feed or pre membrane cartridge.

**Benefits**
- High pressure rated
- Sub micron filtration
- Large holding capacity
- High intensity Rare Earth magnetic material
- Full Stainless Steel construction
- Suitable for all machining applications
- Environmentally ethical
- No consumables

**Category**
High Pressure.
Technical Data:-

**Performance**

- **Maximum Pressure:** 1160 psi
- **Magnetic Performance:** High Intensity
- **Circuit Design:** Open
- **Magnetic Material:** Rare Earth Neodymium Iron Boron
- **Magnet Grade:** N45 – Inspected & confirmed via hystergraph prior to use
- **Temperature:** 32-284 F

**Materials:-**

- **Housing:** 316 Grade Stainless Steel
- **Lid:** 316 Grade Stainless Steel
- **Tube:** 316 Grade Stainless Steel – Aerospace Quality

<table>
<thead>
<tr>
<th>Product number</th>
<th>Flow rate</th>
<th>Contamination capacity</th>
<th>Max. operating pressure</th>
<th>Connection</th>
<th>Temperature range</th>
<th>Construction</th>
<th>Dimensions (inches)</th>
<th>A</th>
<th>B</th>
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<td>Full stainless steel construction</td>
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<tr>
<td>MM10/HP/80 NPT</td>
<td>26</td>
<td>4.4</td>
<td>1160</td>
<td>1</td>
<td>32 – 284</td>
<td>Full stainless steel construction</td>
<td>14.3</td>
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<tr>
<td>MM20/HP/80 NPT</td>
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<td>1160</td>
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<td>32 – 284</td>
<td>Full stainless steel construction</td>
<td>24.6</td>
<td>4.6</td>
<td>4.9</td>
<td></td>
</tr>
</tbody>
</table>
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 technology™
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/gasoline
- Slurry/glazes

Filtramag+ Components
### Magnetic Performance

**Maximum Pressure**
- 290 psi

**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 176°F

### 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)**
- 0.02 inches and 0.04 inches aperture size

### Technical Data

<table>
<thead>
<tr>
<th>Product number</th>
<th>Max. flow rate (Gallons/mins)</th>
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<td>13.2</td>
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<td>2</td>
<td>17.4 13 3.9 9.8</td>
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### Part Numbers (including spares)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>FM1.5+/ANSI</td>
<td>FM1.5+ unit with 4,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
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<tr>
<td>FM2.0+/ANSI</td>
<td>FM2.0+ unit with 4,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
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<tr>
<td>FM1.5+/ANSI /11K</td>
<td>FM1.5+ unit with 11,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
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<tr>
<td>FM2.0+/ANSI /11K</td>
<td>FM2.0+ unit with 11,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
</tr>
<tr>
<td>FM1.5+/ANSI/MC</td>
<td>4,000 magnet cartridge for FM1.5+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI/MC</td>
<td>4,000 magnet cartridge for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM1.5+/ANSI /MC11K</td>
<td>11,000 magnet cartridge for FM1.5+/ANSI units</td>
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<tr>
<td>FM2.0+/ANSI /MC11K</td>
<td>11,000 magnet cartridge for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI /MB0.5</td>
<td>Optional 0.5mm mesh basket for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI /MB1.0</td>
<td>Optional 1.0mm mesh basket for FM2.0+/ANSI units</td>
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<tr>
<td>FM1.5+/ANSI /VS</td>
<td>Spare Viton seal for FM1.5+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI /VS</td>
<td>Spare Viton seal for FM2.0+/ANSI units</td>
</tr>
</tbody>
</table>

If you have any more questions, require technical assistance or would like a quotation, please contact us.
The patented Automag unit is the latest generation of self-purging high intensity magnetic filters for high flow, high contamination industrial applications.

The Automag has two flow chambers. Fluid enters the inlet chamber where primary filtration takes place. The partly treated fluid flows into a second chamber where it is slowed down so that the final filtration treatment can take place. It then returns to the process.

Installing Automag will improve your manufacturing effectiveness and reduce operator intervention.

Using fully filtered fluid, free from micron sized particles will:
- Improve surface finish
- Extend tool/wheel life
- Improve fluid flow
- Cut costs on scrap reduction
- Reduce downtime

All applications, which use pumped cutting fluids will benefit from using this equipment.

**Typical Applications**
- Grinding
- Honing
- Milling
- Fine finishing

**Cleaning**
A signal from your control system activates the outlet valve (not included) so fluid is redirected to a purge tank or reclamation unit (available as an option), then the centrally positioned pneumatic cylinder withdraws the magnetic elements from the filter.

When the contamination has been purged the magnetic elements are reinserted and the outlet valve is returned to position, bringing the unit back online. The complete cleaning cycle take 10-15 seconds depending on fluid type and filter location.

**Suitable Fluids**
Oil, coolant, water.

**Suitable Locations**
Pre- & post-fluid holding tank, machine or process.

**Benefits**
- Double magnetic length
- High collection capacity
- Removes micron sized contamination
- Self purging
- Rare earth high intensity magnetic material
- Compact
- No maintenance
Performance

Maximum Pressure 145psi
Magnetic Performance AM6 & AM12 9000 Gauss, AMC 6000 Gauss
Performance Reading On tube surface
Magnetic Material rare earth neodymium iron boron
Magnet Grade N45 – Inspected & confirmed via hysterograph prior to use
Temperature 41–176°F

Materials
Filter Body 304 Grade stainless steel, powder coated white
Filter Cover 304 Grade stainless steel, powder coated silver
Control Box Aluminium, powder coated white
Pneumatic Cylinder Festo
Solenoid Valve ASCO
Limit Switch Proximity Sensors, RS origin

Options
Simple timer control box
Purge valve arrangement
Super high flow rate systems
Pre-programmed PLC controls
Complete mounting skid arrangement
Purge fluid collection tank and reclaim system

If you have any more questions, require technical assistance or would like a quotation, please contact us.
Fully Automated Magnetic Filtration

A new generation in filtration...
Autofiltrex
Ultimate Filtration Technology

Key product features
- 24/7 Fully automated operation
- Sub-micron performance filtration
- Compact, occupies minimal floorspace
- "Plug and play" - minimal set up
- Can interface with CNC controls
- Incorporates high intensity magnetic technology
- Includes filter, pump, PLC and magnetic reclaim unit

Autofiltrex benefits
- Rapid return on investment - capital cost v cost savings
- Ensures 24/7 "Ultra-polished" fluids – (without removing key fluid additives)
- Extends fluid life by up to 10x
- Huge improvements in part surface finish
- Can reduce spend on filter consumables to zero
- Fit and forget - 24/7 uninterrupted filtration
- On-going protection for machinery and tools

Sub-Micron Magnetic Filtration
Magnetic filtration is the most effective means of removing problem ferrous particles from industrial fluids such as coolants, oils and other lubricants. Its success is based on an ability to remove ferrous contamination, including sub-micron particles, without the need to replace consumable filter items or affecting the fluid's key properties. Traditional filtration systems typically leave ferrous particles smaller than 5-10 microns circulating in the fluid causing damage to process equipment and finished products.

Autofiltrex works off-line, taking dirty fluid from the holding tank and returning clean fluid. The fluid "polishing" process continues even when the machine is not in use.

Off-line Operation
- TANK
  - CLEAN
  - DIRTY

The Process
A high intensity magnetic circuit extracts contamination particles, whilst an automated purging process periodically diverts the contamination to a purge tank. Then, a magnetic reclaim removes the ferrous contamination into a collection box ready for recycling. No fluid is lost!
General Specifications

**Maximum operating temperature:** 80°C  
**Inlet size:** 1” Hose (includes steel mesh strainer)  
**Outlet sizes:** 2 x 1½” Hose  
**Solenoid valves:** 24v spring return pneumatic valves  
**Power requirements:** 230v 50Hz (also available 110v 60Hz version)  
both using IP67 rated standard sockets. All components 24v.  
**Supplied with:** removable contamination collection bin  
**Supplied with:** lifting frame for positioning and moving on site  
**Requires:** 5-7 bar air supply (8mm push fit connection included)  
**Flow rate:** 60 litres per minute  
**Unit weight:** 90 kg

Material Specifications

**Filter and reclaim tank body:** 304 stainless steel  
**System cover:** Aluminium  
**Pneumatic cylinders:** Aluminium  
**Seals:** NBR rubber

Also available for larger applications  
(flow rates up to 10,000 litres per minute)  
see our Automag Skid  
fully automated filtration systems.
Automag skid

Fully automated, self-contained magnetic filtration and fluid recovery system
The Automag Skid is a self-contained, free-standing magnetic filtration system providing uninterrupted 24/7 magnetic filtration. The skid can be used in-line or, with the optional integral pump, off-line.

A patent-pending Automag self-purging magnetic filter* removes magnetic and para-magnetic contamination, down to sub-micron size, from coolants and lubricants. The filter holds the contamination until it is released during the automated ‘purge’ process. This briefly diverts the filter’s purged output so that fluid carries all the contamination to the buffer tank.

The buffer tank feeds the contaminated fluid to the high-intensity coolant roller.

The magnetic coolant roller removes the contamination from the fluid, putting clean fluid back into circulation. The contamination is extracted in a form ready for disposal or recycling.

* Units can be supplied with a single filter, or double filters for duplex operation.

Cut costs
- Eliminate disposal costs
- Extend the life of your fluids
- Extend the life of other filters

Improve quality
- Increase workpiece accuracy
- Improve workpiece finish

Reduce maintenance
- Reduce wear and tear of machinery

Applications
- Grinding
- Honing
- Milling
- Fine finishing

HOW IT 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.

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 stainless steel sleeves and carrying it into the buffer tank.

The fluid is then slowed and passed onto the coolant roller. This purged fluid is highly contaminated. The flow rate and high magnetic strength of the roller ensure that contamination removal is extremely efficient.

The clean fluid is then re-circulated; the contamination is scraped from the roller and collected for disposal or recycling.

In operation

Contamination is attracted to the sleeve of the cores. Cleaned fluid is circulated into the process.
Purging

Cleaning cycle: the magnetic cores are lifted from the sleeves and the purge valve is opened. Contamination is released and washed up into the buffer tank.

Fluid recovery

Contaminated fluid is fed from the buffer tank onto the magnetic coolant roller. Contamination is attracted to the rotating roller, leaving clean fluid to be re-circulated. Contamination is removed from the roller by a scraper, ready for collection.

Automag magnetic filter
2-stage magnetic filtration, removes contamination down to sub-micron size. Automated cleaning process

Buffer tank
Provides a holding point for purged fluid and contamination before it is fed through the magnetic coolant roller

Magnetic coolant roller
Separates contamination from the ‘purge fluid’. Clean fluid is fed back into the system. Contamination is removed as semi-dry cake which can then be recycled

Diverter valve
Automatically switched during the ‘purge’ process to send purged fluid and contamination to the buffer tank

Automag skid
Automated self-cleaning filter requiring no user intervention. In-line or off-line applications. Purging actuated by machine control.

Other magnetic filters

Compact, general purpose magnetic filter. Most machining applications.

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

Automated self-cleaning filter requiring no user intervention. In-line or off-line applications. Purging actuated by machine control.

Product data

Self contained filtration and fluid recovery system for higher flow, higher contamination applications. 24/7 automated operation. Automatic self-cleaning filter (air operated) Magnetic coolant roller for full recovery of fluid used in cleaning process

Temp. range: 41°F / 5°C to 158°F / 70°C (filter unit)

<table>
<thead>
<tr>
<th>Automag filter unit</th>
<th>Number of cores</th>
<th>Maximum flow rate</th>
<th>Contam. capacity</th>
<th>Max. operating pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US gallons/min</td>
<td>Litres/min.</td>
<td>lbs / kgs</td>
<td>psi / bar</td>
</tr>
<tr>
<td>AMC</td>
<td>8</td>
<td>52</td>
<td>200</td>
<td>5 / 2.5</td>
</tr>
<tr>
<td>AM6</td>
<td>6</td>
<td>118</td>
<td>450</td>
<td>15 / 7</td>
</tr>
<tr>
<td>AM12</td>
<td>12</td>
<td>237</td>
<td>900</td>
<td>30 / 14</td>
</tr>
</tbody>
</table>

Dimensions inches / mm

<table>
<thead>
<tr>
<th>Product number</th>
<th>W</th>
<th>L</th>
<th>H</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>Flanges</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC8</td>
<td>35 / 900</td>
<td>35 / 900</td>
<td>67 / 1700</td>
<td>2 / 50</td>
<td>1½ / 38</td>
<td>1½ / 38</td>
<td>ANSI / PN16</td>
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<tr>
<td>AM6S1</td>
<td>38 / 1000</td>
<td>47 / 1200</td>
<td>57 / 1300</td>
<td>3 / 75</td>
<td>2 / 50</td>
<td>2 / 50</td>
<td>ANSI / PN16</td>
</tr>
<tr>
<td>AM12S1</td>
<td>47 / 1200</td>
<td>51 / 1400</td>
<td>74 / 1400</td>
<td>3 / 75</td>
<td>3 / 75</td>
<td>3 / 75</td>
<td>ANSI / PN16</td>
</tr>
</tbody>
</table>

Diagram shows inline unit without integral pump
Installation and Servicing Instructions
Thank you for choosing BoilerMagXT, please follow the instructions carefully to ensure that this BoilerMagXT magnetic filtration system is fitted and maintained correctly.

By completing and returning the guarantee card in the pack you qualify for a 3 year warranty against manufacturing defects. Failure to follow these instructions will invalidate the warranty.

BoilerMagXT is a magnetic filtration system for heating systems in larger premises such as industrial, commercial and municipal buildings. For other applications always consult the manufacturer before installing.

This product contains strong magnets. Care and attention should be taken at all times during installation and servicing. Do not place the magnetic cores on any ferrous surfaces or near ferrous objects.

Suitable personal protective equipment should be used during all installation and servicing.

BoilerMagXT must be installed by a qualified person in accordance with all relevant current regulations.
Ensure the heating system is isolated prior to carrying out installation or maintenance work.

Where to Install

BoilerMagXT is typically installed on the return circuit as close to the boiler as possible. On larger systems, such as the one shown, smaller BoilerMagXT units may be installed elsewhere to give extra protection for radiators and pipework.

Please also ensure that the BoilerMagXT is located in a position which gives adequate access above to lift out the magnets during servicing and maintenance. Also access is required to the underneath of the unit to connect a hose or hold a bucket during draining.

Venting Options

The BoilerMagXT unit is fitted with a manual vent, however, an additional automatic vent has been packaged along with unit separately. The auto-vent will automatically release the trapped air maintaining heating efficiency. This gives you the choice to fit the auto-vent unit when the system temperature and pressure is within the lower limits of 10 bar and 110 C respectively.

Please find enclosed the installation instructions for the Automatic Vent.
1. Identify a suitable location (see ‘Where to Install’ p3).

2. Ensure enough clearance to carry out cleaning as the rods must be lifted out of the unit to clean. See dimensions in column B in the table below.

3. Mark and then cut out the correct length of pipe section to be removed to accommodate the BoilerMagXT unit and isolation valves. Ensure the cut is level and burr free. (Isolation valves are not included in the BoilerMagXT pack.)

4. Install appropriate isolation valves to the pipework and fit the valves to the two PN16 flanges (see below for flange dimensions).

5. Position the BoilerMagXT in place then align and secure the fittings to connect the unit to the valves.

6. Open the isolation valves and turn on the heating system.

7. Complete the BoilerMagXT warranty card and return.

8. Run the heating system at normal operating temperature and check installation integrity.

### Installation details

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Inlet / outlet</th>
<th>B</th>
<th>Flange spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMXT150/2</td>
<td>2”</td>
<td>305</td>
<td>280</td>
</tr>
<tr>
<td>BMXT200/3</td>
<td>3”</td>
<td>390</td>
<td>360</td>
</tr>
<tr>
<td>BMXT200/4</td>
<td>4”</td>
<td>390</td>
<td>380</td>
</tr>
<tr>
<td>BMXT300/6</td>
<td>6”</td>
<td>360</td>
<td>490</td>
</tr>
<tr>
<td>BMXT300/8</td>
<td>8”</td>
<td>400</td>
<td>525</td>
</tr>
<tr>
<td>BMXT400/10</td>
<td>10”</td>
<td>770</td>
<td>760</td>
</tr>
<tr>
<td>BMXT400/12</td>
<td>12”</td>
<td>820</td>
<td>760</td>
</tr>
</tbody>
</table>

all dimensions in mm unless stated

### Flange details

*Flange details for 2", 3", 4", 6", 8", 10" & 12" Flanges to PN16 layout.*
Cleaning and servicing must only be carried out by a qualified person in accordance with all relevant current regulations.

To maintain optimum efficiency we recommend cleaning annually. However when a BoilerMagXT is fitted to an existing heating system we recommend more regular checks as it is likely there will be a large build-up of ferrous oxide (black sludge) to clear out.

To service and maintain BoilerMagXT follow the instructions below:

1. Isolate the heating system and close the isolation valves on either side of the BoilerMagXT unit.

2. Remove the black tricone positioned on the lid. Lift out the magnetic cores using the handle on top of the unit. *Warning see below*. Be careful not to place the cores on or near ferrous items.

3. Either place a bucket underneath or connect a hose to the 1 ¼ “ drain valve on the underside of the BoilerMagXT. Remove the drain plug and open the drain valve.

4. Partially open the inlet isolation valve and allow the contents to drain through the drain valve. When the draining water runs clear turn off the inlet isolation valve and allow the remaining contents to drain.

*Warning: Be careful not to place the cores on or near ferrous items.*

For 8”, 10” and 12” BMXT units, the weight may exceed safe single person lifting limits. Please check and if required do as 2 persons or alternatively as a mechanical lift.
Servicing & Maintenance Instructions

5. Close the drain valve and replace the plug.

6. Replace the magnetic core and hand tighten the black tricone to retain.

7. Re-open both isolation valves. If required open the vent shown on the top of the unit to release any trapped air*.

*Automatic Vent option also available
**Product data**

**Performance**
- Magnetic performance: 9,000 Gauss high strength
- Performance reading: On tube surface
- Magnetic material: Rare earth neodymium iron boron (NdFeB)
- Magnet grade: N42SH – inspected and confirmed by hysteresis graph prior to use
- Temperature: 5°C to 150°C (Auto-vent rated to max temperature of 110°C)
- Operating pressure: 12 bar (Auto-vent rated to operating pressure of 10 bar)
- Drain Valve: 1 1/4”

**Materials**
- Housing: 304 grade stainless steel
- Magnet tube assembly: 316 grade stainless steel – aerospace quality
- Surface finish: Internal - bead blast
- Sealing: External - powder coated, black
- Viton o-ring, brown

**Options**
- High temperature samarium cobalt magnetic material +250°C

**Warranty**
- 3 years

### Product data table

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Inlet / Outlet Dia. A</th>
<th>Filter Dia. B</th>
<th>Flange spacing C</th>
<th>Height D</th>
<th>No. magnetic rods</th>
<th>Flow rate cubic metres/ hour</th>
<th>Flange type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMXT150/2</td>
<td>2”</td>
<td>170mm</td>
<td>280mm</td>
<td>280mm</td>
<td>5</td>
<td>20</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT200/3</td>
<td>3”</td>
<td>220mm</td>
<td>360mm</td>
<td>335mm</td>
<td>7</td>
<td>55</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT200/4</td>
<td>4”</td>
<td>220mm</td>
<td>380mm</td>
<td>335mm</td>
<td>7</td>
<td>85</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT300/6</td>
<td>6”</td>
<td>325mm</td>
<td>490mm</td>
<td>420mm</td>
<td>9</td>
<td>110</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT300/8</td>
<td>8”</td>
<td>325mm</td>
<td>525mm</td>
<td>460mm</td>
<td>9</td>
<td>140</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT400/10</td>
<td>10”</td>
<td>406mm</td>
<td>760mm</td>
<td>600mm</td>
<td>16</td>
<td>220</td>
<td>PN16</td>
</tr>
<tr>
<td>BMXT400/12</td>
<td>12”</td>
<td>406mm</td>
<td>760mm</td>
<td>600mm</td>
<td>16</td>
<td>310</td>
<td>PN16</td>
</tr>
</tbody>
</table>
See our full range of system treatment products

BoilerMag®
Dual Flow System Filter

(22mm & 28mm connections)

BoilerMag®
Dual Flow System Filter

(1½” connections)

BM3

BM1

BoilerMag Electrolytic Scale Reducer
Operating Instructions

Boilermag XL Filter
High Intensity Magnetic Separator

20130531
# Table of contents

1 **Introduction**
   1.1 Range of application 3
   1.2 Used symbols 3
   1.3 Legal basis 3
   1.4 Overview 4

2 **Technical data**
   2.1 Performance data 6
   2.2 Noise data sheet 6
   2.3 Dimensions 7

3 **Design and method of operation**
   3.1 Method of operation 7
   3.2 Constructional design 7

4 **Safety**
   4.1 Intended use 8
   4.2 General preventive measures 8
   4.3 Dangers during neglect of the safety notes 8
   4.4 Safety notes for operation and maintenance 8
   4.5 Notes on residual risks 9
   4.6 Consequences with arbitrary change 9
   4.7 Prohibited operation 9

5 **Installation / Operation**
   5.1 Mechanical installation 9
   5.2 Connections 10
   5.3 Setting of the operating parameter 10
   5.4 Cleaning 10

6 **Maintenance**
   6.1 General notes 14

7 **Service**
   7.1 Service address 14

8 **Shipping, preservation, waste disposal, transport, storage**
   8.1 Shipping, preservation, waste disposal 15
   8.2 Transport 16
   8.3 Storage 16
1 Introduction

1.1 Range of application

The Boilermag XL follows on from the standard Boilermag family and has all the same incredible benefits. The unit was developed to suit larger domestic boiler systems and small commercial systems.

Boilermag XL is designed to be installed on the return line to the boiler and will ensure that even sub micron magnetic and paramagnetic particles are removed before they can cause any expensive damage.

For further information relating to the standard benefits and operation please refer to the downloadable Boilermag brochure on our website – http://www.boilermag.com/

The filter is not to be used with a corrosive or aggressive medium.

Pressure rating – Standard filter is designed and tested to operate at 6 bar max line pressure.

1.2 Used symbols

= Important notes

= Danger notes

= Safety notes

1.3 Legal basis

This device corresponds to the machine guideline 206/42/EC.
1.4 Overview of Boilermag XL

Details of magnetic circuits showing open flow path through bowl even when core is fully contaminated.

Filter Body

Magnet Core Assembly
## Technical data

### 2.1 Performance data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Temperature</td>
<td>5 to 150°C</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>6 bar</td>
</tr>
<tr>
<td>Vessel Construction</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Magnetic Material</td>
<td>NdFeB N42SH</td>
</tr>
<tr>
<td>Port size (Required)</td>
<td>1.1/2” BSP</td>
</tr>
<tr>
<td>Port size (Optional)</td>
<td>1.1/2” NPT</td>
</tr>
<tr>
<td>Contamination capacity</td>
<td>1kg</td>
</tr>
<tr>
<td>Vessel Volume</td>
<td>1.4 Litres</td>
</tr>
<tr>
<td>Vessel Weight</td>
<td>5.4 kg</td>
</tr>
</tbody>
</table>

### 2.2 Noise data sheet

Sound pressure level, measurement according to DIN 45635:

- **Idling**: $< 70$ dB(A)
- **Conveying**: $< 70$ dB(A)
2.3 Dimensions

3 Design and method of operation

3.1 Method of operation

The single magnetic rod is integrated in a stainless steel housing and forms one unit e.g. fitted in series with the pipe-line. The flow is arranged in such a manner that the material that is to be cleaned is well distributed and comes intensively into contact with the magnetic field.

3.2 Constructional design

- Stainless Steel Construction
- Viton O Ring
- 1/2" Drain Plug
- High Intensity magnetic rod
4 Safety

4.1 Intended use

The inline liquid filter is designed for installation into pressurised pipe lines working at up to 6 bar. All pipeline connections are to be installed accurately and sealed to prevent the loss of pressure/product. The lid seal is to be maintained in a good condition.

To ensure that the supplied magnets maintain their high level of performance, attention must be paid to the following conditions:

1. NO temperatures above the specific operating temperature
2. NO oscillating vibrations
3. NO impacts
4. NO strong external flux fields
5. Pay attention to the cleaning and maintenance of the system

4.2 General preventive measures

The rod is constructed with strong magnets. The handling of ferrous tools (e.g. with maintenance or cleaning) etc. can cause risk of injury for the personnel due to the magnetic attraction.

Special measures regarding the presence of ferrous items have to be considered when handling magnetic material.

4.3 Dangers during neglect of the safety notes

Using this equipment in a manner not intended can present safety hazards.

4.4 Safety notes for operation and maintenance

Maintenance work is to be executed only by qualified personnel.

With work on pneumatic, hydraulic, pressurised or electrical services the supply lines are to be isolated prior to any cleaning or maintenance actions.

Prior to any maintenance work being carried out, the process, equipment used and personnel must be risk assessed and deemed suitable to conduct that task. All work is to be carried out in accordance with local and legislative regulations.

WARNING! This system incorporates strong permanent magnetic materials. Please pay attention to the safety notes in order to avoid personal injury or material-damage:

- Operators fitted with heart pace-maker’s shall not come within 1m of the equipment.
- Oppositional poles of magnets attract each other with high clamping forces.
- Do not use steel/iron tools or other ferrous parts in the flux field of the system.
- Data carriers, credit cards, computer drives etc can be erased by the influence of the magnetic field. Keep electronic and sensitive mechanical units (i.e. watches) away from the magnet.
- Please contact our service department before welding or drilling works on the unit.
4.5 Notes on residual risks

Vent any trapped pressure from the process line prior to working on the unit.

4.6 Consequences with arbitrary change

With arbitrary change or repairs all warranties and assertions delivered by the manufacturer become void. Only genuine o.e.m. parts are to be used in any repair to maintain the manufacturer's warranty.

4.7 Prohibited operation

The unit must not be subjected to any high external loads or induced vibrations.

5 Installation / Operation

5.1 Mechanical installation

For optimum performance the unit is to be installed as follows:

- Before installation ensure that all supplies are isolated.
- Boilermag XL is to be installed vertically with the bowl pointing downwards; this allows fluid to drain out of the bowl prior to cleaning.
- It is recommended that Boilermag XL is installed on the return line of the heating system just prior to the boiler.
- If the Boilermag XL is to be installed using flexible hoses, please ensure the unit is suitably supported.
- The function of the magnetic core ‘cartridge’ is direction specific. When installing please ensure the mesh segment is on the outlet side of the pipework.
- If the system is subject to pressure surges install a pressure regulator set at 6bar prior to the Boilermag XL.

- Seal mating piping joints effectively to reduce pressure/product loss
- Erect signage in the close proximity warning of hazards presented by permanent magnets, ie pace makers and the dangers of opening the magnet housing whilst product is flowing.
- Install in location with adequate free space to withdraw magnet cartridge from vessel for cleaning.
- Consider manual handling regulations when deciding installation location.
5.2 Connections

- No external power sources required for this product

5.3 Setting of the operating parameter

- No customer adjustment available to this unit

5.4 Cleaning

If operated and cleaned correctly your Boilermag XL will give many years of trouble free filtration with no consumable parts. The filter will remove even the smallest particle due to its high magnetic filed strength. Cleaning should take no more than a few minutes.

- Turn off the heating system
- Isolate the filter from the system flow
- Using Screwdriver, open the air vent in the top of the filter
- Remove the Drain Plug using Tool provided.
- Fully drain contents into a suitable container.
- Using the Tool provided, unscrew and remove M8 Domed nuts / Washers
- Lift the Magnet Cartridge Assembly out of the body and move it away to a cleaning station.
- Non-magnetic contamination will remain in the bottom of the bowl and requires rinsing out
- Remove the Quick release Mesh Plate from the Magnet Core Assembly and rinse clean
- Using the cleaning tool provided, scrape the bulk of the ferrous contamination off the magnet core and into a suitable container – it is not essential to remove all of the collected contamination
- Refit the Mesh Plate to the Magnet Core Assembly
- Re-assemble the Magnet Cartridge Assembly into the body
- Refit and tighten M8 Domed Nuts / Washer
- Refit the Drain Plug
- Close vent
- Remove the Filter isolation
- Carefully open the air vent to release any trapped air
- Close Vent
- Switch on the heating system

Do not use corrosive substances to clean the equipment
Dismantling Instructions

Loosen Drain Plug using Tool Provided

Remove Drain Plug

Remove Core from Body
Dismantling & Cleaning Mesh

Rotate Mesh Plate Counter Clockwise

Remove Mesh Plate (Before cleaning Magnet Core)
Cleaning Magnet Core Instructions

Scrape Contamination in a downwards movement using Tool Provided
6 Maintenance

6.1 General notes

- Keep the system clean, especially the magnetic rods
- Regular check of the seal for defects
- Regular check of the housing and the tube surface for wear
- Do not clean with aggressive cleaner!
- Do not clean the rod with water!

Moisture on the bar magnets leads to corrosion and possible damage to the system. It is strongly recommended that regular inspections are carried out to check for moisture and that appropriate action is taken to ensure the bar magnets are dried thoroughly.
8 Shipping, preservation, waste disposal, transport, storage

8.1 Shipping, preservation, waste disposal

1. Select a suitable packing depending upon type and range of the transmission (export, sea air freight, truck national, internationally). The packing must be selected in such a way that under normal transport prerequisites no damage to the commodity can occur.

2. National transmissions are packed exclusively truck-transportable depending upon scope, weight and condition of the commodity in cardboard, cardboard pallets etc. When filling and protection material in the packing strengthened cardboard, cardboard, air cushion foil and shred paper used. On the packing outside warning labels are additional to attach, e.g.: ‘Caution! High-energy magnet. Do not throw’. The packing is locked with tape and with weights starting from 50 kg additionally with safety tape.

2a. International truck transmissions are packed accordingly to point 2, larger and heavier transmissions depending upon protection neediness also export-fairly in wooden boxes. To corrosion protection in the packing is to be paid attention. Easily corrosive sections are to be packed up before the packing in oiled paper or corrosion protection foil. It is to be made certain that the packed sections in the packing become secured against slipping.

2b. International air fright transmissions are to be packed accordingly in wooden boxes or in export packaging. You have to ensure that the maximum values of magnetic field strength are not exceeded, when sending by air-freight (IATA Dangerous Medium Prescript “Cap. 3.9.1.2. Magnetized Material”; ICAO Instructions “Packing Instruction 902”). On charge protection within the packing is absolutely to note (this can be achieved by screw connections or keying). Corrosion protection with susceptible sections is to attach (oiled paper, protective plastic film, corrosion spray etc.).

2c. Seaworthy export supplies are to be packed in seaworthy export crates. The crates are made particularly and accurate to size, relating to orders by drawer operations. Crates are to be laid out with oiled paper corrosion resistant and seawater. Commodity is to be protected from corrosion additionally with spray or protective plastic film. It is to be made certain that the transmissions in the crate become secured against slipping (this can by woods, wood slats and additional screw connections takes place). After the packing the sea-crates are to be nailed correctly or bolted. The sea-crates with safety tape become additional secured.

With the loading it is to be guaranteed that the transmissions become correctly and surely stowed away and secured. The transfer and loading correct of the transmission on means of transport are by the carrier on the waybill to certify on the load list, etc..

3. Waste disposal: Observe the national waste disposal regulations.
8.2 Transport

- In order to avoid injury or damage to the unit it must be handled properly. In addition to following the instructions below, general health and safety good practice and specific accident prevention guidelines should be observed.
- For correct handling and storage comply with the following symbols:

![Symbols]

- Protect against moisture
- Careful: glass
- Up
- Centre of gravity

- Do not compress the side walls of the unit or any attached parts by pulling obliquely on ropes or chains.
- Only remove handling safeguards once all installation work has been completed.
- When handling in a loading area make sure the unit cannot topple over or slip.
- Damage caused during transportation must always be reported to the manufacturer.

8.3 Storage

- If possible the unit should be stored in a closed room until final installation.
- If the unit is stored in the open it must be covered over with tarpaulins and open underneath, to allow condensation to drain off.
- If the unit has been packed for transportation by sea the packaging must not be damaged or opened during transit and storage.
- For correct storage comply with all storage and handling symbols:

![Symbols]

- Protect against moisture
- Careful: glass
- Up
The high intensity Liquid Filter magnetic separator has been designed to operate in pressurised transfer lines to provide protection against ferrous and para-magnetic contamination.

The housing comprises a vessel, magnetic lid assembly and band clamp, which secures the unit together. The filter is available in two versions, single wall and double wall (jacketed for heated pipelines).

The filter can be used in any line that processes liquids at all viscosity levels and can be installed at any angle from vertical to horizontal. A common installation location is tanker loading and discharge to inspect outgoing and incoming materials.

The filter can be supplied to suit various processing volumes, pressures, temperatures and specifications.

Cleaning
The filter uses the ‘Easy Clean’ system. To clean, simply release the quick release band clamp, remove the contaminated cartridge from the housing and remove the magnetic cores from the tube assembly. All attracted contamination can be easily removed allowing for inspection or further analysis.

Suitable Products
Chocolate, molasses, jam, syrup, juice, sauce, pastes, soup, pickles, spreads, beverages etc.

Suitable Locations
All, vertical, horizontal or angled.

Benefits
- Easy to clean
- Removes sub-micron sized contaminants
- Meet audit requirements
- Rare earth 9.000 Gauss
- No consumables
- No pressure drop

Category
Secondary protection - fines.
## Technical Data

### Performance

**Magnetic performance**
- 9,000 Gauss high strength

**Performance reading**
- On tube surface

**Magnetic material**
- Rare earth neodymium iron boron

**Magnet grade**
- N45 – Inspected and confirmed via hysterograph prior to use

**Temperature**
- -20°C / +90°C

**Pressure**
- + / - 6 Bar

### Materials

**Housing**
- 316 grade stainless steel

**Tubing**
- 316 grade stainless steel – aerospace quality

**Other Parts**
- 316 grade stainless steel

**Surface finish**
- Brushed internally / externally to 1.2µm

**Sealing**
- Silicon rubber O-ring, brown

**Band Clamp**
- 304 grade stainless steel

### Options
- Stainless steel handles
- High temperature samarium cobalt magnetic material +250°C
- 11,000 Gauss fixed design
- Overpressure to 30 Bar
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Flanged to suit
- Safety relay switch

### Product Information

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<th>Dia. B (mm)</th>
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High intensity magnetic Easy Clean Housed Grids offer unsurpassed levels of contamination removal, removing sub-micron ferrous and para-magnetic contamination from the most demanding and arduous of process environments.

The unit contains one high intensity Easy Clean Magnetic Grid. The grid is secured into the housing by tri-cone locking nuts which ensure even pressure is generated around the food grade seal.

Units can be supplied with quick release toggle clamps if cleaning time is to be kept to a minimum. Alternatively, consider the Auto-Shuttle unit, which requires no intervention. For those applications were ultimate levels of removal are required, a double row system is available (datasheet 511).

It is common to have numerous units installed throughout a processing facility to ensure contamination is removed at source of generation.

All dry powders and granular type materials can be processed through the unit. Electrical safety interlocks can be fitted to the grid to stop the process should it be accidentally opened.

**Cleaning**

This unit uses the 'Easy Clean' system. This design allows all attracted contamination to be easily and quickly collected for further inspection or analysis.

When the unit requires cleaning, simply remove the outer grid securing tri-cone locking nuts and remove the grid from the housing. Remove the central tri-cone locking nut and separate the grid assembly allowing all attracted contamination to simply fall away.

**Suitable Products**

Dry powders and granulates.

**Suitable Locations**

Inlet / outlet points, pre- / post-silo and machinery points.

**Benefits**

- Easy to clean
- High collection capacity
- Reduces 'spark' risk
- Removes sub-micron sized contamination
- Meet audit requirements
- Rare earth 7,000, 9,000 Gauss
**Technical Data**

**Performance**

**Magnetic performance**
- *7,000 Gauss - standard strength*
- *9,000 Gauss - high strength*

**Performance reading**
On tube surface

**Magnetic material**
Rare earth neodymium iron boron

**Magnet grade**
N45 – Inspected and confirmed via hysterograph prior to use

**Temperature**
-20°C / +90°C

**Pressure**
+ / - 0.2 Bar

**Materials**

**Housing**
316 grade stainless steel

**Other Parts**
316 grade stainless steel

**Surface finish**
Brushed internally / externally to 1.2µm

**Sealing**
Self adhered white foam

**Tri-cone Nuts**
Brass and moulded plastic

**Options**
- Stainless steel toggle clamps
- Overpressure to + / - 10 Bar
- 500mm (Special sizes on request)
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Flanged to suit
- Safety relay switches
- Metal detectable silicon rubber seal – dark blue, FDA approved
- Grid support track system
- High temperature samarium cobalt magnetic material, +250°C

---

**Product Information**

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High intensity magnetic Easy Clean Housed Grids offer unsurpassed levels of contamination removal, removing sub-micron ferrous and para-magnetic contamination from the most demanding and arduous of process environments.

The unit contains two high intensity Easy Clean Magnetic Grids with the rods of each grid offset for maximum efficiency. The grids are secured into the housing by tri-cone locking nuts, which ensure even pressure is generated around the food grade seal.

Units can be supplied with quick release toggle clamps if cleaning time is to be kept to a minimum. Alternatively, consider the Auto-Shuttle unit, which requires no intervention.

Common installation locations are raw material inlet points and post-silo etc. It is common to have numerous units installed throughout a processing facility to ensure contamination is removed at source of generation.

All dry powders and granular type materials can be processed through the unit. Electrical safety interlocks can be fitted to each grid row to stop the process should they be accidentally opened (see Fig A.)

**Cleaning**
This unit uses the 'Easy Clean' system. This design allows all attracted contamination to be easily and quickly collected for further inspection or analysis. When the unit requires cleaning, simply remove the outer grid securing tri-cone locking nuts and remove the grid from the housing. Remove the central tri-cone locking nut and separate the grid assembly allowing all attracted contamination to simply fall away.

**Suitable Products**
Dry powders and granulates.

**Suitable Locations**
Inlet / outlet points, pre- / post-silo and machinery points.

**Benefits**
- Easy to clean
- High collection capacity
- Reduces 'spark' risk
- Removes sub-micron sized contamination
- Meet audit requirements
- Rare earth 7,000, 9,000 Gauss

**Category**
Secondary protection - fines.
**Technical Data**

**Product Information**

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<th>Part Number</th>
<th>ØA mm</th>
<th>B mm</th>
<th>C mm</th>
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**Performance**

**Magnetic performance**

*7,000 Gauss - standard strength
9,000 Gauss - high strength

**Performance reading**

On tube surface

**Magnetic material**

Rare earth neodymium iron boron

**Magnet grade**

N45 – Inspected and confirmed via hysterograph prior to use

**Temperature**

-20°C / +90°C

**Pressure**

+ / - 0.2 Bar

**Materials**

316 grade stainless steel

**Housing**

316 grade stainless steel

**Other Parts**

Brushed internally / externally to 1.2µm

**Surface finish**

Self adhered white foam

**Sealing**

Brass and Moulded Plastic

**Tri-cone Nuts**

**Options**

- Stainless steel toggle clamps
- High temperature samarium cobalt magnetic material, +250°C
- Overpressure to + / - 10 Bar
- Sizes up to 500mm special sizes on request
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Flanged to suit
- Safety relay switches
- Metal detectable silicon rubber seal – dark blue, FDA approved
- Grid support track system

---

![Round ECHD100](image1.png)

**Round**

200

![Square ECHD100](image2.png)

**Square**

200
The Auto-Shuttle magnetic separator enables screening of processed products 24 hours a day, seven days a week, without the need for manual intervention. The system can even carry out a full clean without the need to stop the process.

The unit is supplied with a pre-programmed PLC that can either work independently or connected to the central control rooms system for remote activation or monitoring etc.

There are reed switches fitted to each end of the separator tubes to indicate the position of each magnetic core. The full system remains air tight throughout normal operation making it suitable for environments where ATEX equipment is required.

**Cleaning**
The magnetic cores remain in the process chamber until a cleaning signal is given. Then compressed air is fed into each separator tube forcing the core to the other end of the unit. The contamination follows the core, which first passes through the product return chamber, which prevents loss of good product, and into the cleaning chamber where the collected contamination is deposited.

The cleaning chamber is fitted with a transition piece, which allows a collection container to be fitted. It is this container that is removed to assess the collected contamination.

**Suitable Products**
Dry powders and granulates, flour, sugar, herbs and salt, etc

**Suitable Locations**
Any vertical process line.

**Benefits**
- Fully autonomous in operation
- Reduces ‘spark’ risk
- Suitable for control room connection
- Removes micron sized contaminants
- Meet audit requirements
- Rare earth 7,000, 9,000 Gauss

**Category**
Secondary protection - fines.
**Performance**

**Magnetic performance**
- *7,000 Gauss - standard strength*
- 9,000 Gauss high strength

**Performance reading**
On tube surface

**Magnetic material**
Rare earth neodymium iron boron

**Magnet grade**
N45 – Inspected and confirmed via hysterograph prior to use

**Temperature**
-20°C / +60°C

**Pressure**
+- 0.2 Bar

**Materials**

**Housing**
316 grade stainless steel

**Tubing**
316 grade stainless steel – aerospace quality

**Other Parts**
316 grade stainless steel

**Surface finish**
Brushed internally / externally to 1.2µm

**Sealing**
Self adhered white foam

**PLC**
Crouzet, pre-programmed

**Options**
- High temperature samarium cobalt magnetic material +250°C
- Overpressure to +5 Bar
- Siemens, Mitsubishi or Allen Bradley PLC
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Metal detectable silicon rubber seal – dark blue, FDA approved
- Flanged to suit
- Single, triple and quad row units available

---

*7,000 Gauss should be selected for bread flour applications to allow for permissible iron oxide*
The Pneumag high intensity magnetic separator has been designed to operate in pneumatic conveying lines to provide protection against ferrous and para-magnetic contamination.

The unit contains a single double row high intensity magnetic cartridge. It is secured into its housing by quick release toggle clamps, which ensure even pressure is generated around the unique silicon-based metal-detectable seal.

The Pneumag can be incorporated into any form of pneumatic conveying line, from lean to dense phase, and can be installed at any angle from vertical to horizontal. A common installation location is at tanker discharge to inspect incoming materials.

All dry powders and granular type materials can be processed through the unit. Pneumag can operate in line pressures of +/- 1 Bar, units are available up to +/- 5 Bar on request, with a maximum processing line speed of 35m / sec.

A lockable tamper proof cover plate is provided to ensure only authorised personnel have access to the unit.

**Cleaning**
The Pneumag uses the ‘Easy Clean’ system.

To clean, simply release the quick release toggle clamps, remove the contaminated cartridge from the housing and then remove the magnetic cores from the tube assembly. All attracted contamination will be released allowing for inspection or further analysis.

**Suitable Products**
Dry powders and granulates.

**Suitable Locations**
All.

**Benefits**
- Easy to clean
- Tamper proof guard
- Metal detectable seal
- Reduces 'spark' risk
- Removes sub-micron sized contaminants
- Meet audit requirements
- Rare earth 7,000, 9,000 Gauss

**Category**
Secondary protection - fines.
Performance

Magnetic performance
- 7,000* Gauss standard strength
- 9,000 Gauss high strength

Performance reading
- On tube surface

Magnetic material
- Rare earth neodymium iron boron

Magnet grade
- N45 – Inspected and confirmed via hysterograph prior to use

Temperature
- -20°C / +60°C

Pressure
- + / - 1 Bar

*7,000 Gauss should be selected for bread flour applications to allow for permissible iron oxide.

Materials

Housing
- 316 grade stainless steel

Tubing
- 316 grade stainless steel – aerospace quality

Other Parts
- 316 grade stainless steel

Surface finish
- Brushed internally / externally to 1.2µm

Sealing
- Metal detectable silicon rubber – dark blue, FDA approved

Toggle Clamps
- Mild steel – Bright Zinc plated

Options
- Stainless steel toggle clamps
- High temperature samarium cobalt magnetic material +250°C
- 11,000 Gauss fixed grid
- Overpressure to + / - 5 Bar
- Double magnetic core arrangement
- 304 grade stainless steel
- ATEX certified
- Pharmaceutical specification
- Safety relay switch
- Flanged to suit

*7,000 Gauss should be selected for bread flour applications to allow for permissible iron oxide.

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Product Information

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The high intensity magnetic Rota-Grid separator has been designed specifically to process difficult products that are prone to bridging and/or caking.

The unit contains a centrally mounted magnetic ‘rota’ assembly: numerous ‘Easy Clean’ magnetic rods are arranged in a ‘wheel’ around and parallel to the axis of rotation. The number of rods used depends on the inlet and outlet size.

The assembly rotates, gently agitating the product being processed. It is this agitation that prevents blockages occurring.

All dry and semi-dry powders and granular type materials, such as starch etc., can be processed through the unit. The Rota-Grid can be supplied to the most stringent of standards, such as required in the pharmaceutical industry.

**Cleaning**
As the Rota-Grid uses the ‘Easy Clean’ system, cleaning can be completed in a matter of minutes.

To clean, simply remove the door and remove the assembly from the housing. Remove the magnetic cores from the assembly. All attracted contamination will then be released allowing for inspection or further analysis.

**Suitable Products**
Dry and semi-dry powders and granulates, starch, protein etc.

**Suitable Locations**
Any vertical process line.

**Benefits**
- Easy to clean
- Allows difficult products to be screened
- Reduces ‘spark’ risk
- Removes sub-micron sized contaminants
- Meet audit requirements
- Rare earth 7,000, 9,000 Gauss

**Category**
Secondary protection - fines.
**Technical Data**

**Performance**
- Magnetic performance: *7,000 Gauss - standard strength
9,000 Gauss - high strength*
- **Performance reading**
  - On tube surface
- **Magnetic material**
  - Rare earth neodymium iron boron
- **Magnet grade**
  - N45 – Inspected and confirmed via hysterograph prior to use
- **Temperature**
  - -20°C / +60°C
- **Electrical Spec**
  - 415 / 380 Volts industrial three phase
  - IP65 rated motor gearbox

**Material**
- **Housing**
  - 316 grade stainless steel
- **Tubing**
  - 316 grade stainless steel – aerospace quality
- **Other Parts**
  - 316 grade stainless steel
- **Surface finish**
  - Brushed internally / externally to 1.2µm
- **Sealing**
  - Self adhered white foam
- **Tri-cone Nuts**
  - Stainless steel and moulded plastic

**Options**
- Stainless steel toggle clamps
- High temperature samarium cobalt magnetic material +250°C
- 11,000 Gauss fixed grid
- Overpressure to + / - 5 Bar
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Metal detectable silicon rubber seal – dark blue, FDA approved
- Flanged to suit

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**Product Information**

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</table>
The high intensity magnetic Chute Magnet has been designed to operate in arduous conditions and where contamination size is relatively large e.g. nuts, bolts etc.

The unit has two hinged, high intensity magnetic packs, which are secured to a housing by an adjustable hinge arrangement and tri-cone locking nut. These tri-cone nuts ensure even pressure is generated around the food grade silicon seal.

The chute magnet can be incorporated into any form of vertical or angled pipe or chute section. A common installation location is raw material inlet points for products such as grain, rice, corn, bran and animal feed etc.

A central diverter is mounted on the inlet. This directs processed product onto the magnetic face ensuring a high contamination removal rate.

All dry powders and granular type materials can be processed through the unit.

Electrical safety interlocks can be fitted to the magnetic packs to stop the process should they be accidentally opened.

**Cleaning**
The Chute Magnet benefits use the ‘Easy Clean’ system (Fig. A).

Simply release the quick-release toggle clamps, swing the packs away from the line and hinge the easy clean plates away. The collected contamination will be free from magnetic attraction and can be simply and easily removed allowing for inspection or further analysis.

**Suitable Products**
Dry powders and granulates.

**Suitable Locations**
Inlet / outlet points.

**Benefits**
- Easy to clean
- Maintains full flow
- High collection capacity
- Reduces 'spark' risk
- Removes 'tramp' sized contaminants
- Meet audit requirements
- Rare earth deep magnetic field

**Category**
Primary protection - tramp.
Performance

Magnetic performance
3,500 Gauss

Performance Reading
On magnetic pack surface

Magnetic material
Rare earth neodymium iron boron

Magnet grade
N35 – Inspected and confirmed via hysterograph prior to use

Temperature
-20°C / +60°C

Pressure
+ / - 0.2 Bar

Materials
Housing
316 grade stainless steel

Other Parts
316 grade stainless steel

Surface finish
Brushed internally / externally to 1.2µm

Sealing
Self adhered white foam

Toggle Clamps
Mild steel – bright zinc plated

Options
- Stainless steel toggle clamps
- High temperature samarium cobalt magnetic material, +250°C
- Overpressure to + / - 5 Bar
- Sizes up to 500mm Ø or square
- 304 grade stainless steel
- Pharmaceutical specification
- ATEX certified
- Flanged to suit
- Safety relay switches
- Metal detectable silicon rubber seal – dark blue, FDA approved
- Ceramic magnetic material

Product Information

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<th>Part Number</th>
<th>Inlet / Outlet A mm</th>
<th>B mm</th>
<th>C mm</th>
<th>H mm</th>
<th>Weight kg</th>
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Screening incoming ingredients is easy with the free-standing hand ingredient sieve.
Sieving can significantly reduce the risk of introducing glass, plastic, steel, wood, insects, paper, card and organic materials into your product.

Sieving also removes irregular shaped ingredients.

The frame is sturdy, fully-welded 316 grade stainless steel. It is easily moved using the attached ‘tilt’ wheels.

The sieve is available in 2 sizes – 450mm and 600mm diameter – and can be supplied with a high-intensity grid magnet. This sits below the screen and removes any ferrous contamination that passes through the screen (see data sheet 505).

**Cleaning**
Cleaning is easy and can be completed within a minute.

**Suitable Products**
Dry powders, granulates, liquids.

**Benefits**
- Easy to clean
- Highly polished finish
- Fully mobile
- Includes on/off switch and main isolation switch
- Compact size
- Ultra-quiet operation

**Category**
Ingredient sieving.
Technical Data

**SU450**

![SU450 Diagram](image)

**SU600**

![SU600 Diagram](image)

### Product Information

<table>
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<tr>
<th>Part Number</th>
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<th>Max. throughput kgs per hour*</th>
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*Estimated: sieving flour using #60 screen

### Performance

- **Operating voltage**: 220 – 240 volts
- **Operating frequency**: 50 – 60 Hz
- **Motor speed**: 1440 rpm
- **Noise level**: <70 dB
- **Temperature**: 5°C – 40°C

### Materials

- **Main body**: 316 grade stainless steel
- **Top pan**: 316 grade stainless steel
- **Surface finish**: Highly polished
- **Sealing**: Silicon, metal-detectable, blue. FDA approved
- **Thumb clamps**: 304 grade stainless steel

### Options

- Sieve magnet 11,000 Gauss
- ATEX certified
- Larger top pan
- Dust hood
- Dust hood incorporating bag station
The high intensity magnetic Sampling Probe is ideal for quality control personnel to quickly and easily carry out product purity inspections on any powder, granulate or liquid for ferrous or para-magnetic contamination.

The probe should be used for sample inspection of product at goods inward, prior to despatch and at critical control points throughout the process line for batch testing.

Simply allow the processed product to pass over the magnetic section of the probe or agitate in any static product. Any ferrous or para-magnetic contamination present will be highly visible when concentrated on the probe’s surface.

**Cleaning**
Cleaning can be conducted in seconds. Remove the unit from the sampling area and, while holding the body of the probe, simply pull the rear handle backwards. This will release any attracted contamination enabling further analysis to be conducted.

**Suitable Locations**
Any powders, granulates, liquids, sauces, juices, chocolate etc.

**Benefits**
- Easy to clean
- Simple to use
- Indicates if contamination is present
- Removes micron sized contaminants
- Meet audit requirements
- Rare earth 9,000 Gauss

**Category**
Secondary protection - fines.
Performance
Magnetic performance  9,000 Gauss high strength
Performance reading  On tube surface
Magnetic material  Rare earth neodymium iron boron
Magnet grade  N45 – Inspected and confirmed via hysterograph prior to use
Temperature  -20°C / +90°C

Materials
Tubing  316 grade stainless steel – aerospace quality
Other parts  316 grade stainless steel
Surface finish  Polished to 0.6µm

Options
• High temperature samarium cobalt magnetic material +250°C
• Pharmaceutical specification
• Magnetic lengths up to 1000mm
• ATEX certified

Product Information

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Technical Data