2021

# MAGNETIC FILTER SCRUBBER SERIES


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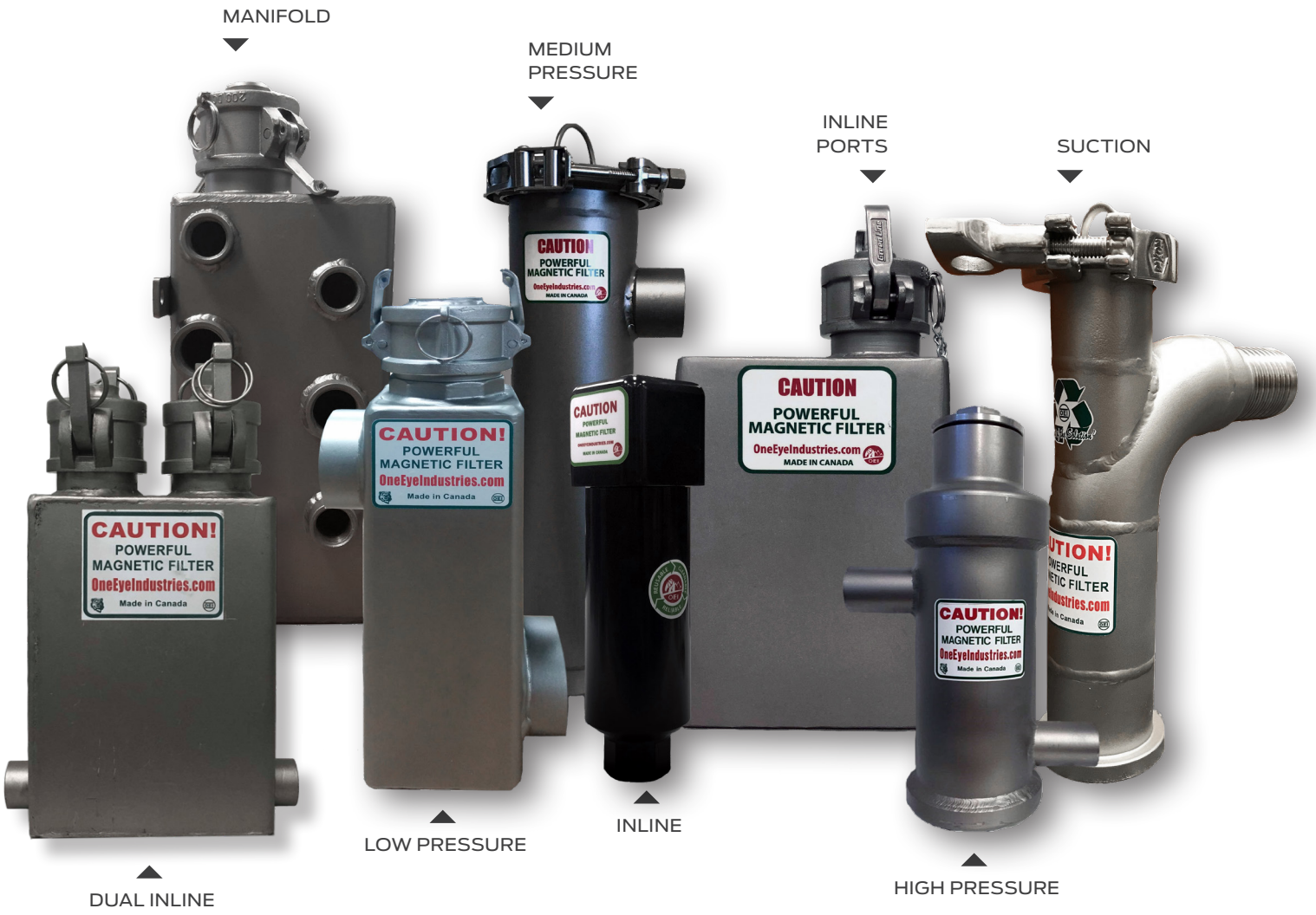
# SCRUBBER SERIES



# SCRUBBER SERIES

## DESCRIPTION

Magnetic filter scrubbers employ a magnetic filter element in a specialty housing designed to operate with minimal flow restriction and maximum fluid exposure for high-efficiency filtration. Flow is regulated by the diameter of the inlet-outlet supply pipe as well as fluid velocity. These systems install on suction and return lines of high-pressure and low-pressure applications.

## BENEFITS

- Minimal flow restriction allows for suction line installation and pump protection.
- High holding capacity allows for extended planned maintenance periods.
- Acts as an effective predictive maintenance tool if contamination is collected and analyzed to determine sources of equipment component wear.

## EFFICIENCY

| | | |
|---|---|---|
| Magnetic Filter Element | Ferrous Contamination | Captures ferrous wear particles down to 4 µ and below with up to 95+% efficiency. |
| | Non-ferrous Contamination | Non-ferrous particles are magnetically captured because of cross-contamination from static charge or embedded ferrous particles. |

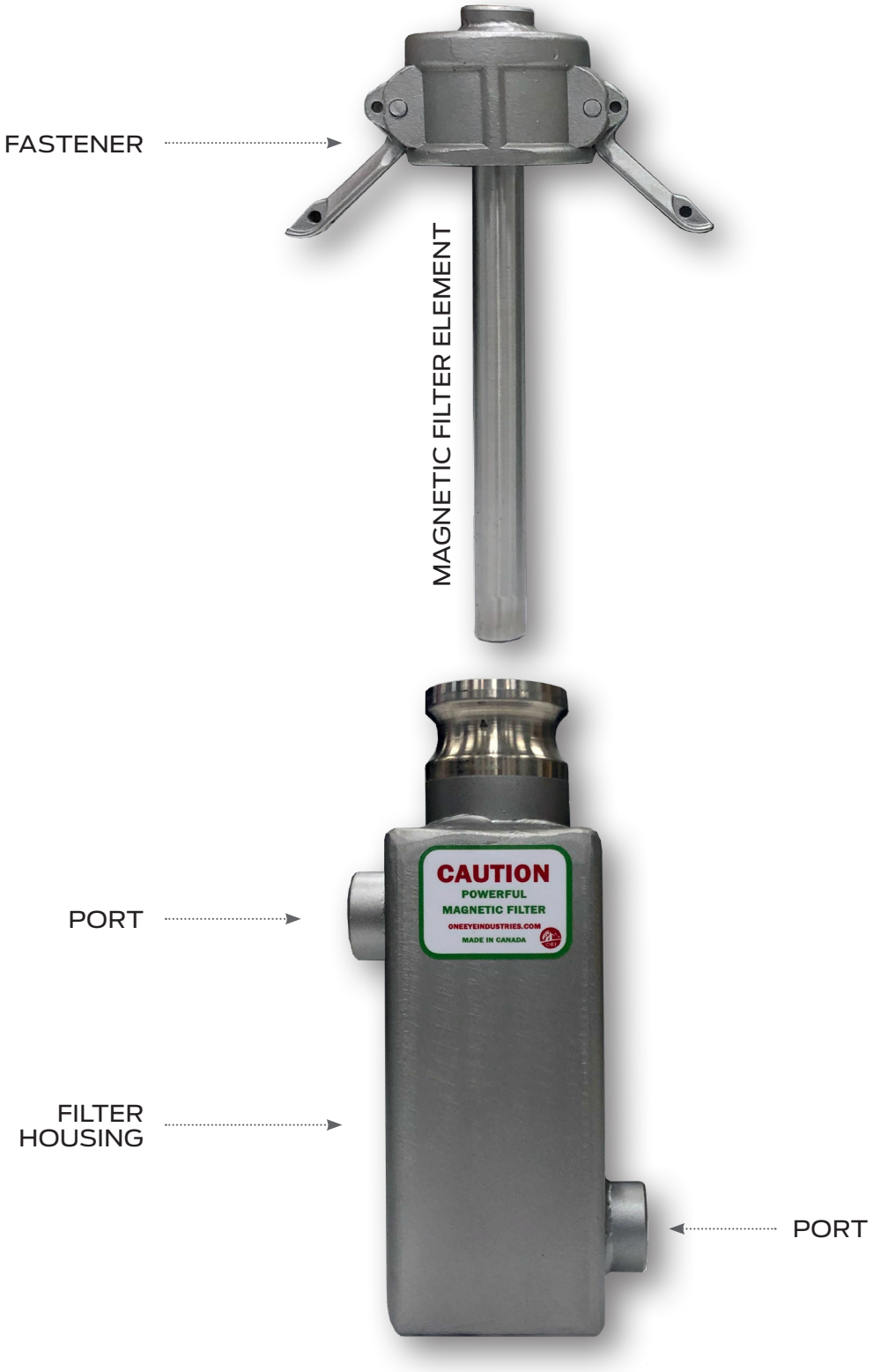
## OPERATING PARAMETERS

| | | |
|---|---|---|
| Pressure / Temperature Rating | Standard | < 10.3 bar (150 psi) @ < 105° C (221° F) |
| | High Heat | < 34.4 bar (500 psi) @ < 204.4° C (400° F) |
| Viscosity Rating | Standard | < 680 cSt |
| | Low Viscosity | < 2,000 cSt |
| Bypass Settings | Continuous filtration with no internal bypassing | |

## CLEANING

Magnetic Filter Element: Remove the contamination by wiping downward with a lab cloth or rubber glove.

Use the magnetic filter element as a predictive maintenance tool by removing contamination with a lab cloth or rubber glove and depositing it into a sample jar. Send the contamination for analysis to determine the source of equipment component wear and prevent system failure.




Standard design with 180° offset ports

# STANDARD SCRUBBER SPECIFICATIONS

## MATERIALS

| | | |
|---|---|---|
| Magnetic Filter Element | Rare-earth magnets configured in a patented radial field design. | |
| Filter Housing, Drain Plugs, End Caps, Mounts | Standard | Stainless Steel |
| | Specialty Materials | » Monel<br>» Other alloys available |
| Seals | Standard Heat | Buna |
| | HIgh Heat | Viton |
| | Sub-zero | EDPM |

## CONFIGURATIONS

| | | | | | |
|---|---|---|---|---|---|
| Magnetic Filter Element | Quantities | » Single<br>» Dual | » Dual Inline<br>» Triple | » Quadruple | |
| | Lengths | » 9” | » 12" | » 24" | » 36" |
| Housings | Square | < 10.3 bar (150 psi) | | | |
| | Round | < 34.4 bar (500 psi) | | | |
| Fasteners | Cam-lock | < 10.3 bar (150 psi) | | | |
| | ORB, Flange | < 34.4 bar (500 psi) | | | |
| Ports | » Inline | » Parallel Ports | » Upper housing<br>» Lower housing | | |
| | » Offset | » 0º Offset<br>» 90º Offset | » 180º Offset<br>» 270º Offset | | |
| | » Multi-port | » Manifold | | | |

## INSTALLATION

| | | | | |
|---|---|---|---|---|
| Port Size<br>*Custom sizes available* | ½” - 2 ½” | | | |
| Port Type | » NPT<br>» ORB | » CD61<br>» CD62 | » BSPT<br>» BSPP | » Flange |
| Mount Type | » Inline<br>» Vertical | » Horizontal | | |
| Element Clearance | Housing length + 4” | | | |

## LIMITED WARRANTY

| | |
|---|---|
| Magnetic Filter Element | 3 years |
| Housing and Components | 1 year |

## SERVICE LIFE

| | |
|---|---|
| Magnetic Filter Element | 18+ years |

# SCRUBBER SERIES SPECIFICATIONS

| | | DESCRIPTION | PART NUMBER | PRESSURE RATING | TEMP. RATING | HOUSING SIZE | MAGNETIC FILTER ELEMENT |
|---|---|---|---|---|---|---|---|
| LOW PRESSURE | | *OEI standard magnetic filter scrubber is designed with a square housing, typically with a camlock fastener. These units install with multiple port size, location, and fitting options.* | 5SC349S | < 10.3 bar (150 psi) | 105° C (221° F) | 3" L x 3" W x 9" H | ¾" OD |
| | | | 5SC12S | < 10.3 bar (150 psi) | 105° C (221° F) | 4" L x 4" W x 12" H | 1" OD |
| | | | 5SC24S | < 10.3 bar (150 psi) | 105° C (221° F) | 4" L x 4" W x 24" H | 1" OD |
| MEDIUM PRESSURE | | *Fluid applications requiring pressures over 150 psi are designed with a round housing and ORB, or flange fastener.* | 5SC349RORB | < 34.4 bar (500 psi) | 105° C (221° F) | 3" OD x 9" H | ¾" OD |
| | | | 5SC12RORB | < 34.4 bar (500 psi) | 105° C (221° F) | 4" OD X 12" H | 1" OD |
| | | | 5SC24RORB | < 34.4 bar (500 psi) | 105° C (221° F) | 4" OD x 24" H | 1" OD |
| HIGH PRESSURE | | *Designed for high pressure applications up to 5000 psi.* | 5SMP | < 206.8 bar (3000 psi) | 75° C (167° F) | 3 ½" OD x 17" H | 1" OD |
| | | | 5SHP | < 344.7 bar (5000 psi) | 75° C (167° F) | 3 ½" OD x 17" H | 1" OD |
| SPECIALTY | INLINE | *With a billet aluminum housing, this scrubber installs inline for low-pressure, light viscosity, low-flow applications.* | 5IL04 | 6.9 bar (100 psi) | 105° C (221° F) | 2 ¼" OD x 6" H | ½" OD |
| | | | 5IL05 | 6.9 bar (100 psi) | 105° C (221° F) | 2 ¼" OD x 7 ¼" H | ¾" OD |
| | | | 5IL905 | 6.9 bar (100 psi) | 105° C (221° F) | 2 ¼" OD x 9 ¼" H | ¾" OD |
| | FUNNEL | *This scrubber installs inline on food and material production lines.* | 4FS# | 24.1 bar (350 psi) | 121.1° C (250° F) | 4" OD x 27" H | 1" OD |

| PART NUMBER | | Flow Rate (gpm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 30 cSt | 110 cSt | 220 cSt | 460 cSt | 680 cSt | 1,000 cSt |
| 5SC349S | Single-Pass | 8 gpm (30.3 L/min) | 7 gpm (26.9 L/min) | 6 gpm (22.7 L/min) | 5 gpm (18.9 L/min) | 3 gpm (11.4 L/min) | NA |
| | Multi-Pass | 30 gpm (113.6 L/min) | 30 gpm (113.6 L/min) | 15 gpm (56.8 L/min) | 10 gpm (37.9 L/min) | 5 gpm (18.9 L/min) | NA |
| 5SC12S | Single-Pass | 21 gpm (79.5 L/min) | 20 gpm (75.7 L/min) | 15 gpm (56.8 L/min) | 12 gpm (45.4 L/min) | 6 gpm (22.7 L/min) | 3 gpm (11.4 L/min) |
| | Multi-Pass | 81 gpm (306.6 L/min) | 65 gpm (246.1 L/min) | 41 gpm (155.2 L/min) | 25 gpm (94.6 L/min) | 13 gpm (49,2 L/min) | 5 gpm (18.9 L/min) |
| 5SC24S | Single-Pass | 40 gpm (151.4 L/min) | 38 gpm (143.9 L/min) | 30 gpm (113.6 L/min) | 20 gpm (75.7 L/min) | 10 gpm (37.9 L/min) | 10 gpm (37.9 L/min) |
| | Multi-Pass | 95 gpm (359.6 L/min) | 80 gpm (302.8 L/min) | 76 gpm (287.7 L/min) | 30 gpm (113.6 L/min) | 16 gpm (60.6 L/min) | 8 gpm (30.3 L/min) |
| 5SC349RORB | Single-Pass | 8 gpm (30.3 L/min) | 7 gpm (26.9 L/min) | 6 gpm (22.7 L/min) | 5 gpm (18.9 L/min) | 3 gpm (11.4 L/min) | NA |
| | Multi-Pass | 30 gpm (113.6 L/min) | 30 gpm (113.6 L/min) | 15 gpm (56.8 L/min) | 10 gpm (37.9 L/min) | 5 gpm (18.9 L/min) | NA |
| 5SC12RORB | Single-Pass | 21 gpm (79.5 L/min) | 20 gpm (75.7 L/min) | 15 gpm (56.8 L/min) | 12 gpm (45.4 L/min) | 6 gpm (22.7 L/min) | 3 gpm (11.4 L/min) |
| | Multi-Pass | 81 gpm (306.6 L/min) | 65 gpm (246.1 L/min) | 41 gpm (155.2 L/min) | 25 gpm (94.6 L/min) | 13 gpm (49.2 L/min) | 5 gpm (18.9 L/min) |
| 5SC24RORB | Single-Pass | 40 gpm (151.4 L/min) | 38 gpm (143.9 L/min) | 30 gpm (113.6 L/min) | 20 gpm (75.7 L/min) | 10 gpm (37.9 L/min) | 10 gpm (37.9 L/min) |
| | Multi-Pass | 95 gpm (359.6 L/min) | 80 gpm (302.8 L/min) | 76 gpm (287.7 L/min) | 30 gpm (113.6 L/min) | 16 gpm (60.6 L/min) | 8 gpm (30.3 L/min) |
| 5SMP | Single-Pass | 7 gpm (26.9 L/min) | 7 gpm (26.9 L/min) | 6 gpm (22.7 L/min) | 5 gpm (18.9 L/min) | 3 gpm (11.4 L/min) | NA |
| | Multi-Pass | 30 gpm (113.6 L/min) | 30 gpm (113.6 L/min) | 15 gpm (56.8 L/min) | 10 gpm (37.9 L/min) | 5 gpm (18.9 L/min) | NA |
| 5SHP | Single-Pass | 7 gpm (26.9 L/min) | 7 gpm (26.9 L/min) | 6 gpm (22.7 L/min) | 5 gpm (18.9 L/min) | 3 gpm (11.4 L/min) | NA |
| | Multi-Pass | 30 gpm (113.6 L/min) | 30 gpm (113.6 L/min) | 15 gpm (56.8 L/min) | 10 gpm (37.9 L/min) | 5 gpm (18.9 L/min) | NA |
| 5IL04 | Single-Pass | 2 gpm (7.6 L/min) | NA | NA | NA | NA | NA |
| | Multi-Pass | 4 gpm (15.1 L/min) | NA | NA | NA | NA | NA |
| 5IL05 | Single-Pass | 3 gpm (11.4 L/min) | NA | NA | NA | NA | NA |
| | Multi-Pass | 6 gpm (22.7 L/min) | NA | NA | NA | NA | NA |
| 5IL905 | Single-Pass | 3 gpm (11.4 L/min) | NA | NA | NA | NA | NA |
| | Multi-Pass | 6 gpm (22.7 L/min) | NA | NA | NA | NA | NA |
| 4FS4200 | Single-Pass | 20 gpm (75.7 L/min) | NA | NA | NA | NA | NA |
| | Multi-Pass | NA | NA | NA | NA | NA | NA |

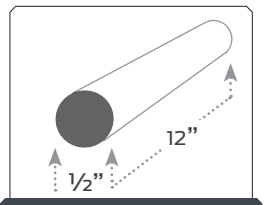
# CORE TECHNOLOGY

## DESCRIPTION

The patented magnetic filter element attracts ferrous wear particles down to 4 microns and below with up to 95+% efficiency. The magnetic filter element attracts both ferrous and non-ferrous particles. The radial magnetic field design offers incredible holding strength and a high dirt holding capacity.

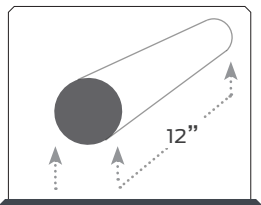
OEI magnetic filter elements are employed in various housings designed with calculated dwell times for optimal filtration. Magnetic filter elements come in five sizes from ½" to 2" outer diameter (OD) (shown below).

1" magnetic filter elements with varying loads of contamination. Dirt holding capacity*: 3.97 lb-ft.



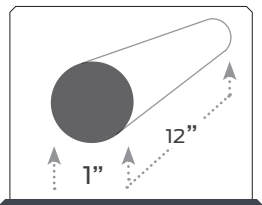

½" OD MAGNETIC FILTER ELEMENT

Dirt holding capacity: 1.8 lb-lft



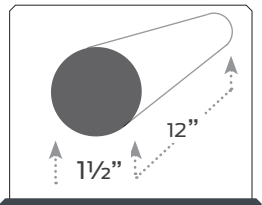

¾" OD MAGNETIC FILTER ELEMENT

Dirt holding capacity: 3.0 lb-lft



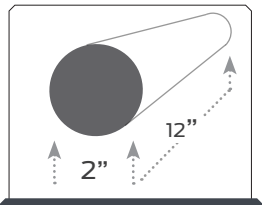

1" OD MAGNETIC FILTER ELEMENT

Dirt holding capacity: 4.0 lb-lft




1 ½" OD MAGNETIC FILTER ELEMENT

Dirt holding capacity: 16 lb-lft




2" OD MAGNETIC FILTER ELEMENT

Dirt holding capacity: 31.3 lb-lft

*Dirt holding capacity is the quantity of contaminant mass a filter element can trap and hold before the maximum allowable back pressure, or delta P level, is reached.

# CORE TECHNOLOGY BENEFITS

## CLEAN AND REUSE

OEI products are reusable for 18+ years, and require minimal consumables. Conventional filters require frequent, costly changeouts, and disposal.

## PREDICTIVE MAINTENANCE

OEI Magnetic Filter Elements are effective predictive maintenance tools when used for condition monitoring. When removed for inspection, magnetic filter elements will have varying quantities of contamination. Abnormally high quantities of contamination indicate component failure. The composition of contamination will identify which components are stressed, worn, or failing.

Visual analysis of the quantities of wear contamination collected on magnetic filter plugs can determine component failure. Analysis of wear particle compositions and sizes will determine early component wear.

## GOES WHERE NO CONVENTIONAL FILTER HAS GONE BEFORE

OEI magnetic filters can be installed on suction lines to protect pumps without risk of cavitation. Unlike conventional filters, they accommodate space restrictions and unique applications such as splash oil gearboxes, reservoirs, and small coolant lines.

## CAPTURES NON-FERROUS CONTAMINATION

Non-ferrous particles are magnetically captured because of cross-contamination. Particles become statically charged from flow velocity. This charge is a principal force of particle adhesion; iron particles contaminate non-ferrous particles by adhering to their statically charged surface. Another form of cross-contamination occurs when sub-micron iron particles embed in softer non-ferrous particles after abrasive impact.

## PREVENT OXIDIZATION AND VARNISH

OEI effectively removes iron and steel particles under 10 microns that are known to promote oil oxidation because of their catalytic properties. Oxidation can deplete additives that protect against wear, corrosion, sludge, varnish, and viscosity changes that affect the thickness of films between bearing surfaces, friction, control of temperature, and energy consumption.

## NO WORMHOLING OR CHANNELING

OEI filters eliminate the opportunity for wormholing and channeling that conventional paper, fiberglass, and polymer media filter elements are subject to.
Wormholing: when wear contamination punctures the filter media.
Channeling: when fluid flows through punctured holes because it takes the path of least resistance.

# MAGNETIC FILTER ELEMENT

## EFFICIENCY

| | |
|---|---|
| Ferrous Contamination Filtration | Captures ferrous wear particles down to 4 µ and below with up to 95+% efficiency. |
| Non-Ferrous Contamination Filtration | Non-ferrous particles are magnetically captured because of cross-contamination. Particles become statically charged from flow velocity. This charge is a principal force of particle adhesion; iron particles contaminate non-ferrous particles by adhering to their statically charged surface. Another form of cross-contamination occurs when sub-micron iron particles embed in softer, non-ferrous particles after abrasive impact. |

## OPERATING PARAMETERS

| | | |
|---|---|---|
| Pressure Rating | Standard | < 34.5 bar (500 psi) |
| | High Pressure | < 689.5 bar (10000 psi) |
| Temperature Rating | Standard | < 150° C (300° F) |
| | High Heat | < 300° C (600° F) |
| Flow Rate | Housing Dependent | |
| Bypass Setting | Continuous | |

## CLEANING

Remove the magnetic filter element from the housing, then remove the contamination with a lab cloth/ non-fiber cloth that absorbs the contamination. Save the cloth in a sample bag to send for analysis.

Use the magnetic filter element as a predictive maintenance tool by removing contamination with a lab cloth or rubber glove and depositing it into a sample jar. Send the contamination for analysis to determine the source of equipment component wear and prevent system failure.

## MATERIALS

| | |
|---|---|
| Magnetic Filter Element | Rare-earth magnets are configured in a patented radial field design |
| Casing | Stainless Steel |

## LIMITED WARRANTY

| | |
|---|---|
| Magnetic Filter Element | 3 years |

## SERVICE LIFE

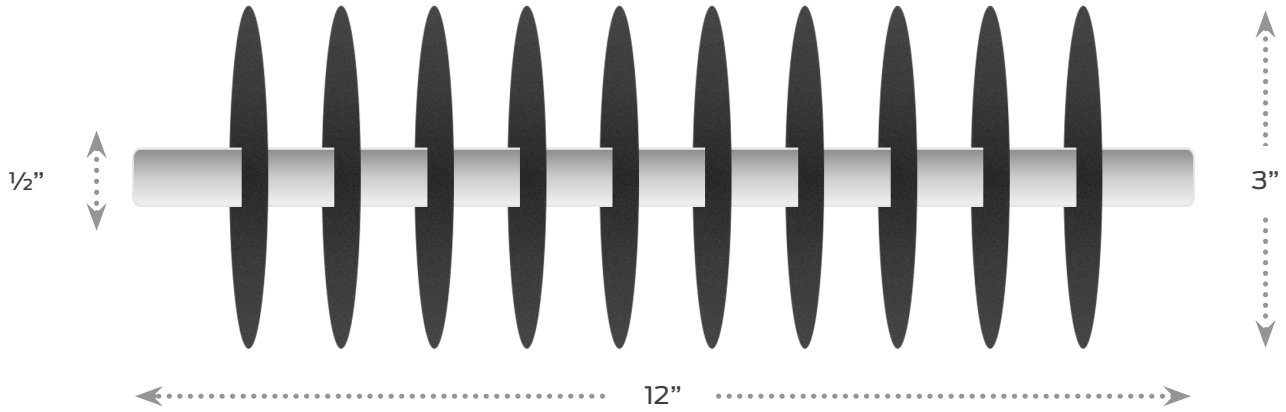
| | |
|---|---|
| Magnetic Filter Element | 18+ years |

## ½” OD X 12” L

### SPECIFICATIONS

| | |
|---|---|
| Holding Strength | 57 ft-lb |
| Dirt Holding Capacity | 1.8 lb-lft |
| Length Options | 9", 12”, 24" |

| | |
|---|---|
| Radial Magnetic Fields (12") | 10 |
| Radial Magnetic Field Diameter | 3" |
| Magnetic Surface Area (12") | 68.7 $in^3$ |

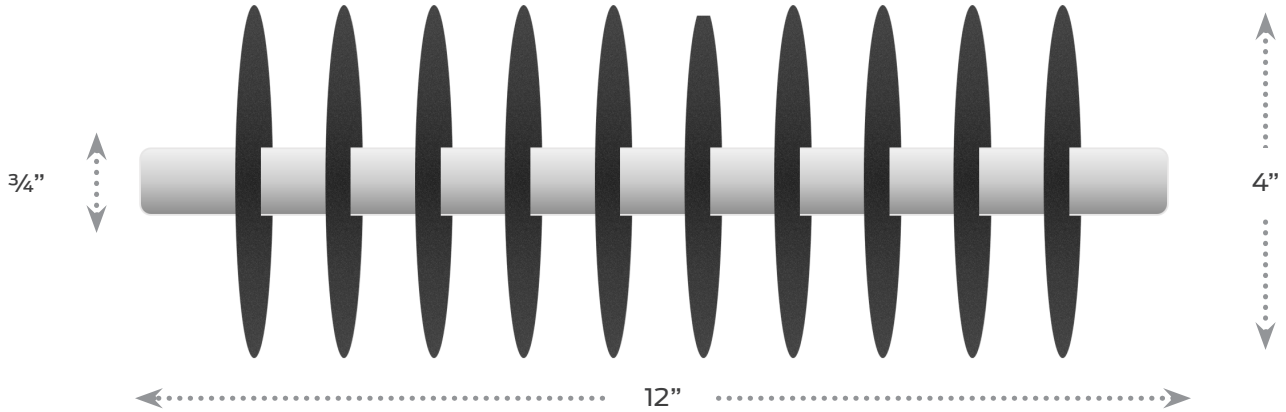



## ¾” OD X 12” L

### SPECIFICATIONS

| | |
|---|---|
| Holding Strength | 123 ft-lb |
| Dirt Holding Capacity | 3.0 lb-lft |
| Length Options | 9", 12”, 24", 36" |

| | |
|---|---|
| Radial Magnetic Fields (12") | 10 |
| Radial Magnetic Field Diameter | 4” |
| Magnetic Surface Area (12") | 125.2 $in^3$ |

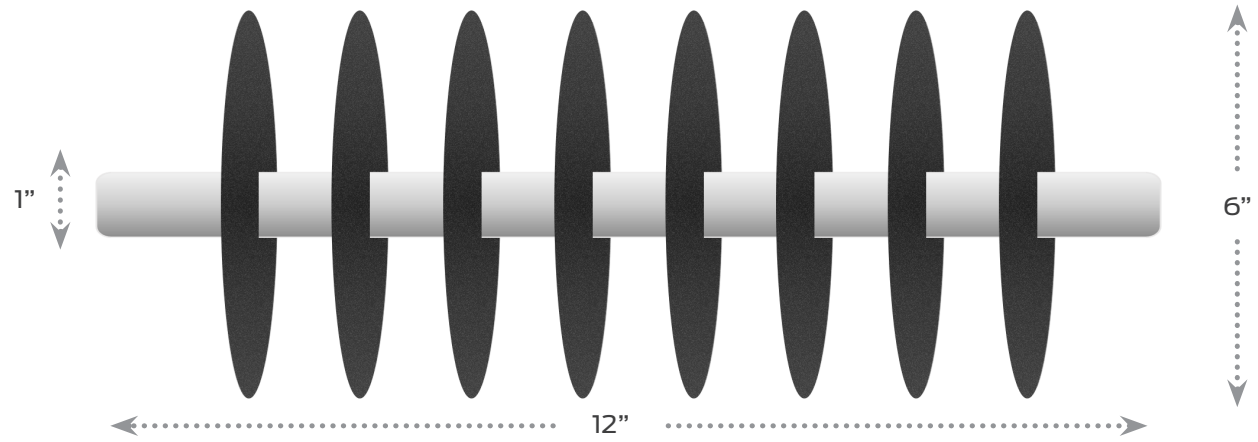


## 1” OD X 12” L

### SPECIFICATIONS

| | |
|---|---|
| Holding Strength | 270 ft-lb |
| Dirt Holding Capacity | 4.0 lb-lft |
| Length Options | 9", 12”, 24", 36" |

| | |
|---|---|
| Radial Magnetic Fields (12") | 8 |
| Radial Magnetic Field Diameter | 6” |
| Magnetic Surface Area (12") | 195.5 $in^3$ |

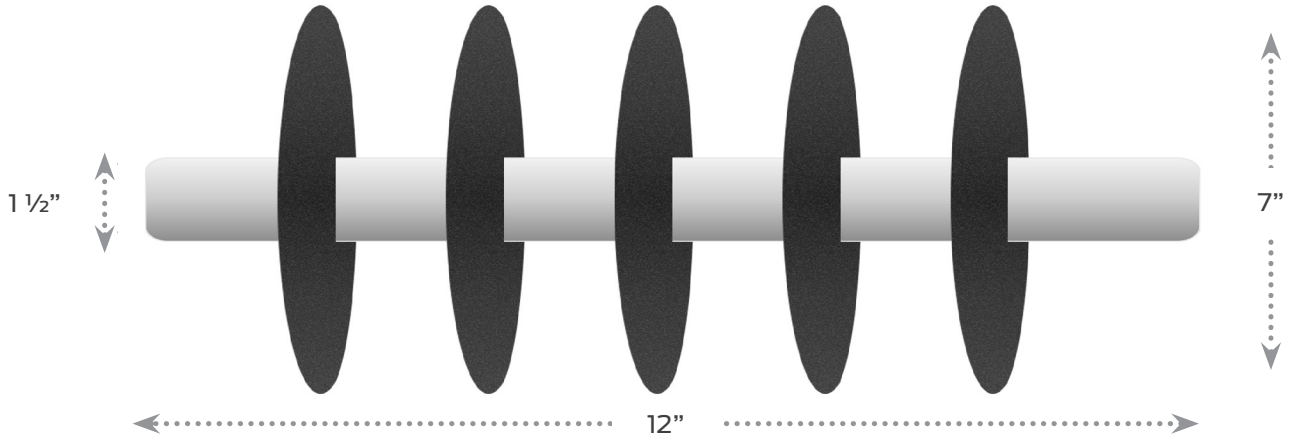


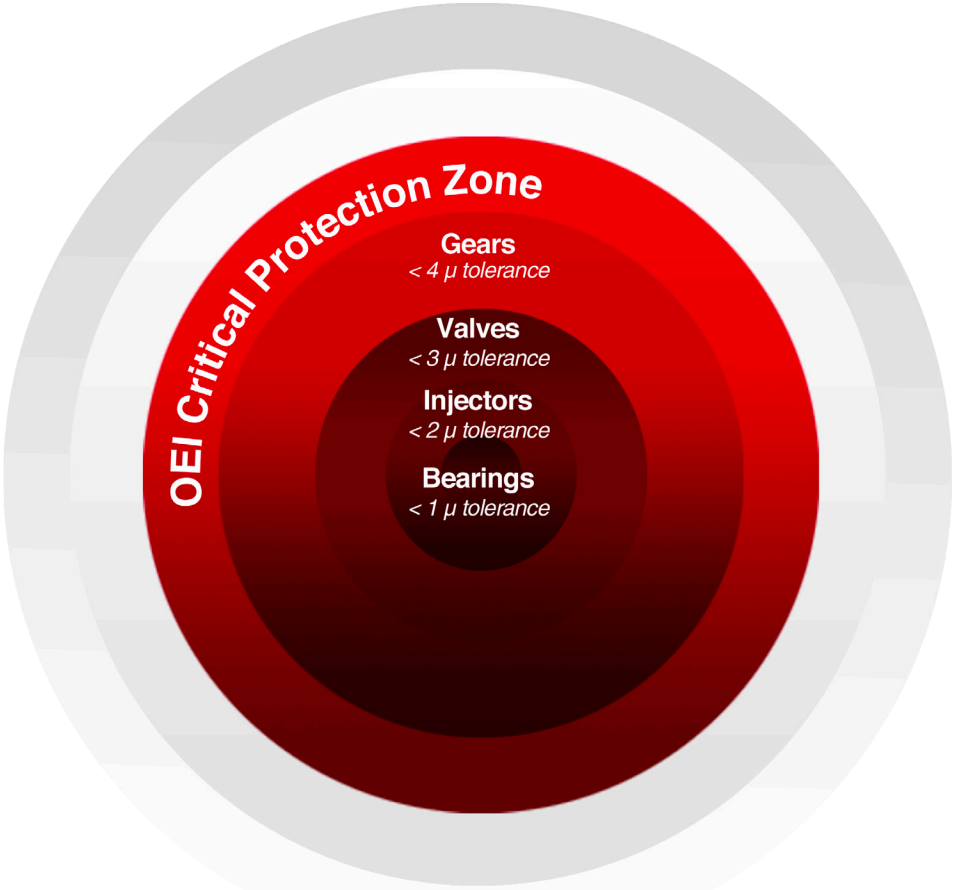

## 1 ½” OD X 12” L

### SPECIFICATIONS

| | |
|---|---|
| Holding Strength | 500 ft-lb |
| Dirt Holding Capacity | 16.0 lb-lft |
| Length Options | 9", 12”, 24", 36" |

| | |
|---|---|
| Radial Magnetic Fields (12") | 5 |
| Radial Magnetic Field Diameter | 7” |
| Magnetic Surface Area (12") | 328.7 $in^3$ |



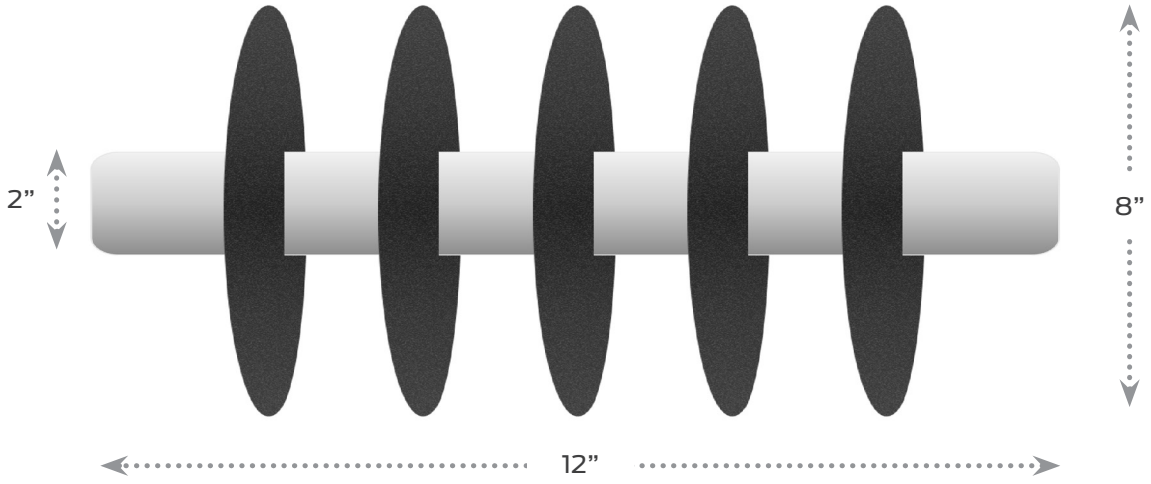



## 2” OD X 12” L

### SPECIFICATIONS

| | |
|---|---|
| Holding Strength | 740 ft-lb |
| Dirt Holding Capacity | 31.3 lb-lft |
| Length Options | 9", 12”, 24", 36" |

| | |
|---|---|
| Radial Magnetic Fields (12") | 5 |
| Radial Magnetic Field Diameter | 8” |
| Magnetic Surface Area (12") | 420.9 $in^3$ |



# MAGNETIC FILTER SCRUBBER - IL

## DESCRIPTION

Magnetic filter scrubbers employ a magnetic filter element in a specialty housing designed to operate with minimal flow restriction and maximum fluid exposure for high-efficiency filtration. Flow is regulated by the diameter of the inlet-outlet supply pipe as well as fluid velocity. With a billet aluminum housing, this scrubber installs inline for low-pressure, light viscosity, low-flow applications.

## BENEFITS

- Minimal flow restriction allows for suction line installation and pump protection.
- High holding capacity allows for extended planned maintenance periods.
- Acts as an effective predictive maintenance tool if contamination is collected and analyzed to determine sources of equipment component wear.

| | |
|---|---|
| FUEL | COOLANT |
| ENGINE OIL | CHEMICALS |
| HYDRAULIC FLUID | WATER |


## CLEANING

Magnetic Filter Element: Remove the contamination with a lab cloth/non-fiber cloth that absorbs the contamination. Save the cloth in a sample bag to send for analysis.

Use the magnetic filter element as a predictive maintenance tool by removing contamination with a lab cloth or rubber glove and depositing it into a sample jar. Send the contamination for analysis to determine the source of equipment component wear and prevent system failure.

## EFFICIENCY

| | | |
|---|---|---|
| Magnetic Filter Element | Ferrous Contamination | Captures ferrous wear particles down to 4 µ and below with up to 95+% efficiency. |
| | Non-ferrous Contamination | Non-ferrous particles are magnetically captured because of cross-contamination from static charge or embedded ferrous particles. |

## OPERATING PARAMETERS

| Part Number | Port Size | Housing Size | Flow Rate | | Pressure Rating | Temp. rating | Magnetic filter element |
|---|---|---|---|---|---|---|---|
| 5IL04 | ¾" | 2 ¼" OD x 6" H | Single-pass | 2 gpm (7.6 L/min) | 6.9 bar (100 psi) | 105º C (221° F) | ½" OD |
| | | | Multi-pass | 4 gpm (15.1 L/min) | | | |
| 5IL05 | 1" | 2.4" OD x 7 ¼" H | Single-pass | 3 gpm (11.4 L/min) | 6.9 bar (100 psi) | 105º C (221° F) | ¾" OD |
| | | | Multi-pass | 6 gpm (22.7 L/min) | | | |
| 5IL905 | ¾" | 2.4 OD x 9 ¼" H | Single-pass | 3 gpm (11.4 L/min) | 6.9 bar (100 psi) | 105º C (221° F) | ¾" OD |
| | | | Multi-pass | 6 gpm (22.7 L/min) | | | |

## MATERIALS

| | | |
|---|---|---|
| Magnetic Filter Element | Rare-earth magnets configured in a patented radial field design. | |
| Filter Housing, Drain Plugs, End Caps, Mounts | Standard | Billet Aluminum |
| | Specialty Materials | » Stainless Steel<br>» Other alloys available |
| Seals | Standard Heat | Buna |
| | HIgh Heat | Viton |
| | Sub-zero | EDPM |

## INSTALLATION

| | |
|---|---|
| Port Type | ORB |
| Element Clearance | Housing length + 4" |

## LIMITED WARRANTY

| | |
|---|---|
| Magnetic Filter Element | 3 years |
| Housing and Components | 1 year |

## SERVICE LIFE

| | |
|---|---|
| Magnetic Filter Element | 18+ years |

ONE EYE INDUSTRIES

SOLVING TOMORROW'S CHALLENGES, TODAY.

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