FLUID POWER - BULK FUEL FILTRATION
Technical Guide
WHY THE NEED FOR FILTRATION?

Planning
- Prevention of failures through routine maintenance
- Planned scheduling
- Continuous training of operators & technicians
- Stock modelling – On site availability of spares
- Condition monitoring of product and equipment

Life extension of machinery, equipment and vehicles
To achieve dependable long term performance from diesel and lubricant oils, it is essential that fuels be free of water and particulates. Even small quantities of water suspended in fuels can become harsh abrasive under high pressure. This can result in costly damage to injectors and engine cylinders, as well as unplanned downtime. As new machines and engines are required to meet ever changing standards, diesel engine design and quality is rapidly improving. This means that reliable diesel engine operation demands cleaner dryer fuel. A major cause of this fuel contamination occurs during the fuel handling process. Prevention of contamination is extremely difficult. By installing BMG filtration systems and products your fuel becomes much cleaner and offers more protection to your critical and costly equipment.

ISO – Environmental Management Systems (EMS)
- Planning for tomorrow with environmental leadership
- Allows countries to contribute and participate in the standards development process without increasing their carbon footprint
- Understanding of and concerns about environmental and sustainable development issues
- ISO is helping to meet the challenge of climate change with standards for greenhouse gas emissions and for measuring the carbon footprint of products
- Organisations worldwide are becoming increasingly aware of the need for environmental management and socially responsible behaviour regarding growth and development
- As proactive management of environmental aspects, converges with enterprise risk management, corporate governance and sound operational and financial practices and performance, ISO standards are becoming increasingly important for organisations to work toward common and comparable environmental management practices to support the sustainability of their organizations, products and services

Cost saving on operational expenditure
The BMG value adds concept combines our technical expertise with our quality fuel filtration product range and solutions including superior service to reduce green house gas emissions. All of this in turn offers you the lowest possible energy consumption attainable from operations of your fuel farm while maintaining production output. This will lower the costs of output and ensure overall effective use of your fuel depot. BMG’s expertise and on-site services offers uncomplicated but effective solutions to energy and productive inefficiencies to regain some competitive advantage, improve productivity and increase the profitability of the enterprise.
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The company has been established since 1974, and has been successfully supplying Valves, Instrumentation, Industrial lubrication equipment and filtration locally and globally.

In 2007 a need for cleaner fuel was identified in the mining sectors by OMSA customers. Through demand, and ongoing research and development, the product range was developed consistently to a full range of diesel and lube oil filtration systems, spares and accessories. The concept started with a single filter manifold, and continuous improvement as well as customer requirements has developed to a full range of product offering for the filtration sector.

In 2014, Bulk Filtration is integrated into BMG, under the Fluid Power Division. The enterprise is committed to conducting business ethically and to the highest standards. Our customers are the most important part of our business.

We are committed to establishing long term relationships with our customers and providing solutions, by providing customised filtration solutions to facilitate daily operations, and in doing so extending the life span of equipment.

What is a Micron?

ISO 4406 (1987 & 1999) Cleanliness level code:

**Microns = micrometers.**
1,000,000 microns = 1 meter.
25, 400 microns = 1 inch

**Smallest particle to the eye is +/- 40 to 80 microns**

**ISO Table Code Number**

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**Electric Motors, Variable Speed Drives, Drive Couplings, Gearboxes, Gaskets, Fittings**

**MAHLE**

**Industrial Filtration**

**Parker**

**Industrial Filtration**

**Airpel**

**Industrial Filtration**

**IMAGNOM**

**Industrial Magnetic Filters**
CONTAMINATION INGRESS THROUGH SUPPLY CHAIN

CRUDE OIL IMPORT → CRUDE OIL STORAGE

DISTRIBUTION (FUEL) → REFINERY

DISTRIBUTION (LUBRICANTS) → BLEND PLANT

SERVICE STATION → INLAND DEPOTS

CUSTOMER SITE STORAGE

EQUIPMENT OR MACHINERY ← CUSTOMER SITE FUEL OR BULK LUBE TRUCK
### ISO 4406 Chart

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### Contamination Indicator

- **UNACCEPTABLE**
- **TOO HIGH**
- **ACCEPTABLE**
PORTABLE TRANSFER DIESEL FILTRATION PUMPING UNIT

Technical data

- Fluid type - Diesel
- 50 L/Min flow rate
- 12 – 24 V DC electric motor
- Suction and delivery hose
- 2m cables with clips for battery connection
- Aluminium fuel nozzle
- 3 micron particulate filter
- 25 micron water absorbing filter

INLINE DUAL FILTER WITH COALESCER UNIT

Technical data

- Fine filtration – 3.6 & 10 micron
- Coalescer & water separator
- Pressure gauge with mini mess sample point
- Pop-up filter indicator
- Flow rate up to 500 L/min
- In-line unit
- Can be fitted on delivery
- Water drainage point

Application: Diesel storage tank dispensing and/or curb side pump

 DIESEL FILTRATION TRAILER

Technical data

- Fluid type – Diesel / Oil
- Engine – Yanmar 4.8 HP
- Vane pump
- Pre- filters
- Flow rate – 145 l/Min
- 15m Hose reel
- In- line particle counter
- Dual coalescer & separator filter
- 3” Basket strainer
- Fully customised
**CLOSED LOOP SAMPLING TANK**

Technical data
- Fluid type – Diesel
- 200 Litre sampling tank
- 4 L ALJAC – Sampling jar
- Spring loaded ball valves
- Thermal relief valves
- Fire safe ball valves

**PRE-FILTER MANIFOLD SKID**

Technical data
- Fluid type – Diesel
- Range from single to sixteen pre-filter manifold
- Differential pressure gauge 0-200 kpa
- Skid & drip tray
- Pressure gauge 0 - 16 Bar
- Sample points
- Flow rates up to 4000 L/Min
- Max 10 bar pressure
- Filter selection – 1.5,10,25,50 micron

**PRE- FILTER COMPLETE WITH WATER ABSORBING FILTER**

Technical data
- Fluid type – Diesel & lubricant oil
- Pre-filter housing
- Inline filter housing
- Differential pressure gauge, 0-200 kpa
- Pressure gauge, 0 – 16 Bar
- Sample points
- Skid & drip tray
- Flow rate up to 250L/Min
- Max 10 Bar pressure
- Filter selection – 1.5,10,25,50 micron
FILTER MANIFOLD C/W WATER COALESCER & SEPARATOR

Technical data
- Fluid type – Diesel
- Contamination indicator
- Dual filter head
- Coalescer & separator
- Spin-on filters
- Pressure gauges, 0 – 16 Bar
- Sample points
- Flow rates up to 500 L/Min
- Maximum 10 Bar pressure
- Drip tray & support frame

FILTER MANIFOLDS

Technical data
- Fluid type – Diesel & lubricant oil
- Dual filter head
- Contamination indicator
- Pressure gauges, 0 – 16 Bar
- Sample points
- Flow rates up to 1000 L/Min
- Max 10 bar pressure
- Filter selection – 3,6,10,25 micron
- Drip tray & support frame

MOBILE DRUM TROLLEY

Technical data
- Turn table trolley
- Hose reel ½” 15m length
- Electric nozzle LCD 0-50 L/Min
- Magnetic filter
- Pneumatic oil drum pump 5:1
- Air filter / regulator unit
- Max 10 Bar pressure
MOBILE TRANSFER FILTRATION TROLLEY

Technical data
- Steel trolley
- 1.10kW Electric motor 220VAC
- Dual filter head
- Screw pump
- Magnetic Y-strainer
- Start/stop control box
- Flow rate 0 - 80L/Min
- Max 10 Bar pressure

MOBILE WASTE OIL TROLLEY

Technical data
- Air filter/ regulator unit
- Double diaphragm pump
- Up to 350L storage capacity

IBC PUMPING SKID

Technical data
- IBC 1000L tank
- Air filter/ regulator unit
- Double diaphragm pump
- Skid

HOSE REEL STAND

Technical data
- Fully customized
- Hose reels available – 5m, 10m, 20m & 25m
- Top and bottom entry connections
- Display & pulse meters available
- Electrically actuated valve options
- Range of nozzles & end fittings
- Pressure gauges & test points
- Various mounting positions available
- Waste oil, coolant & grease pumps optional
L - SHAPED TANK

Technical data

- Enables filtration at various filling stations
- Removes particulate
- Cost effective filtration system
- Modular design and can be fitted together to provide different grades of oil to be dispensed in a combined storage system
- The pressure sensors will allow a continuous variable control with digital capabilities.
- This will allow a single sensor to control more than volume level eg low, medium and high volume. The level can now be controlled from the HMI.
- The temperature will be controlled via a PT100 sensor which will also transmit an analogue signal. The temperature can be displayed and simultaneously controlled. The temperature settings can also be controlled from the HMI.
- The PLC will be equipped with an Ethernet unit to allow external communication with the PLC. This allows access to the PLC remotely.
- A particle counter will also measure and record the quality of the product being filtered. All other control will be done directly from the HMI.

ISO 12/10/8 cleanliness level result in accordance with ISO 4406 was achieved through this unique design on lubricant. This compact design is suitable for surface and underground applications.
- Filtration and reservoir products
- Low pressure filters
- Medium pressure filters
- High pressure filters
- Filter indicators
- Heavy duty filtration products
- Par-Test – Laboratory analysis
- Portable filtration systems
- PARFIT – Interchange replacement element range
- Marine PARFIT - Interchange replacement element range
- Static control media
- Par-Gel – Par- Gel water removal elements
- Reservoir equipment – Co – polymer and steel reservoir solutions
- Fluid condition monitoring and flow meters
- Fluid hydrocarbon monitoring
- Parker Kittiwake products
- Transducers and transmitters
- Flow meters and monitor
10MFP SERIES
with ‘Moduflow plus’ Portable Filtration Trolley

Product Features
- 10MFP hydraulic trolley is the ideal way to pre-filter and transfer fluids into reservoirs or to clean up a system.
- Maximum flow 38 l/min.
- Par-Gel water removal elements available.
- iCountPD particle detector option available.
- MS Moisture Sensor option (IPD integrated).

Technical Specification

Product description:
- Transfers fluid from drums or storage tanks

Product Features
- 10MFP hydraulic trolley is the ideal way to pre-filter and transfer fluids into reservoirs or to clean up a system.
- Maximum flow 38 l/min.
- Par-Gel water removal elements available.
- iCountPD particle detector option available.
- MS Moisture Sensor option (IPD integrated).

iCOUNTPD - ONLINE PARTICLE DETECTOR

Product Features
- Independent monitoring of system contamination trends.
  Warning LED or digital display indicators for Low, Medium and High contamination levels.
- Visual indicators with power and alarm output warnings.
- Continuous performance for prolonged analysis.
- Moisture Sensor RH% intergrated option.
  Full PC/PLC integration technology

iCOUNT OIL SAMPLER (IOS)

Product Features
- Portable monitoring tool providing fluid qualification to ISO 4406:1999 standards.
- Quick, simple to use monitoring tool for sampling fluids from container fuel bunkers and holding tanks.
- Field solution to laboratory methods for the detection of solid contamination and free water inference.
- On-board 250,000 test memory.
- MS moisture sensor standard.
ACCESSORIES

TOOLKIT

Battery drill
Tool box
No 24 Spanner set & 8-27 Ring set
Set of Allen keys – Ball head
Screw driver set & tips
Set of ½” sockets – 8 -32
Shifting spanner – 300mm 12”
Medium Stilson Wrench – 450mm
Set of screw drivers
Circlip pliers – Angled
Side cutter
Long nose plier
Multi meter
Normal pliers
Tin snip

BIOREMEDICATION

BMG’s environmental company will remove, crush and ensure that the materials are received and re-used by a registered facility and that the client receives all required documentation on completion. Using a filter crusher removes 95% of the free flowing oil, assisting in the recycling and re-use of not only the oil, but the crushed metal filter as well.

SPILL KIT

Used for: Clean up or containment or small spillages created by vehicles and equipment
Fits snugly behind a vehicle seat or in the boot of the vehicle
Re-fillable
Dimensions: 50cm x 50cm x 10cm
Can be tailored to suit your needs
ENGINEERED SOLUTIONS

BMG offers top quality products in bulk fuel filtration as well as design and commissioning of diesel and oil lubrication systems.

Our products for mining applications include:
- Particulate filters
- Online & offline condition monitoring
- On site vendor managed inventories
- Training

but are not limited to:
- Water coalescing and separation filters
- Site surveys
- Support through local branch network
- Field services

Features
- Pre-filters
- Coalescers and water separators
- Particle counters
- In accordance with ISO 4406

- Fine filters
- Meters
- Touch screen
- Operator training provided

Benefits
- Plug and play
- Less space required for installation
- Reduced civils
- Suitable for 20” container
- Mobile
- Easy to install
- Compact design
- Fully automated

OFFLOADING/RECEIVING FILTRATION PUMPING SKID - DIESEL

Technical data
- Offloading/ receiving 0–800 L/Min 4” inlet & outlet
- 15kW 380 Volt 4 Pole electric motor
- Vane pump
- Pre-filters 1 micron
- LC-M25 inline Liquid Control meter c/w pulser
- Variable Speed Drive
- PLC controlled
- Max 10 Bar pressure
- Flow switch
- Pressure switch
- Inline particle counter
DISPENSING FILTRATION PUMPING SKID - DIESEL

Technical data
- Dispensing 0-500L/Min 3” inlet & outlet connection
- 7.50kW 380 Volt 4 Pole electric motor
- Vane pump
- Pre-filters 1 micron, basket strainer, geared motor
- LC-M25 inline liquid control meter c/w pulser
- Variable Speed Drive
- PLC controlled
- Max 10 Bar pressure
- Inline particle counter
- Flow switch
- Pressure switch

TRANSFER FILTRATION PUMPING SKID - DIESEL

Technical data
- Transferring 0-800 L/Min 4” inlet & outlet connection
- 15kW 380 Volt 4 Pole electric motor
- Vane pump
- Pre-filters, 1 micron, basket strainers, geared motor
- LC-M25 inline Liquid Control meter c/w pulser
- Water coalescer & separator vertical vessel, 5 micron
- Variable Speed Drive
- PLC controlled
- Max 10 Bar pressure
- Flow switch
- Pressure switch
OFFLOADING, RECIRCULATING & DISPENSING OIL FILTRATION SKIDS - OIL

Technical data
- Modular design
- Up to 170 L/Min flow rate
- PLC controlled
- Gear pump
- LC-M05 meter with pulser
- Flow switch
- Pressure switch
- In-line particle counter
- Water absorbing filter cartridge, 10 micron
- Fine filter cartridge 3 & 6 micron
- Electric motor 380 Volts
- Fully customized
- Variable Speed Drive
- Optional tanks up to 20 000 L capacity
What is Diesel fuel?

Diesel fuel is a very complex mixture of thousands of individual compounds with carbon numbers between 9 and 23 (the number of carbon atoms per hydrocarbon molecule). Most of these compounds are members of the paraffinic, naphthenic or aromatic classes of hydrocarbons (HC).

These three classes have different chemical and physical properties. The different relative proportion of these three classes is one of the factors that make one diesel fuel different from another. It influences fuel properties and affects its performance.

Up until 35 years ago, refineries used only about 50% of a barrel of crude oil to make distillates such as gasoline, jet fuel and diesel. The remainder of the barrel of crude oil went to “residual oil”. Today, as a result of different refining techniques and additive packages, the refinery uses 90% or more of the same barrel of crude, which clearly has consequences for fuel stability.

More than 90% of the debris on filter elements and the sludge in your fuel tank is organic material, fuel and oil breakdown residue. In most cases, this debris is acidic and not good for your engine. It causes corrosion in injectors, pumps and storage tanks.

The solids that form as a result of the inherent stability of the fuel and the natural process of degradation will accumulate in the bottom of your tank. The sludge will form a coating or bio-film on the walls and baffles of the tank, plug your filters and impact combustion efficiency. Eventually it will clog fuel lines and ruin your equipment.

What is bad Diesel?

Diesel is made to certain ASTM specifications. When it does not meet these specs, we could refer to it as “bad fuel”. However, we tend to refer to fuel as “bad fuel” when we see symptoms such as:

- Dark, hazy fuel
- Filter clogging
- Sludge build up in tanks
- Poor Mining Equipment performance
- Excessive smoke and emissions

We refer to fuel and “good fuel” when it is clear and bright. Or rather in that case, no reference is made at all to Diesel fuel. We simply use it and take Diesel quality and peak Mining Equipment performance for granted. Bad diesel is fuel that does not meet ASTM specifications.
What is diesel fuel “algae”?

Algæ are a life form found in water, similar to algae growing in an aquarium. Algæ do not live in fuel and it requires sunlight to grow. For years, people have been referring to tank sludge and the jelly, slime and other contaminants found in fuel filters as “algæ”.

The colloquialism “diesel fuel algæ” is widely used and understood. However, there is no relationship between the “algæ” growing in your aquarium and the sludge “growing” (forming) in your fuel tank and showing up on your filter elements.

There are three basic areas of concern about contaminants in fuel and oil:
1. Water
2. Inorganic debris (sand, dust, rust, etc.)
3. Organic debris (fuel breakdown products and waste products of fuel deterioration and re-polymerization)

The organic debris represents more than 90% of all contaminants found in fuels and oil. It is this organic debris, the sludgy, slimy, acidic material that people refer to as “diesel fuel algæ”. It could also be called a polymer, tar, wax or asphalt!

How does Fuel stability affect you?

Fuel stability is a serious concern to the diesel fuel user.

The chemistry of diesel fuel instability involves the chemical conversion of precursors to species of higher molecular weight with limited solubility. The conversion process often involves the oxidation of the precursors.

We all realize that fuel is an unstable, organic liquid that goes “bad”. Your vendor will always sell you the highest fuel quality possible. However, due to a variety of circumstances fuel may have “aged”, oxidized and contain water. It may have been contaminated before it was delivered to you by your vendor.

Fuel has to travel from the refinery to you. It is pumped through pipelines, barged, trucked and stored in tank farms. Daily changes in temperature and exposure to the atmosphere will cause condensation and water in storage systems. None of this will help improve fuel quality.

When your fuel is finally used, it is exposed to the heat and pressure of the engine injection system, centrifuges, pumps and heaters causing an increase in asphaltene agglomerations, which negatively impacts combustion efficiency and emissions.

Can diesel fuel clog your filters?

Yes, it can. The stuff that clogs your filter is actually fuel in some way, shape or form. In excess of 90% of this organic debris is fuel breakdown products. It is not sand, dust, stones, rust or inorganic matter that blocks your filter. The inorganic material like sand, dust and other particles will not cause your filter to clog. In fact, a lot of sand in a fuel filter would act as extra filtration. The pores between the sand particles are much larger than the pores in a standard fuel filter element. Sand filters are commonly used to filter water. A hair is approximately 80 microns in diameter, and fuel filter elements range all the way from 1 micron for a pre-filter to 6 microns for a fine filter.
What is the stuff that clogs your filter?

Filter clogging can have several causes. For example, low temperatures can cause wax crystallization, which can lead to filter clogging. An example would be using summer diesel in cold weather. Wax or paraffin is part of the diesel fuel.

Chemical incompatibility may cause dramatic filter clogging. This may happen when fuels with incompatible additive packages are mixed together.

Contaminant build up resulting from excessive microbial growth and bio-degradation of fuel can cause filter clogging. Micro-organisms, bacteria and enzyme activity, fungus, yeast and mould cause fuel degradation and the formation of waste products. The process is similar to milk turning into cottage cheese, a different form of milk.

Even though microbes may cause and accelerate the process of fuel degradation, it should be noted that the waste products clogging your filter are not the microbes, but fuel components which have formed solids.

Frequently, the application of biocides aggravates the situation and turns bio-film into solids creating a real fuel filter nightmare. Bio-film develops throughout the entire fuel system. It grows in the water/fuel interface and on the walls, baffles and bottoms of storage tanks. An unlucky end user may be filling up his tank and getting this debris delivered as part of the fuel, for the same price as the fuel.

Poor thermal fuel stability can clog filters. Fuel will form particulates (solids) when exposed to pumps and the hot surfaces and pressure of the fuel injection system. This will result in an increase in asphaltene, agglomerations, polymerization and a dramatic loss of combustion efficiency.

Fuel systems, in general, are designed to return a significant portion of the fuel, not used for combustion, back to the tank. The return fuel is very hot and will promote polymerization and fuel breakdown. Eventually, more and more solids from the tank will reach the filter and over time clog the filter. These problems continuously occur in commercially operated engines, such as trucks, heavy equipment, shipping, and power generation; but will also appear in recreational boats, RV’s and all types of fuel storage tanks.

Short filter life is symptomatic of polymerization, increase in the size of the fuel droplet, agglomeration of asphaltene and the formation of solids in the fuel system. The consequences are carbon build up in engines and exhaust systems, higher fuel consumption and excessive smoke.

How do diesel engines negatively affect fuel quality?

A diesel engine uses only some of the fuel it pulls from the tank. All of that fuel goes to the high pressure fuel pump and to the injectors operating under enormous pressure and high temperatures.

The surplus fuel the engine is not using goes back to the tank. The fuel is continuously re-circulated and exposed to extreme pressure and heat, which results in the agglomeration of asphaltenes, the high carbon content and heavy fuel molecules. It leads to the formation of larger and larger clusters of solids, which are very difficult to completely combust. These solids may grow so large that they will not pass through the filter element and become part of the polymer and sludge build up clogging the filter.
In addition, hot fuel coming back to the tank will raise the fuel temperature in the tank, cause condensation and contribute to microbial contamination, fuel breakdown, bio-fouling and the build-up of sludge and acid.

Large fuel droplets and high asphaltene concentrations require more time, more energy and higher temperatures to combust than is available in engines during the combustion cycle and before the exhaust valve opens.

Any device in the fuel system exposing fuel to heat and pressure, such as pumps, heaters, or centrifuges will increase the formation of asphaltenes and negatively impact combustion.

How can I protect stored fuel for a long time?

Temperature, humidity and condensation are very important factors in managing fuel integrity. The presence of free water provides a medium for microbiological growth that result in the formation of slime and acids causing corrosion of metal surfaces such as storage tanks, pumps and injectors. Therefore, good housekeeping and purchasing clean, dry fuel from a reputable supplier are definitely the first steps.

It is recommended to start out protecting stored fuel with a chemical conditioner to stabilize the fuel in the tank. This chemical conditioner is a fuel catalyst that also contains corrosion inhibitors and lubricity enhancers to not only preserve fuel integrity, but also to protect your engine equipment. Periodically, additional chemical conditioner is added to keep the fuel stabilized.

You also need to remove water from storage tanks on a regular interval. This can be done with a mobile tank cleaning system. It is used to remove water from the tank bottom and works as a fuel polishing system. Storage tanks can also use a “water eliminator”. A “water eliminator” is a small nylon or larger stainless steel cylinder, containing a special polymer. The polymer will absorb the water, and not the fuel, for easy removal.

The use of an adequate fuel quality management program and service, regular fuel testing to monitor fuel integrity are an absolute necessity and will save money. In applications such as emergency power generation, installing a fully automated fuel recirculation and fuel filtration system is recommended.

Health and Safety

Diesel present little or no hazard to users provided they are properly used. This can be achieved by taking reasonable care to avoid contact with the skin, and away from the eyes. To ensure that their use will be safe and without risk to health, the following guidelines should be followed. The notes which follow are intended only as a guide and not as a substitute for official codes of practice or other more comprehensive publications.

General Advice:

Where occasional short-term contact is involved, Diesel is a relatively harmless material. Diesel gives only a slight or mild skin irritant and is well tolerated by intact normal skin.

Frequent and prolonged contact with diesel can, in some cases, give rise to various forms of skin irritation and in exceptional circumstances more serious conditions, such as skin cancers.
Workplace environment precautions:

To ensure the safe use of diesel, it is essential that in the workplace environment, provision is made for the worker to practice good standards of personal and industrial hygiene by providing:

- Splash guards on machines, face shields, working overalls, impermeable aprons and gloves to eliminate all unnecessary contact with oils.
- Arrangements for the extraction of fine sprays of diesel mist.
- Adequate washing facilities, easily accessible wash basins and an adequate supply of soap, clean towels and suitable cleansers. Harsh or strongly alkaline soaps should be avoided as they can cause skin irritation. Wherever possible impermeable gloves should be used. If, however, this is impracticable, use should be made of barrier creams. However, barrier creams do not prevent the absorption through the skin of compounds in leaded lubricants. Conditioning creams for use after washing can also help to counter undue degreasing of the skin.
- First Aid advice backed up by adequate medical facilities.
- Supervision to ensure that these provisions are adhered to.

Disposing of dirty Diesel

**WARNING!**

Waste diesel should be disposed of at a designated oil recycling point or by waste removal companies. Failure to do so could have detrimental and long-term effects on the environment.

**Diesel Dumped in storm water drains.**

Anything poured into a gutter or a storm drain, such as used diesel, flows directly into local streams and lakes. There is a common misconception that water travelling into storm sewers ends up treated at the local wastewater treatment plant. Because of this misunderstanding, many people use storm drains and ditches as places to dispose of all kinds of pollutants. Hosing down workshop floors often washes pollutants into storm drains. Thus, storm drains carry large amounts of pollution away from industrialized areas mixed with the excess storm water.

**Diesel dumped on land.**

When diesel is dumped on land it can eventually seep into the ground water thus polluting wells and bore holes. After an aquifer has been contaminated it is difficult and extremely costly to remove the contamination. Even after the source of contamination has been removed, an aquifer may remain contaminated for anywhere from a few years to a few centuries. Clean groundwater is needed for more than drinking purposes. Agriculture depends heavily on groundwater for irrigation. Poor or contaminated groundwater could jeopardize crops and threaten the health of livestock. Clean groundwater is also essential to clean surface water. Groundwater is connected to surface water in the hydrological cycle, and some aquifers actually feed area springs and rivers.

**Pouring diesel down the drain.**

Often people clean the diesel tank in their car and then dump the used diesel down the drain. This results in water pollution and damage to the bacterial colonies in the sewage disposal plant.
Burning waste diesel

Diesel is often contaminated with toxic metals, which result from normal wear of the machinery. This an overlooked source of pollution. Some people even use waste diesel as a fuel for oil-burning heaters. This is a very bad practice because it releases the toxic metals into the air.

Prevention is the Key

Diesel sticks to everything and it is harmful to soil bacteria, and invertebrates. Diesel can damage or even kill aquatic vegetation and animal life. Contamination of two million gallons of drinking water can develop from one quart of diesel

Solution:

- Recycle your used diesel.
- Never pour used diesel down a storm drain, onto holes in the ground or down the drain.
- Never burn waste diesel as this releases toxic chemicals into the air.
- Maintain a "dry site" by containing and cleaning up spills immediately
- Train employees and subcontractors as to the dangers of diesel pollution.
## Customer Details

<table>
<thead>
<tr>
<th>COMPANY:</th>
<th>DATE:</th>
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<tr>
<th>CONTACT PERSON:</th>
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<table>
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## General Information Required

### Brief Description of Application

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## Type of Fluid

<table>
<thead>
<tr>
<th>DIESEL</th>
<th>LUBE</th>
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## If Oil, What Grade?

### Viscosity

### Min Temperature

### Max Temperature

### Operating Pressure

### Flow Rate

## Filtration Requirement

<table>
<thead>
<tr>
<th>PARTICULATE REMOVAL</th>
<th>WATER REMOVAL</th>
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## Pipe Size

## Volume Usage per Month

## Pump Type

<table>
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<th>VANE</th>
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## ISO 4406 Cleanliness Level Required

<table>
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<th>4μm</th>
<th>6μm</th>
<th>14μm</th>
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