

In today's modern electronic diesel engine, timing has been retarded to meet the demands placed on them regarding emissions. This in turn has placed great pressure on engine oil to control soot levels due to the excessive blow-by caused by this retarding.

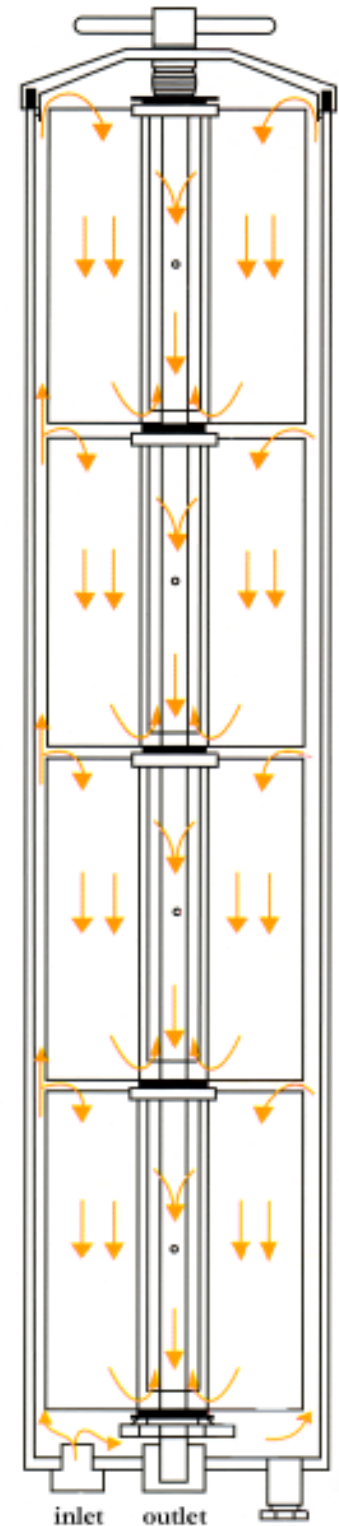
Soot is the major causes of engine wear as it also increases the oil viscosity. This increase in viscosity will increase the operating temperature of the engine oil, which in turn will denigrate the oil at a greater rate. For example, every 10 degree Celsius rise in temperature above the oil manufacturer's specifications halves oil life.

Installation of FTA's by-pass filters will control soot levels, lower wear metals, increase engine component life and allow extended oil drains. These benefits can be assessed and monitored using oil analysis.

Engine oil is the most difficult of all filtration applications. It is a combination of different fuels, engine capacity, work applications and environments.

It is important to have a high level of understanding of an engine and how it operates, before installing FTA filters.

A history of oil analyses, sump capacity, equipment history and correct mounting locations will help you select the right FTA system.



## **Filter Technology oil filters are a by-pass filter unit.**

There are three basic considerations when installing Filter Technology oil filters:

1. Mounting location.
2. Oil pressure source.
3. Oil return points.

### **Mounting Location:**

1. Ground clearance: Mount filter so that its fittings are no lower than other components already under the vehicle, for example, 4-wheel drives.
2. When mounting the filter above the chassis on trucks make sure it cannot be hit or crushed by the trailer.
3. Typical mounting points are chassis rails, exhaust brackets. For examples refer to the brackets section.
4. Liase with the owner or mechanical staff to select a convenient position for servicing as they understand the vehicle's operating environment.
5. Make sure the filter drain plug is accessible for draining the filter when servicing. If not, fit a ¼" ball valve and hose to the drain port.
6. The filter can be mounted anywhere on the vehicle, but consider accessibility for ease of service and removal of used elements. The filter can be mounted either horizontally or vertically.

**DO NOT** drill holes in cabin or side deflectors to mount filters.

### **Oil Pressure Sources:**

The most commonly used oil pressure source is a tee installed at the oil pressure sender. If unable to tee into the oil pressure switch, pressure plugs off the internal oil gallery which are aligned to the oil pressure sender can often be used. To make certain a plug is a pressure source, check for oil on the plug and connect a pressure gauge to read oil pressure when the engine is running. An orifice of 1.5mm( 1/16"), located in the return tube, controls the flow through the filter so as not to affect oil pressure to the engine components.

**DO NOT** tap into the turbo oil pressure feed line.

### **Oil Return Points:**

Extra dipstick ports are sometimes available opposite to the existing dipstick. Most modern diesel engine sumps have several threaded access points which can be used for the return line from the filter. If unable to locate any of the above, remove tappet cover, locate the oil return from the head to the sump, drill through the cover in the corresponding position, install 1/4" BSPT to 9/16" JIC nipple or bulkhead fitting.

**Do not** return oil directly over a valve because the oil flow will be too great for the valve stem seal and oil burning will occur. **Do not** return oil from FTA filter to any pressurised point on the engine block.

If not fitted by an authorised FTA technician, FTA filters must be fitted by a qualified tradesman. We recommend single wire braid 1/4" hydraulic hose be used. These fittings and hoses will be available from your local hydraulic dealer.

It is advisable to fit a non-return valve on the inlet if the bottom of the FTA filter is mounted higher than the sump so that oil does not flow back into the sump giving a false sump reading.

### **Filter Elements Service Intervals**

When a filter is fitted, or when FTA elements are changed at the normal service interval, oil samples should be taken in order to determine the maximum drain period. This sample should be taken before top up.

### **Oil Analysis**

It is most important to take samples when the oil is at operating temperature, about 15 minutes after shutdown. Take the sample from the same point every time, usually from live sampling points on the engine block or around the middle of the sump using a vacuum sampler. Measure the sample hose against the dipstick, mark the hose with tape then put it in the dipstick hole stopping at the mark point. Fill in the sample identification clearly. Fit the service sticker.

### **Fittings**

Fittings should be **steel only**. **Do not use** brass, malleable iron or galvanized fittings.

### **Hose**

¼" steel braid hose that must meet or exceed the performance requirements of SAE J1402 A1 for inlet and return lines.

**All installations should be carried out by a qualified technician.**

- **Secure oil lines away from hot exhaust**
- **Route and clamp oil lines to avoid contact with abrasion points**
- **Test run engine until the filter becomes hot**
- **Check all lines and fittings for leaks**
- **Check oil level in the sump**
- **Check oil pressure before and after installation**

