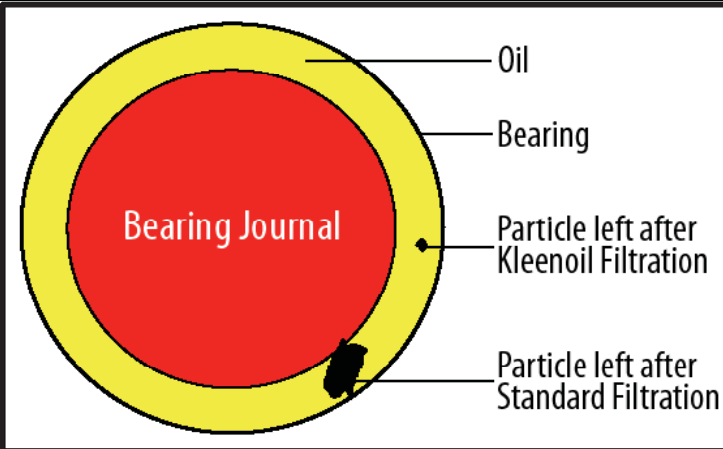


"The best filtration modern technology can provide"

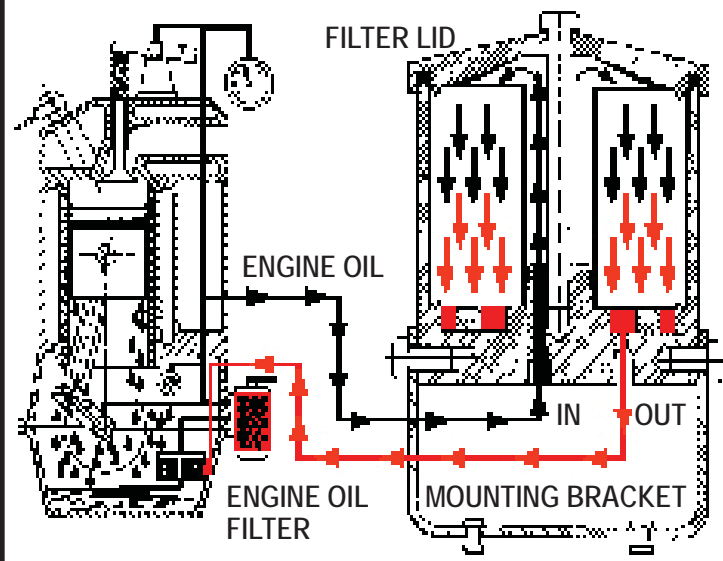
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Identical bearings from a Catapiller 3406C that was hauling a Tandam Milk Truck Trailer. In the past, the bearing on the left had to be regularly changed out at 160,000 km due to the strain on the motor from the liquid load shifting back and forth during movement. The bearing on the right came from the same truck that now has a Kleenoil Bypass Filtration System with over 1,600,000 km on the motor. Seeing is believing!

KLEENOIL BYPASS FILTRATION SYSTEM



- 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

For more information, please visit our website:
www.kleenoil.ca

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Kleenoil Mobile Filter Cart System



Model show M.F.U.2

Level of filtration applying to all units - BS 5540/4, ISO 14/9 and equiv NAS 1638 class 6. Water removal to <0.05% up to capacity of cartridges which is 0.26 gal. (1.2 litres) each. These codes may not be obtainable under all conditions.

FLOW RATE

It is impossible to state an exact flow rate because it is dependent upon many factors such as viscosity, temperature, and a degree of contamination of fluid, and also pump pressure and degree of contamination of cartridges. As an approximate guide, the flow of 32 sec. Hydraulic oil room temperature through new KLEENOIL cartridges will be:

MFU1 Single Filter	400 Litre per hour
MFU2 Twin Filter	600 Litre per hour

If faster flows are required, they can be achieved by specifying alternative pumps.

HEAD OFFICE

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www.kleenoil.ca email: info@kleenoil.ca

KLEENOIL

"The reliability company"

Kleenoil the affordable simple but innovative By-Pass Oil Filtration System!



Removes All Particales to 1-Micron in size
Removes 99.95% of All Water
Removes Wear Particles
Maximizes Component Life

"The best filtration modern technology can provide"

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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 the Kleenoil Filtration System, 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 sulfurous gases will pass by the piston rings and into the crankcase. These gases will mix with the water forming acids. Using the Kleenoil Filtration System will remove all the water down to less than 0.05%, reducing the formation of acids that cause accelerated wear to engine components and oil degradation by oxidization

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 Filtration 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 Filtration 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 Filtration 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
Up to 250 Litres	Up to 16 Litres	KU16	KF16
Up to 540 Litres	Up to 50 Litres	KU50	KF50
Up to 1000 Litres	Up to 65 Litres	KU65	KF65
Up to 1360 Litres	Up to 85 Litres	KU85	KF85

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



Component Life Extention

The following chart clearly demonstrates the effectiveness of the Kleenoil Filter System by showing the number of times that the life of engine and hydraulic components can be extended. The area highlighted on the chart 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 BYPASS Filtration Systems.

Level of Cleanliness Code 4406 after running oil through the Kleenoil Bypass Filtration System

Unfiltered Level of Cleanliness Code 4406	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

Construction



Bus



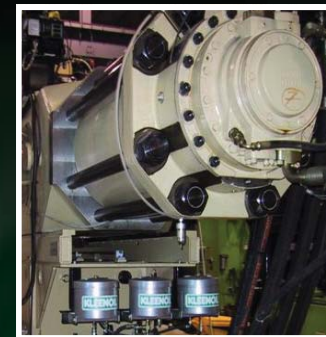
Fire & Emergency Medical Services



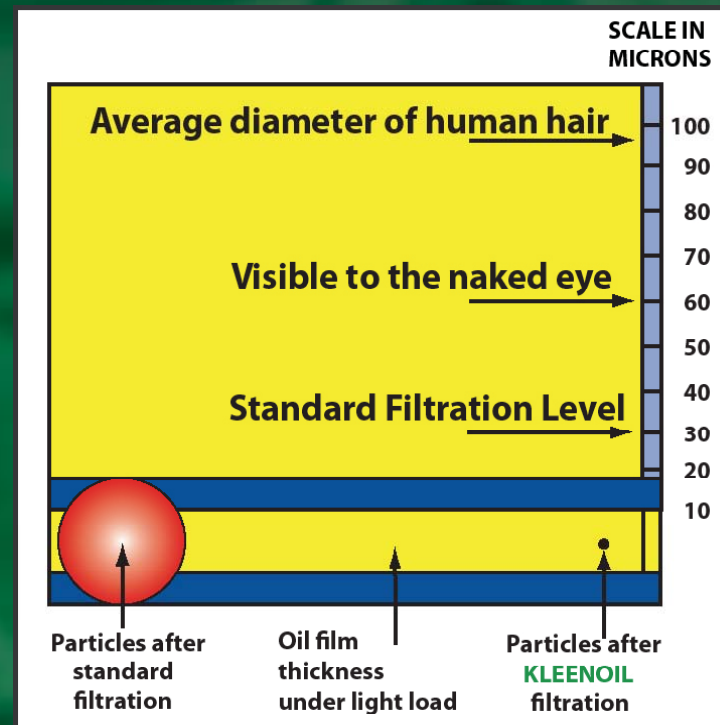
Oil Field Applications



Hydraulic Equipment Uses



- More than 70% of hydraulic failures are caused by contaminants in the oil.
- Heavily contaminated oil can reduce power by as much as 15-20%, slowing machine response and taking longer to perform an operation.
- By following a few basic tips, the life of piston rods, seals, valves and pumps can be more than doubled.
- By maintaining the hydraulic fluid in 'as-new' condition, the life of some components can be increased ten-fold.



Lifetime Warranty



Original equipment warranties are unaffected by the installation of a Kleenoil bypass filter. 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. The Kleenoil system carry a lifetime warranty. It is also not unusual for

our office to receive calls from the new owner of a second hand truck with a Kleenoil bypass filter unit installed. When asked what the condition the engine is in, the new owner invariably replies that is the tightest second hand engine in the fleet.

Kleenoil warrants the Kleenoil filter housing and brackets to the original purchaser for life. Adaptors, hose ends, and hosing 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 Bypass Filters will attain ISO 4406 To a standard of less than 14/11!

Table of ISO 4406 Particle Counts

ISO Code	Particles per 1 ml > 5 Micron in Size	Particles per 1 ml > 15 Micron in Size
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 Bypass Filtration System Filter Range