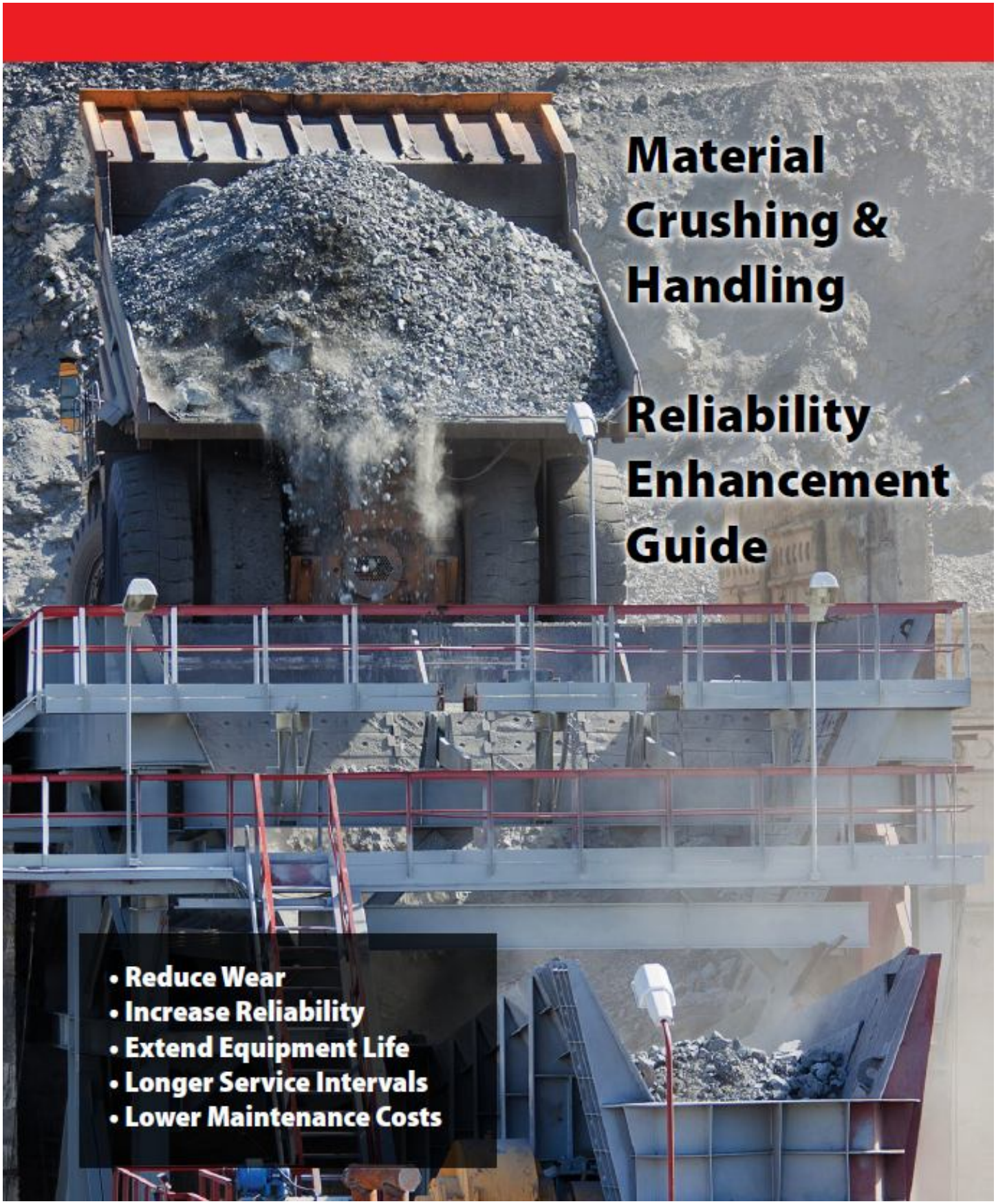
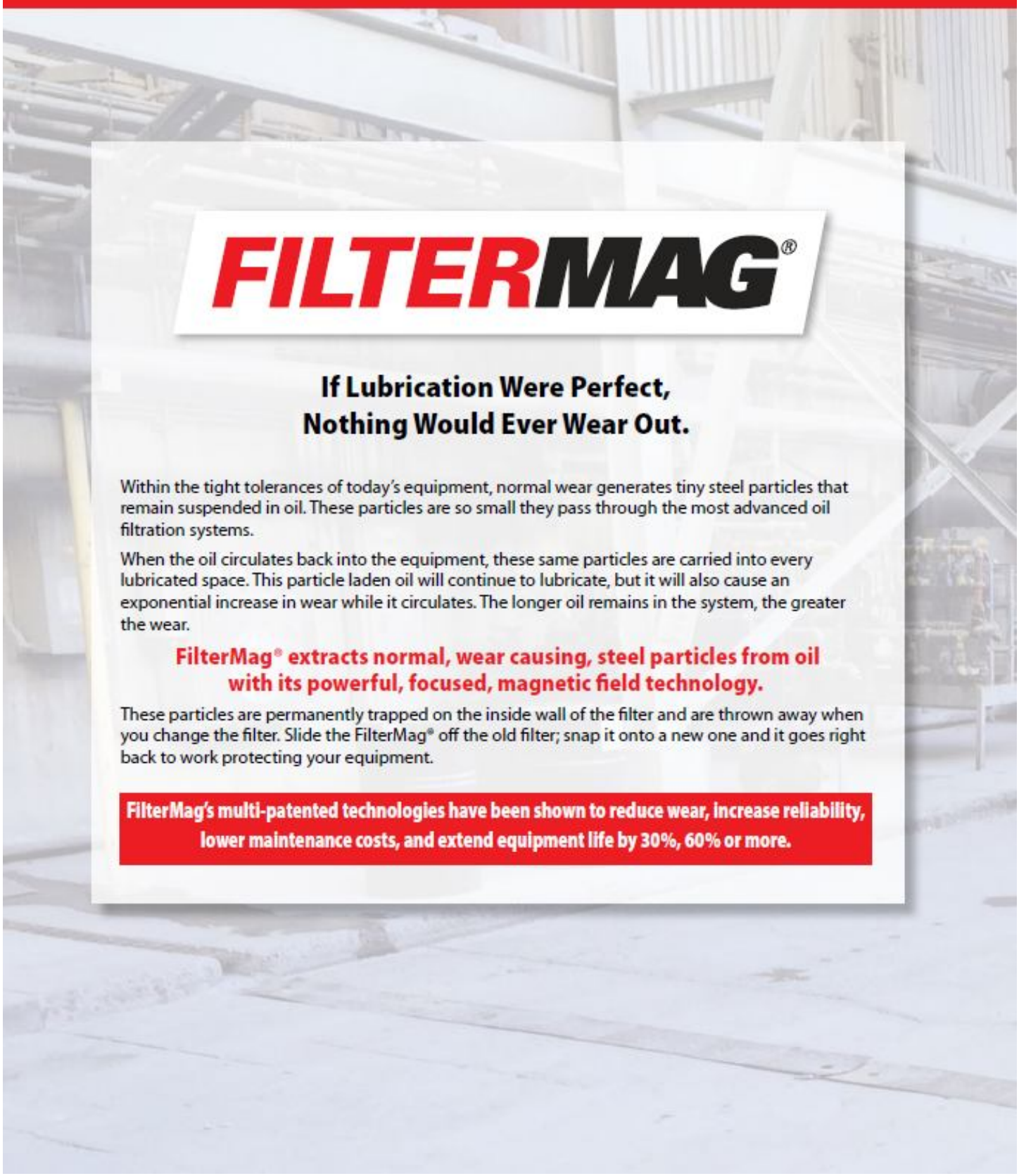


CRANSERCO

Mobile Cranes



FILTERMAG®

If Lubrication Were Perfect, Nothing Would Ever Wear Out.

Within the tight tolerances of today's equipment, normal wear generates tiny steel particles that remain suspended in oil. These particles are so small they pass through the most advanced oil filtration systems.

When the oil circulates back into the equipment, these same particles are carried into every lubricated space. This particle laden oil will continue to lubricate, but it will also cause an exponential increase in wear while it circulates. The longer oil remains in the system, the greater the wear.

FilterMag® extracts normal, wear causing, steel particles from oil with its powerful, focused, magnetic field technology.

These particles are permanently trapped on the inside wall of the filter and are thrown away when you change the filter. Slide the FilterMag® off the old filter; snap it onto a new one and it goes right back to work protecting your equipment.

FilterMag's multi-patented technologies have been shown to reduce wear, increase reliability, lower maintenance costs, and extend equipment life by 30%, 60% or more.

Caterpillar 3516 Engine Case Study

Caterpillar 3516

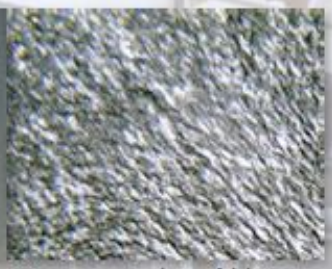
A noted Ph.D. Analytical Chemist and Lab Manager at a large equipment dealer wanted to know ***"how many particles would be caught by FilterMag® that would otherwise pass through the four onboard 3516 oil filters?"*** A newly rebuilt 3516 was broken in on the dealer's dynamometer and the filters and oil were discarded. Each of the new filters were equipped with two FilterMag® CT4.9s encircling the filter (closest to the threaded end). The engine was run for one hour on a dynamometer.

The results were stunning.

In one hour of operation, over 134,000,000 particles below 21µm were captured and held against the inside wall of the oil filter.

None of the particles can be seen individually. However, under 45X magnification the particles can been seen aligning themselves to the CT4.9's magnetic field.

Particles captured by FilterMag® on inside of filter canister.



45X microscopic photo of debris captured by FilterMag® on side of filter canister.

PV 271 Compressor Case Study

Atlas Copco PV271

Each of four oil filters protecting a PV271 compressor were fitted with two FilterMag® CT4.9s. The results were stunning.

- 84% overall reduction in particles ≥4µm was achieved.
- 300% increase in life extension was yielded from ISO contamination code drops at >6µm and >14µm particle sizes.
- The life extension was established using Noria's Life Cycle Multipliers for Diesel Engines and Hydraulics.
- FilterMag® is a one time expense designed for a 10-year service life. Use it over and over when each oil filter is replaced, or as you replace equipment.

Particle Count	Sample 3	Sample 2	Sample 1	No FilterMag
ISO 4406 Rating	19/16/11	21/18/11	21/18/12	22/20/15
>4 Micron	3258	10907	10474	20518
>6 Micron	498	1424	1785	8955
>14 Micron	14	19	35	285

Fewer Particles in Oil = Higher Reliability + Longer Life

Sierrita Secondary Crusher

Ten of the 12 secondary crushers use fixed canister filtration systems. Two of these use a six filter bank of spin-on filters.

- Install two FilterMag® CT4.9s opposite of each other near the threaded end of each of four CAT 1R-0716 filters.
- 12 CT4.9s required for all six filters on each cluster.
- 24 CT4.9s required for both crushers.

Two FilterMag® 4.9s.

Each spin on filter set is also accompanied by a single spin on Sandvik hydraulic filter.

- Install four CT3.8s opposing each other near the threaded end on the SANDVIK 912.0129 filter.
- Four CT3.8s required for each crusher.
- Eight CT3.8s required for both crushers.

SANDVIK 912.0129 filter.

Four FilterMag® CT 3.8s.

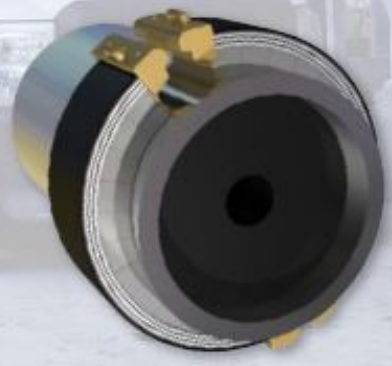
The remaining 10 secondary crushers use a fixed Donaldson four canister reverse flow high capacity filtration system.

On each of the four canisters, install two XT8s approximately in the position occupied by the yellow filter label.

The XT8s should be installed as close to the filter cap as possible with out impeding its operation.

In this case, the filter outlet may prevent both XT8s from directly opposing each other. Two alternatives configurations may apply. First is a stacked configuration in a clear area as shown in the example below. The stack should be as close to the top of the filter cap as possible. The second alternative is placing one XT8 on the yellow filter label with one edge abutting the output. The second XT8 would be placed below the first but on the other side of the canister and abutting the other side of the filter outlet. This would reasonably maintain encirclement of the oil flow as it enters the filter cartridge.

- Eight XT8s required per crusher.
- 80 XT8s required for all 10 crushers.



Concentric installation of two XT8 FilterMags.

Concentric installation of two XT8 FilterMags.

Stacked installation of two XT8 FilterMags.

Safford Processing Equipment

Safford Leach Pad Stacker

- Install four CT4.9s opposing each other near the threaded end on each of the four filters.
- 16 CT4.9s required per station.
- 48 CT4.9s required for all three stations.

FilterMag® CT4.9s.

Safford Hydraulic System

- Hydraulic canister filter requires two XT5s installed as close to the filter cap as possible with out impeding its operation.
- 2 XT5s required.

FilterMag® XT4s shown.

Safford Rock Breaker for Primary Crusher

- Install four XT4s opposing each other near the opening end of the canister.
- Four XT4s required.

Four FilterMag® XT4s.

Why put four FilterMag's on hydraulic Filters?

Particles generated by Hydraulic systems are smaller than those circulating in lubricating oil.

These smaller particles require a greater amount of time to be captured.

Multiple FilterMags extend the time the particles are influenced and attracted by the magnetic field.

Applications	Filters Used, Qty.	Type/Dia. inches (mm)	Applicable FilterMag®
Sierrita Crushers with Spin-on Filters			
Secondary Crusher	CAT 1R-0716 (6)	Spin-on, 5.3 (135)	CT4.9 *(12 required)*
Secondary Crusher Hydraulic System	SANDVIK 912.0129 (1)	Spin-on, 3.6 (91)	CT3.8 *(4 required)*
Sierrita Crushers with Canister Filters			
Secondary Crusher	Canister (4)	Cartridge, 8 (203)	XT8 *(8 required)*
Safford Processing Equipment			
Leach Pad Stacker	Donaldson (4)	Spin-on, 4.5 (114)	CT4.9 *(16 required)*
Secondary Crusher Hydraulic System	Canister (1)	Cartridge, 5 (127)	XT5 *(2 required)*
Primary Crusher Rock Breaker	Canister (1)	Cartridge, 4 (102)	XT4 *(4 required)*

- Gas & Diesel Engines
- Rotating Equipment
- Hydraulic Systems
- Diesel Fuel Filtration
- Most Spin-on Filters

Typical FilterMag® CT

FilterMag® CT for Spin-on Filters

Specifications

Order part # based on filter diameter			Dimensions			
Part #	Minimum	Maximum	Height	Thickness	Arc (Max)	Weight
CT3.2	2.9 in (74 mm)	3.5 in (89 mm)	2.65 in (67 mm)	.34 in (8.6 mm)	180°	9 oz (.26 kg)
CT3.8	3.6 in (91 mm)	4.2 in (107 mm)	2.65 in (67 mm)	.35 in (8.9 mm)	180°	14 oz (.40 kg)
CT4.9	4.4 in (112 mm)	5.5 in (140 mm)	2.95 in (75 mm)	.36 in (9.1 mm)	180°	19 oz (.54 kg)

Operating Temperature Range: -40F to +302F (-40C to +150C) • **Magnet Type:** N42SH (High Temperature Nd-Fe-B alloy) with Ni-Cu-Ni plating

FilterMag® CT Installation

Correct FilterMag® CT installation.

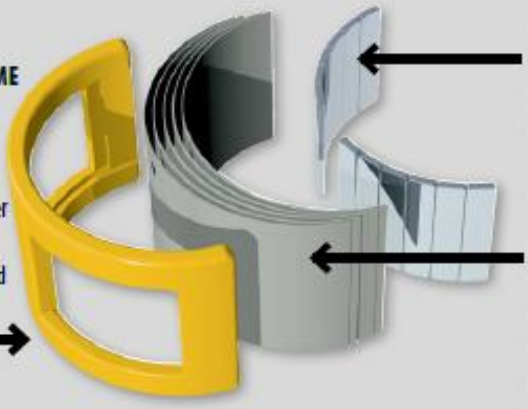
Installation Guidelines

1. Install two or more FilterMags on each spin-on filter opposite each other near the threaded end. Wear safety glasses.

2. Re-use FilterMags by sliding them off the old filter and snapping them on a new one when the filter is changed.
3. Never attempt to pry off a FilterMag.

FilterMag® CT: Powerful—Focused—Magnetic Field Technology

1. RUGGED FLEXIBLE FRAME encases and protects the elements of a FilterMag® while providing enough flexibility to fit a range of filter diameters. Our proprietary design and materials are rated for temperatures from -40°F to +300°F.



2. POWERFUL, HEAT-RESISTANT NEODYMIUM ALLOY MAGNETS are engineered to focus a magnetic field inside your filter. Specifically formulated to remain effective in the most extreme environments, our magnets are guaranteed to remove particles from oil operating at up to 300°F while most magnets start losing magnetism at 180°F.

3. PATENTED FLUXCON™ SHIELDING TECHNOLOGY stops magnetic flux which could damage electronic components. Not even a paper clip will stick to the outside of a FilterMag®. Our FluxCon™ system also redirects a portion of that magnetic power back into the filter to increase filtration efficiency.

FilterMag® XT for Cartridge Filters
Specifications

- Rotating Equipment
- Hydraulic Systems
- Gas & Diesel Engines
- For most fixed installation cartridge filters (not for mobile applications)

	Order part # based on housing diameter			Dimensions		
Part#	Minimum	Maximum	Arc (Max)	Weight	Height: Faceplate/Endcap	Thickness: Faceplate/Endcap
XT4	3.8 in (96 mm)	4.8 in (122 mm)	165°	3.5 lb	2.7" (68mm)/3.4" (86mm)	.9"(23mm)/1.4" (36mm)
XT5	4.8 in (122 mm)	5.8 in (147 mm)	170°	4.5 lb	2.7" (68mm)/3.4" (86mm)	.9"(23mm)/1.4" (36mm)
XT6	5.8 in (147 mm)	6.8 in (173 mm)	172°	5.5 lb	2.7" (68mm)/3.4" (86mm)	.9"(23mm)/1.4" (36mm)
XT7	6.8 in (173 mm)	7.8 in (198 mm)	174°	6.5 lb	2.7" (68mm)/3.4" (86mm)	.9"(23mm)/1.4" (36mm)
XT8	7.8 in (198 mm)	8.8 in (224 mm)	175°	7.5 lb.	2.7" (68mm)/3.4" (86mm)	.9"(23mm)/1.4" (36mm)

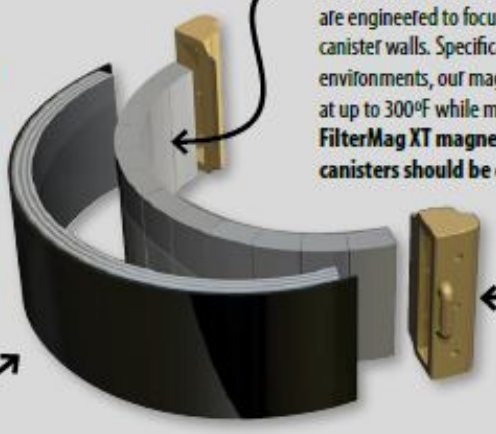
Operating Temperature Range: -40F to +302F (-40C to +150C) • **Magnet Type:** N42SH (High Temperature Nd-Fe-B alloy) with Ni-Cu-Ni plating

FilterMag® XT Installation

Install FilterMag® XTs in pairs opposite each other near the open end of the oil filter housing.

FilterMag® XT installation.

FilterMag® XT: Powerful—Focused—Magnetic Field Technology



PATENTED FLUXCON™ SHIELDING TECHNOLOGY stops magnetic flux from emanating out the back of the FilterMag. Our FluxCon™ system also redirects a portion of that magnetic power back into the filter to increase filtration efficiency.

XTREMELY POWERFUL, HEAT-RESISTANT NEODYMIUM ALLOY MAGNETS are engineered to focus a magnetic field inside your filter through even the thickest canister walls. Specifically formulated to remain effective in the most extreme environments, our magnets are guaranteed to remove particles from oil operating at up to 300ºF while most magnets start losing magnetism at 180ºF. **CAUTION: FilterMag XT magnets are so powerful that any installation on steel filter canisters should be considered permanent.**

SECURITY END CAPS integrate all the parts of a FilterMag XT while allowing enough flexibility to fit a range of filter housing sizes. Our proprietary anchoring technology ensures component integrity even under extended periods of extreme vibration. Built in slots for use with stainless steel band clamps allow attachment to aluminum filter housings or for redundant security when used in an overhead environment.

How to hold the XT during installation

Correct way to hold the XT during installation.

Don't let your fingers get between the magnets and the filter housing or serious injury could result.

FilterMag® XT for Cartridge Filters

Installation Instructions

1. The FilterMag® XT is designed for permanent installation on cartridge style oil filter housings with diameters from 3.8"–8.8" (96mm–224mm). **Never attempt to pry off a Filtermag® with a screwdriver.**
2. Choose a location for installation near the open end of the oil filter housing. Installation location should be free of obstructions, debris and dirt. **Wear safety glasses.**
3. Hold the XT by the edges as shown in the photo. Position the XT near the intended installation location. As you get close to the oil filter housing, the powerful magnets of the FilterMag will suddenly pull the XT onto the housing.

   Caution. Extreme magnetic energy. Objects, clothing, gloves, and fingers can become permanently trapped between the FilterMag XT and the oil filter housing during installation.
4. **Aluminum Housings**—Use a band clamp through the slots on the XT's end caps to position and secure the XT to the housing.
5. **Clean Out**—When replacing the filter cartridge, reach inside the housing with a clean, lint free, damp cloth and wipe away the wear-causing particles captured by the FilterMag XT.

FilterMag® Limited Industrial Product Warranty

We warrant this FilterMag® to be free from manufacturing defects for a period of five years from the date of purchase for CT or XT Series products or other FilterMag® products specifically designated for use in industrial applications. All implied warranties are only valid for the same periods. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. At our discretion we will repair or replace, at no charge to you, any FilterMag® found to be defective in materials or workmanship within the specified coverage period. This warranty does not apply to damage from improper handling resulting in damage to the plating of magnetic surfaces. This warranty does not apply to damage resulting from accident, abnormal use, misuse, abuse, neglect, or failure to follow the manufacturer's instructions. We specifically disclaim all warranties whether implied or expressed when FilterMag® industrial products are used in consumer or personal use applications. We will not be liable for damages whether incidental, consequential or otherwise, resulting from a defective FilterMag®. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. To file a warranty claim please contact us.

About FilterMag®

FilterMag® is a privately-owned company based in Scottsdale, Arizona. It manufactures and markets products using patented technology based on a powerful, focused magnetic field. When attached to the outside of conventional filters of lubrication fluid, the products remove and hold harmful contaminants: microscopic particles less than 20 microns in size that a conventional filter unequipped with FilterMag® would allow to continue circulating and cause costly damage to critical capital assets.

Its technology has been shown to reduce wear, increase reliability, cut maintenance costs and extend equipment life up to 60% or more. For FilterMag® users, extended life of equipment means lower capital expenditures. Improved reliability and lower operating costs add up to more profitability.

FilterMag® products are used in vehicles and machinery associated with mining and aggregates, oil and gas, heavy construction, manufacturing, solid waste management, transit and other industries where mechanical reliability, durability and low maintenance costs are crucial to financial performance.

FILTERMAG®