**When absolute reliability of your lubricated components is critical, you need ...**

# FILTERMAG®


## Magnetic Fluid Filtration

- **Reduces wear**
- **Extends Equipment Life**
- **Lowers Maintenance Costs**


9/19/16

## If lubrication were perfect, nothing would wear out.

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

When the oil circulates back into the equipment, these same particles are carried into every lubricated space. This particle-laden oil continues to lubricate AND cause an exponentially increased wear. The longer this contaminated oil remains in the system, the greater the destruction of the lubricated systems.

**FilterMag extracts normal, wear causing, steel particles from fluids with its powerful, focused, magnetic field technology without restricting oil flow.**

**FilterMag on the outside . . .** Four pairs of FilterMag XT8s are mounted on the outside of two 8" diameter canister oil filters.

**Results on the inside . . . This metallic goo is comprised of billions of microscopic steel particles** magnetically captured by FilterMag – not the internal oil filter element.

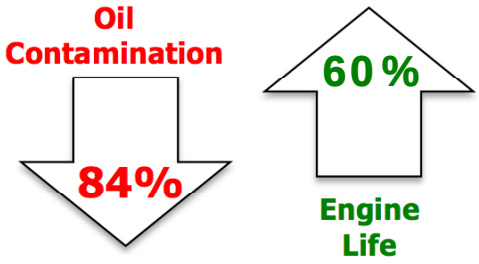
**FilterMag is applied to the outside of existing filtration systems**

**NO CHANGES are required to existing system**

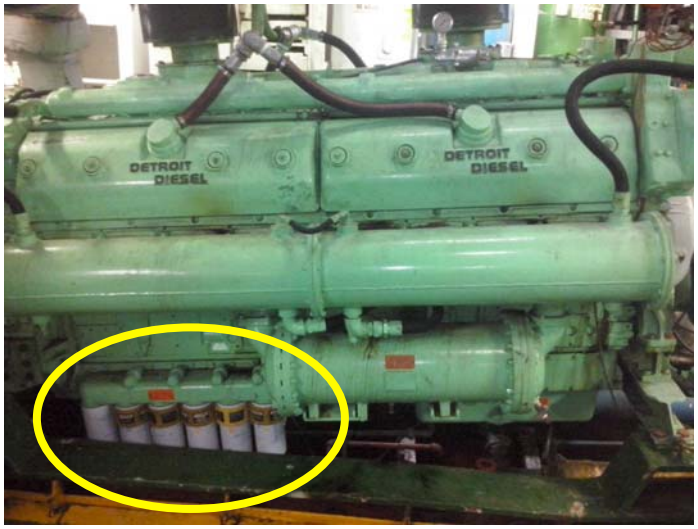
**FilterMag CTs are to applied to spin on filters & last up to 10 years**

**FilterMag XTs are applied to canister filters & last up to the life of the canister**

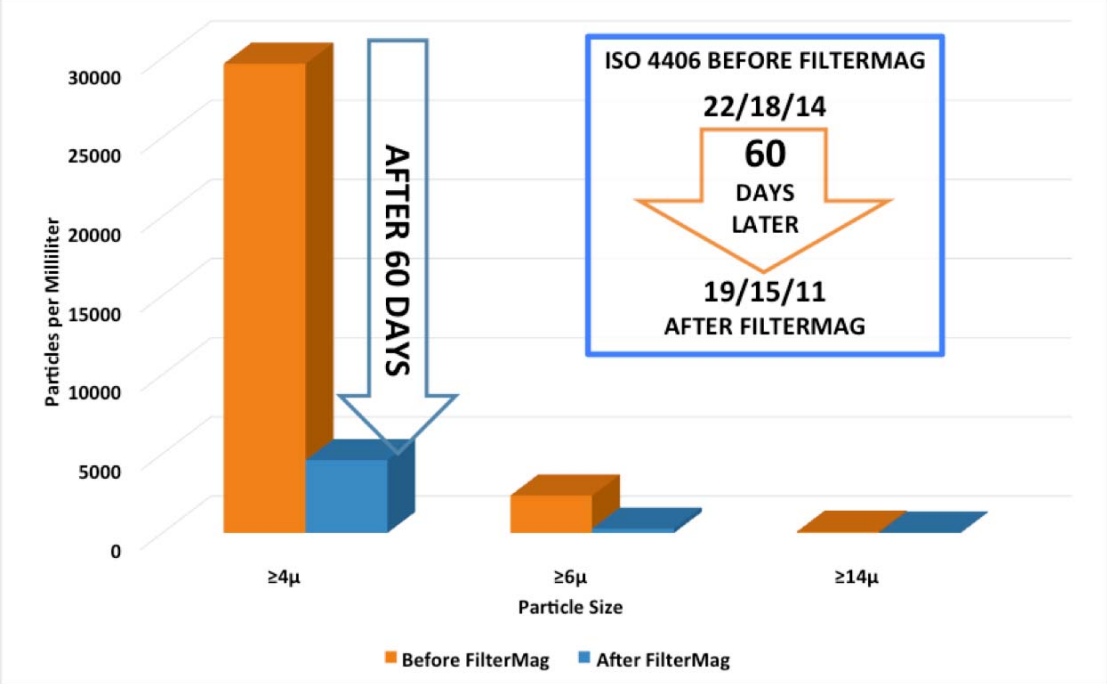
## DIESEL PROPULSION Detroit Diesel Series 149 engines powering tugboat




***FilterMag SAVED $81,396 from reduced hourly operating costs*** due to longer engine life. Customer paid $8,952 to protect a $150,000 engine and received 60% extended life and reliability.

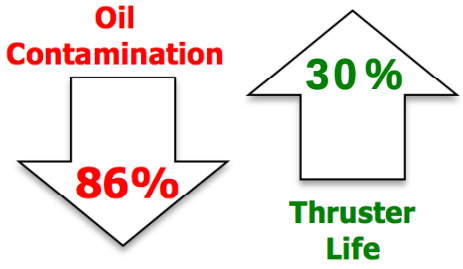



**Test process:** an engine oil sample was taken. One pair of CT4.9s was then placed on each oil filter. A second sample was taken after two month's operation and compared to the first.



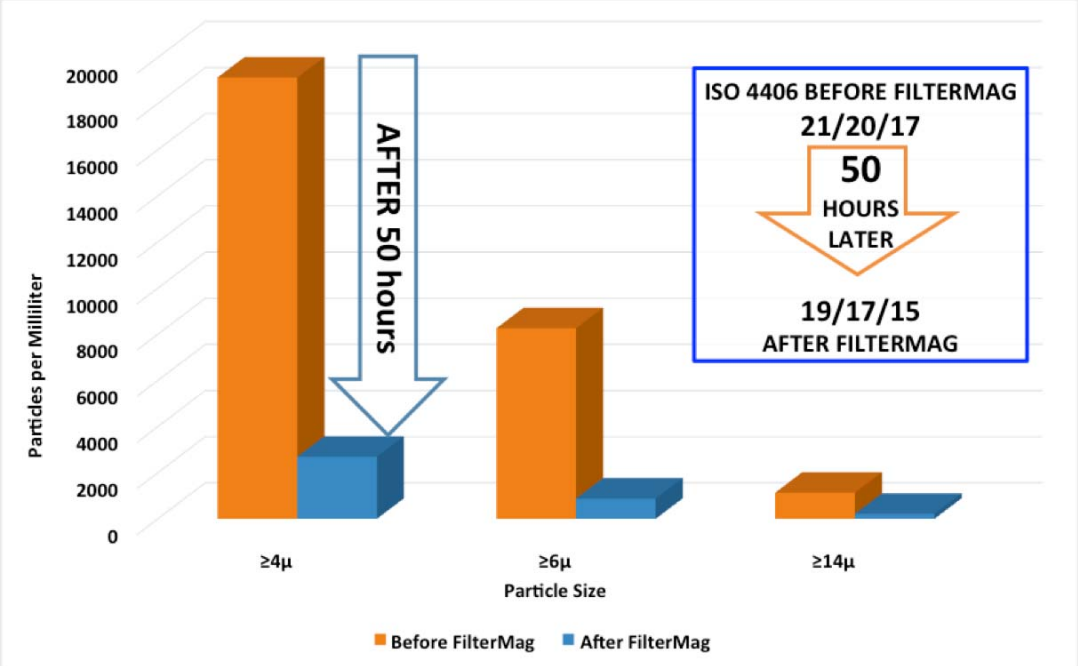

***Oil contamination ≥ 4µm particle sizes dropped 84% extending engine life and reliability by 60%.***

## THRUSTER PROPULSION LIPS FS 500-226/500 MNR 1,100 HP thrusters



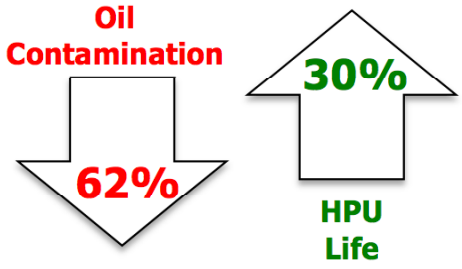

***FilterMag SAVED $147,600 from reduced hourly operating costs*** due to longer engine life. Customer paid $6,000 to protect his $500,000 thruster and received 30% extended life and reliability extension.

**Test process:** a thruster gear oil sample was taken. Two pairs of XT4s were then placed on the thruster's oil filter. A second sample was taken after 50 hours of operation and compared to the first.



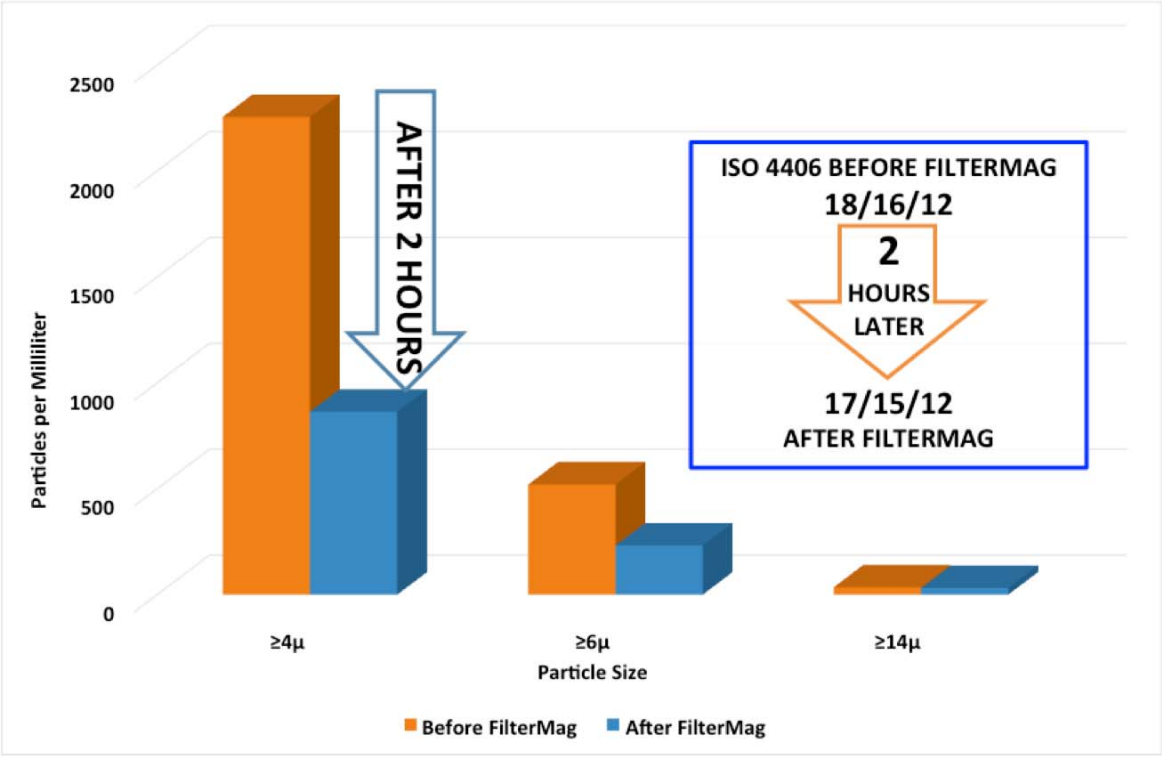

***Oil contamination ≥ 4µm particle sizes dropped 86% extending thruster gear train life and reliability by 30%.***

## MARINE HYDRAULIC CRANE Hydraulic Pressure Unit




***FilterMag SAVED $6,116 from reduced hourly operating costs*** due to longer hydraulic system life. Customer paid $3,000 to protect $35,000 HPU and received 30% extended life and reliability.

**Test process:** a major marine crane manufacturer performed a bench test in their hydraulics laboratory. A sample was taken from the lab HPU and then FilterMag CT4.9s were applied. A second sample was taken after two hours of operation and compared to the first.




***Oil contamination ≥ 4µm particle sizes dropped 86% extending hydraulic pressure unit life and reliability by 30%.***

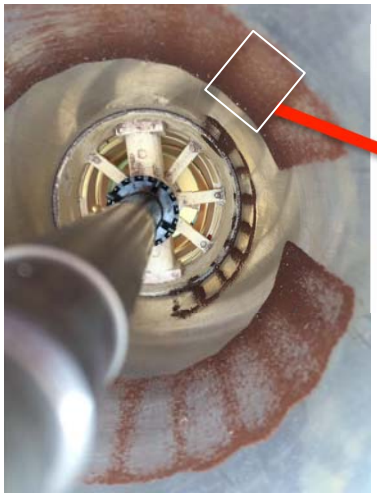
# HELICOPTER AVIATION FUEL Onboard Storage Tank

**Problem:** Rust particles, that were too small to be stopped by avgas fuel filters, were damaging helicopter fuel injection systems. Excessive helicopter downtime extended time to obtain full capacity catches.

**Test process:** Two pairs of FilterMag XT6s were mounted to each of the aviation fuel tank filters.

**Results:** Visual inspections satisfied the customer who then purchased XT6s for his entire fleet. Pictures below are of opened filters with the FilterMags still in place to hold captured materials.


***FilterMag on the outside . . . placement of XT6s on bulk fuel filter.***



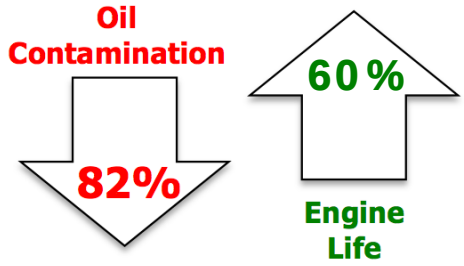
***Results on the inside . . . Red arrow points to enlarged section of rust captured from aviation fuel tanks***

***FilterMag prevented these rust particles from attacking fuel injectors and entering the combustion chamber.***

***Engine wear and injector degradation are reduced. Less downtime – more fishing.***

***What's in your fuel?***

# IN-PORT RAIL CAR MANAGEMENT Trackmobile Rail King RK285




***FilterMag SAVED $33,472 from reduced hourly operating costs*** due to longer engine life. Customer paid $5,168 to protect a $95,600 engine and received 60% extended life and reliability.

**Results:** an engine oil sample was taken. Two pairs of CT4.9s were then placed on the oil filter. A sample was taken after 250 hours of operation and compared to the first.

***FilterMag on the outside . . . placement of two pairs of CT4.9s on the engine oil filter.***

**After one month of operation with FilterMag . . .**

***Results on the inside . . . Millions of particles <25 µm (which is the normal engine filter specification) passed through the oil filter and were captured by FilterMag. What's getting by your filter?***

# HYDRAULICALLY POWERED WINCH

**Problem:** Rust particles - *too small to be stopped by their hydraulic filters* - were scouring actuator valves controlling the winch. This caused problems with reliability, downtime and extended times to complete the catch.

**Test process:** Two pairs of FilterMag CT4.9s were mounted to each of the hydraulic filters.

***FilterMag on the outside . . .***

***Less downtime, more fishing time.***

***What does it cost to lose a day of fishing?***

**Results:** Satisfied with this visual evidence, the customer applied FilterMags to the hydraulic systems that powered his winches.

Below is the opened hydraulic filter. The trapped particles were could not be stopped by the normal filter. They were continuously circulating and damaging the hydraulic system components.

***Results on the inside . . . This collected debris was routinely passing through the hydraulic filtration and damaging operating valves. Is this happening in your HPUs?***

# REFRIGERATION Ammonia Compressor

**Problem:** Screw compressors are extremely sensitive to particle contamination and fail quickly. The refrigerant (ammonia) carried wear particles throughout the system and systematically reduced reliability.


*FilterMag on the outside . . . of the compressor housing*

**Test process:** A pair of FilterMag CT4.9s was mounted on the compressor housing to determine what materials could be trapped.

**Result:** In only 24 hours of operation FilterMag trapped millions of particles. The customer implemented FilterMag for his fleet refrigeration systems.

*Results on the inside . . . Millions of particles that passed through the filter are highlighted in the white circles shown on this photograph.*

# GENSET DIESEL ENGINE Lube Oil and Fuel Filtration

**Problem:** Onboard gensets experiences premature failures. Oil and fuel contamination were the root cause. Applying better filtration could not be done due to lack of space, downtime and cost.

**Engine lube test process:** Two pairs of FilterMag CT4.9s were mounted to each engine's lubrication filters.



**Engine result:** After 24 hours of continuous operation a substantial amount of particles (>10 million) were collected that would have normally passed through the 25µm filters. *These particles are responsible for abnormal wear of engine components. FilterMags have been installed on each genset to reduce wear, extend engine life and improve reliability.*

**Diesel fuel test process:** Two pairs of FilterMag CT3.8s were mounted to each of the engine's fuel filters.


***Two pairs of CT3.8s were mounted on the outside of the fuel filter.***

**Fuel result:** After 24 hours of continuous operation a substantial amount of rust particles that were below the size of the filter's porosity limit (i.e. 5 µm) were captured. Millions of these particles were removed from the fuel before they could damage fuel injectors. *The customer realized these particles are responsible for abnormal injector wear and retrofitted his gensets with FilterMag.*


***FilterMag caught millions of microscopic rust particles that passed through the fuel filter.***

# Cartridge Filters USE XT


**Applications:** Rotating Equipment • Hydraulic Systems
Gas and Diesel Engines • For most cartridge filters

**Order part # based on outside filter housing diameter**

| Pairs | | Fits Outside Housing Diameters | | Dimensions | | | |
|---|---|---|---|---|---|---|---|
| Part# | Qty. | Minimum | Maximum* | Height: Faceplate/Endcap | Thickness: Faceplate/Endcap | Arc (Max) | Weight |
| XT4PR | 2-ea. | 3.8 in (96 mm) | 4.8 in (122 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 330° | 7.0 lb (3.2 kg) |
| XT5PR | 2-ea. | 4.8 in (122 mm) | 5.8 in (147 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 340° | 9.0 lb (4.1 kg) |
| XT6PR | 2-ea. | 5.8 in (147 mm) | 6.8 in (173 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 344° | 11.0 lb (5.0 kg) |
| XT7PR | 2-ea. | 6.8 in (173 mm) | 7.8 in (198 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 348° | 13.0 lb (5.9 kg) |
| XT8PR | 2-ea. | 7.8 in (198 mm) | 8.8 in (224 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 350° | 15.0 lb. (6.8 kg) |
| **Single Replacement—Special Order** | | | | | | | |
| XT4 | 1-ea. | 3.8 in (96 mm) | 4.8 in (122 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 165° | 3.5 lb (1.6 kg.) |
| XT5 | 1-ea. | 4.8 in (122 mm) | 5.8 in (147 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 170° | 4.5 lb (3.0 kg.) |
| XT6 | 1-ea. | 5.8 in (147 mm) | 6.8 in (173 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 172° | 5.5 lb (3.5 kg.) |
| XT7 | 1-ea. | 6.8 in (173 mm) | 7.8 in (198 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 174° | 6.5 lb (2.9 kg. |
| XT8 | 1-ea. | 7.8 in (198 mm) | 8.8 in (224 mm) | 2.7" (68mm)/3.24" (82mm) | .9"(23mm)/1.4" (36mm) | 175° | 7.5 lb. (3.4 kg.) |

**Operating Temperature Range**: -40F to +302F (-40C to +150C) • **Magnet Type:** N42SH (High Temperature Nd-Fe-B alloy) with Ni-Cu-Ni plating
*Maximum size may be significantly less on Aluminum and Plastic Housings.

## XT INSTALLATION



*Correct way to hold the XT.*


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

1. **The FilterMag XT Series 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.** 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.

1-800-FilterMag • 480-991-9939 • FilterMag.com

FILTERMAG®
INDUSTRIAL PRODUCTS DIVISION

# Spin-on Filters USE CT


**Applications:** Gas & Diesel Engines • Diesel Fuel Filtration • Rotating Equipment
Hydraulic Systems • For most cartridge filters

## Order part # based on oil filter diameter

| Pairs | | Fits Spin-on Filter Diameters | | Dimensions | | | |
|---|---|---|---|---|---|---|---|
| Part # | Qty. | Minimum | Maximum* | Height | Thickness | Arc (Max) | Weight |
| CT3.2PR | 2-ea. | 2.9 in (74 mm) | 3.5 in (89 mm) | 2.65 in (67 mm) | .34 in (8.6 mm) | 360° | 18 oz (.52 kg) |
| CT3.8PR | 2-ea. | 3.6 in (91 mm) | 4.4 in (112 mm) | 2.65 in (67 mm) | .35 in (8.9 mm) | 360° | 28 oz (.80 kg) |
| CT4.9PR | 2-ea. | 4.5 in (114 mm) | 5.5 in (140 mm) | 2.95 in (75 mm) | .36 in (9.1 mm) | 360° | 38 oz (1.08 kg) |
| **Single Replacement—Special Order** | | | | | | | |
| CT3.2 | 1-ea. | 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 | 1-ea. | 3.6 in (91 mm) | 4.4 in (112 mm) | 2.65 in (67 mm) | .35 in (8.9 mm) | 180° | 14 oz (.40 kg) |
| CT4.9 | 1-ea. | 4.5 in (114 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
*Maximum size may be significantly less on Aluminum and Plastic Housings.

## CT INSTALLATION—SNAP ON • SLIDE OFF • REUSE

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 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: Returns@FilterMag.com

FILTERMAG®
INDUSTRIAL PRODUCTS DIVISION

FilterMag International, Inc.
7440 East Karen Dr. • Scottsdale, AZ 85260
1-800-345-8376 • +01-480-991-9939