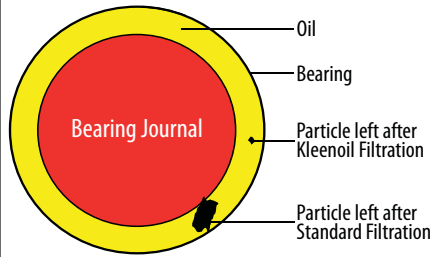


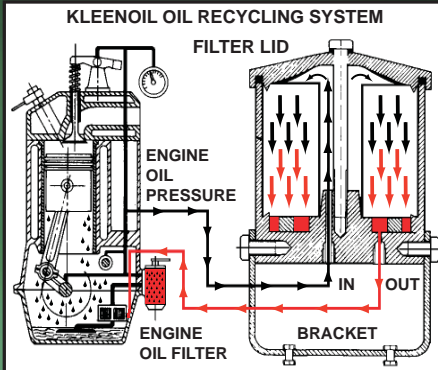
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Identical bearings from a Catapiller 3406C that was hauling a Tandam Milk Truck Trailer. In the past, the bearing on the left had to be regularly changed out due to the strain on the motor from the liquid load shifting back and forth during movement. The bearing on the right came from the same truck that now has a Kleenoil Onboard Oil Recycling System with over 1,000,000 miles on the motor. Seeing is believing!



- Added to existing full flow engine filtration
- Filters particles down to 1-micron (3 absolute) in size
- Removes water to 0.05%
- Does not remove additive package components in oil
- Quick and easy no mess cartridge change
- High efficiency densely wound filter cartridge

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the new color of your bottom line!

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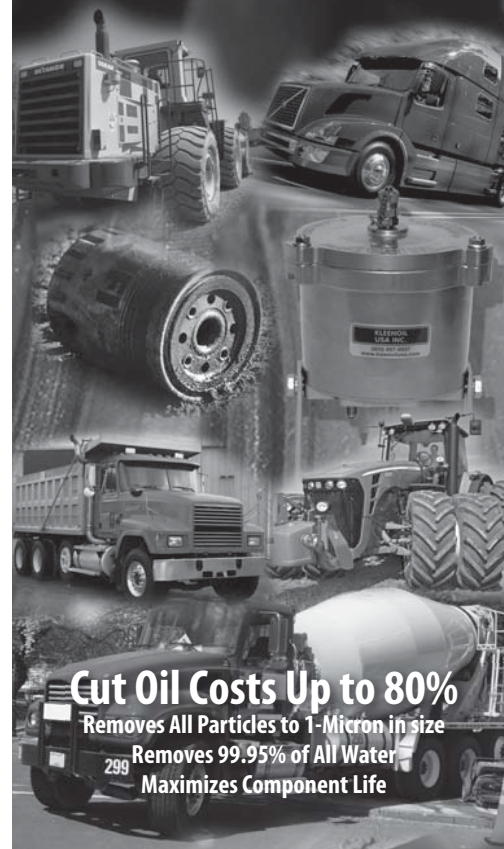
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Run All Your
Equipment on Clean
Oil All The Time!



Cut Oil Costs Up to 80%
Removes All Particles to 1-Micron in size
Removes 99.95% of All Water
Maximizes Component Life

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Features and Benefits

Removes Dirt and Contaminants

Dirt and wear metals will always be present in hydraulic and engine oil. The reasons that most fluid changes are done is to get rid of the dirt and contaminants. Standard full flow filtration at best, will filter oils down to approximately 35 microns in size in engines and 20 microns in hydraulic systems. Accelerated wear and damage occurs somewhere around 3 to 6 micron. Using Kleenoil Onboard Oil Recycling Systems, you will filter the fluid down to 1 micron in size, reducing the chance of wear and ultimately reducing the number of engine failures and rebuilds that would have been needed to be performed during the life of the unit.

Eliminates Water

Water will always be present because of condensation from the heating and cooling of components in an engine. Diesel fuel used as the source of combustion contains sulfur. Small amounts of fuel will pass by the piston rings and down into the oil. The sulfur will mix with the water resulting in sulfuric acids. The Kleenoil Onboard Oil Recycling System will remove all the water down to less than 0.05%, reducing the formation of sulfuric acid that will cause accelerated wear to engine components.

Doesn't Remove Desirable Elements

Certain components are purposely placed in lubricating oil to make it effective. Some of these additives include dispersants, detergents, oxidation and rust inhibitors, pour-point depressants, metal de-activators, and anti-foaming and gelling agents. While the Kleenoil Onboard Oil Recycling System removes dirt, contaminants, wear metal particles, and water, it does not remove the oil additives needed for continued use.

Reduces Oil Cost Up to 80%

Oil can be run longer as long as it is kept clean, free of water, and still maintains its additive package. Proper oil analysis will indicate the life of the oil, but on average oil drains can be extended 3 to 5 times what it would be without the Kleenoil Onboard Oil Recycling System.

Reduces Time Needed for Service

Changing the Kleenoil Filter Cartridge requires less time than what is required to perform a conventional full fluid change. Simply remove the lid from the container, remove the old cartridge and install the new cartridge and seal. All this can be performed in less than five minutes and without worry of spilling oil and disposing of contaminated fluids.

Continuous Protection Provided

The Kleenoil Onboard Oil Recycling System is installed to filter the fluid whenever there is oil pressure. Once the engine or the hydraulic pump is activated and there is fluid pressure, the fluid is continuously passing through the densely wound filter cartridge. The cartridge is wound with pure coniferous long fiber wood pulp paper. The design allows the water to be extracted from the fluid and still allows the larger oil molecules to pass through unchanged. The dirt and wear particles are trapped in the filter giving you a continuous, self-contained recycling system.

Good for the Environment

Because the fluid is being recycled inside of its own application, longer drain intervals can be realized. Disposing of the used, contaminated oil also creates a risk to the environment for future generations. Reducing the amount of fluid that has to be discarded, reduces the impact on the already taxed environment. Whenever fluid change is required to be done, there is always a risk of spills and ground contamination. Reducing the number of full drains reduces the risk dramatically.

Unit and Cartridge Selection

Hydraulic Capacity	Engine Sump Capacity	System Required	Cartridge Required
Not Applicable	Up to 6 Quarts	KU06	KF06/KC06
Up to 60 Gallons	Up to 16 Quarts	KU16	KF16/KC16
Up to 200 Gallons	Up to 50 Quarts	KU50	KF50/KC50
Up to 300 Gallons	Up to 65 Quarts	KU65	KF65/KC65
Up to 400 Gallons	Up to 85 Quarts	KU85	KF85/KC85

Note: For Optimum Protection step up one size if you are near the upper limit of the oil volume as indicated.



Component Life Extension

The following chart clearly demonstrates the effectiveness of the Kleenoil Onboard Oil Recycling System by showing the number of times that the life of engine and hydraulic components can be extended. The area highlighted in yellow shows the number of times that the life of a component would be extended when going from brand new oil right out of the barrel to oil that has been filtered using one of the Kleenoil Onboard Oil Recycling Systems.

Level of Cleanliness Code 4406 after running oil through the Kleenoil Onboard Oil Recycling System

	23/20	22/19	21/18	20/17	19/16	18/15	17/14	16/13	15/12	14/11	13/10
29/26	5	7	9	>10	>10	>10	>10	>10	>10	>10	>10
28/25	4	5	7	9	>10	>10	>10	>10	>10	>10	>10
27/24	3	4	5	7	9	>10	>10	>10	>10	>10	>10
26/23	2	3	4	5	7	9	>10	>10	>10	>10	>10
25/22	1.6	2	3	4	5	7	9	>10	>10	>10	>10
24/21	1.3	1.6	2	3	4	6	7	9	>10	>10	>10
23/20		1.3	1.6	2	3	4	5	7	9	>10	>10
22/19			1.3	1.6	2	3	4	5	7	8	>10
21/18				1.3	1.6	2	3	4	5	7	9
20/17					1.3	1.6	2	3	4	5	7
19/16						1.3	1.6	2	3	4	5
18/15							1.3	1.6	2	3	4
17/14								1.3	1.6	2	3
16/13									1.3	1.6	2

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Construction



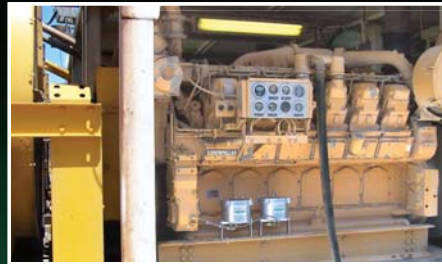
Oil Pump or Dirt Pump?

Filter (A)	ISO Code (B)	Dirt (lbs.) (C)	50 lb Bags	Relative Pump Life
25 micron nominal	21/18	6784	136	1
10 micron nominal	19/16	1809	36	1.9
10 micron absolute	16/13	211	4.2	4.4
6 micron absolute	14/11	53	1	8.8
3 micron absolute	12/9	14	0.28	15

All figures are approximations. © Copyright 2002 Noria Corporation

At ISO 14/11, only one 50-lb. bag of dirt passes through the pump. At ISO 21/18, this hydraulic system passes 136 50-lb. bags of dirt through the teeth of the pump in one year.

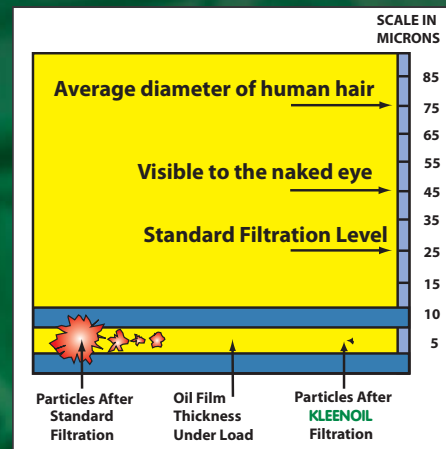
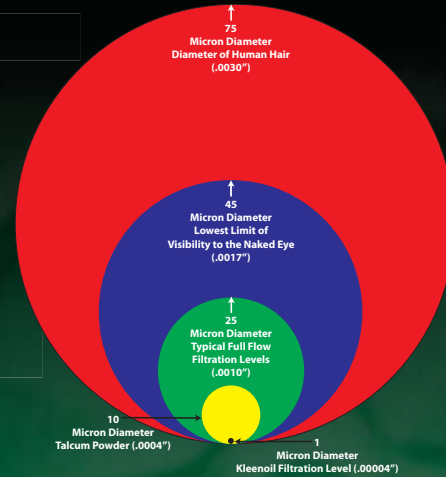
Oil Field Applications



Government / Municipalities



Concrete Mixers



Lifetime Warranty



Original equipment warranties are **unaffected** by the installation of a Kleenoil Onboard Oil Recycling System. All Kleenoil products far exceed the OEM warranty specifications and requirements; and in most cases the filtration quality provided by Kleenoil filters is over 100 times finer than standard filtration. All Kleenoil units carry a lifetime warranty.

Kleenoil warrants the Kleenoil filter housing and brackets to the original purchaser for life. Adaptors, hose ends, and hoses will all carry the normal warranty of the original supplier of those parts. The Kleenoil warranty exceeds the working life of the engine and can be transferred from vehicle to vehicle.

Kleenoil Oil Recycling Systems will attain ISO 4406 To A Standard of Less than 15/12

Table of ISO 4406 Particle Counts

ISO Code	Particles per 1 ml	
	> 5 Micron in Size	> 15 Micron in Size
21/18	10,000 - 20,000	1280 - 2560
21/17	10,000 - 20,000	640 - 1280
21/16	10,000 - 20,000	320 - 640
21/15	10,000 - 20,000	160 - 320
20/17	5000 - 10,000	640 - 1280
20/16	5000 - 10,000	320 - 640
20/15	5000 - 10,000	160 - 320
20/14	5000 - 10,000	80 - 160
19/16	2500 - 5000	320 - 640
19/15	2500 - 5000	160 - 320
19/14	2500 - 5000	80 - 160
19/13	2500 - 5000	40 - 80
18/15	1300 - 2500	160 - 320
18/14	1300 - 2500	80 - 160
18/13	1300 - 2500	40 - 80
18/12	1300 - 2500	20 - 40
17/14	640 - 1300	80 - 160
17/13	640 - 1300	40 - 80
17/12	640 - 1300	20 - 40
17/11	640 - 1300	10 - 20
16/13	320 - 640	40 - 80
16/12	320 - 640	20 - 40
16/11	320 - 640	10 - 20
16/10	320 - 640	5 - 10
15/12	160 - 320	20 - 40
15/11	160 - 320	10 - 20
15/10	160 - 320	5 - 10
15/09	160 - 320	2.5 - 5
14/11	80 - 160	10 - 20
14/10	80 - 160	5 - 10
14/09	80 - 160	2.5 - 5
14/08	80 - 160	1.3 - 2.5

Approximate New Oil

Kleenoil Onboard Oil Recycling System Filtration Range