

# MAXILUBE SYSTEMS™ LLC

Office Phone #  
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*Maxilube Systems LLC* 's mission is to provide specialized service and products designed to increase performance and extend engine life while reducing operating expenses to owners and operators of cars, trucks, boats and motor homes powered by gas or diesel engines. We accomplish this by installing the finest automatic pre and post lubrication system and oil purification system available to the industry. With the patented *Maxilube System*, engines have the ability to continually operate at their maximum level of efficiency.



**Trade Show Demonstration System**



Nominated at the Newport International Boat Show for best new product of the year in 2006.

Vehicles equipped with the *Maxilube System* receive the benefits of substantially increased engine life by eliminating "dry start" metal to metal wear that takes place at start up, this type of wear occurs when oil is not immediately available to lubricate the engine's vital moving parts. The *Maxilube System* benefits the environment by extending or even eliminating the common oil change and drain intervals in engines by keeping the oil in a continual "clean" state providing a savings of up to 90% in new oil purchases, for the life of the engine. This reduces dependency on oil and future responsibilities associated with the discarding of waste oil. The T.F Purifier, now known as the "puraDYN" bypass oil filtration system, portion of the *Maxilube System*, has been certified as "Pollution Prevention Technology by the California Environmental Protection Agency's Department of Toxic Substance Control in 1994 ". Our heavy duty lubrication pumps are custom made for *Maxilube Systems* using special "viton" seals and pressure relief valves. These pumps are designed for long term service and extended reliability. It is this patented combination of an automatic pre and post lubrication system and oil purification system along with our electronic control module that form the *Maxilube System*. The addition of this electronic control module and display allow the operator to see first hand how the electrical and mechanical systems are operating from the dashboard or helm station. An optional high water temperature and/or low oil pressure alarm system can be incorporated in the system if desired.

\* Engine must be maintained according to Maxilube Systems recommendations - Call for more info.

***Maxilube Systems --- Your Engine's Life Depends On It!***

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*This is an extended list of benefits of the Maxilube System*

### **Engine Benefits**

1. **AUTOMATIC** Pre and Post lubrication cycles, engine life extended.
- 2 "Dry start" wear eliminated through pre lubrication.
- 3 "Coking" of turbo charger bearings eliminated through post lubrication.
- 4 Better protection during break-in period of new engine and equipment.
- 5 Engines and equipment run with constantly clean oil.
- 6 Oil drain intervals safely extended or eliminated.
- 7 Engines and equipment run cooler.
- 8 Engine efficiency increased, less fuel consumption.
- 9 Oil circulation improved.
10. Proper viscosity maintained.
11. Water, fuel and glycol removed.
12. Acid formation neutralized.
13. Solid contaminants down to 1 micron or less removed, compared to engine equipped 25-40 micron engine "spin on" oil filters.
14. Additives remain well within acceptable limits.
15. Sulfur removed.
16. Sludge and varnish deposits removed.
17. Engine wear pattern changed (SAE Technical Report # 831317)
18. New oil purchases and disposal costs reduced up to 90%.
19. Better maintained equipment = less down time.
20. Visual display of system operation on dashboard / helm station.
21. Increased battery, starter and alternator life due to reduced coefficient of friction.
22. High water temperature / low oil pressure alarm systems available.
23. The Maxilube System does not void engine manufacturers' warranties.

### **Environmental Benefits**

1. The Purifier/ puraDYN (bypass oil filtration system) technology can decrease the generation of waste oil by up to 90%.
2. Full flow filters last longer, fewer entering waste system.
3. Reduced exposure to "cradle to grave liability" associated with spills, transportation, storage and disposal of waste oil.
4. The Purifier/ puraDYN filter elements can be recycled.
5. Longer life of oil means less demand for new oil.
6. Less ground water contamination.
7. Reduced harm to delicate ecosystems and wildlife.

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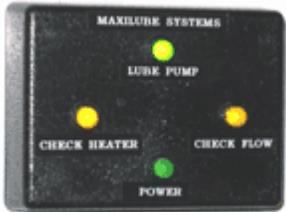
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## A Great Concept Made Even Better



As great as the concept is to combine a pre and post lubrication system, that eliminates "dry start" wear and a 1 micron bypass filtration filter that removes the harmful contaminants from the oil, is the addition of our electronic control module and display that automatically operates and monitors the entire system. The electronics portion of the system activates a lubrication pump just prior to engine start up for a set time period to pre-lubricate and again after shut down to post lubricate every time the engine is operated. The addition of a post lubrication cycle aids in the lubrication of turbocharger bearings and eliminates a condition known as "coking" that can happen when these bearings are not properly lubricated after engine shut down.



## About The Inventor: Tom Callan



Having worked in the marine engineering field for over 35 years in South Florida and New England, I've enjoyed the opportunity to design, install and maintain some of the most sophisticated equipment on privately owned yachts and R.V.'s. My responsibilities were to make sure that the machinery on each vessel or vehicle was kept in proper working condition. I was instructed that no expense was to be spared when it came to improvements or modifications that would increase performance, reliability and efficiency. I was first introduced to the concept of oil purification in 1985 and how this type of bypass system would increase the life of the engine and reduce many of the operating expenses associated. Only after the installation of a "Refinco" bypass oil refiner did I realize that this concept would later evolve into an important portion of the *Maxilube System* of today. I found that engines having this type of "bypass" filtration system, offered the highest quality filtration maximizing the engine's life expectancy and efficiency.

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It was only after the purchase of a new company truck in 1993 did we at *Maxilube Systems* install our first prototype that included an electronic control module consisting of a pre and post lubrication pump timing circuit along with a filter flow and heater current monitoring display. The installation of this system would also maximize the life and performance of our 7.3 Ford diesel engine. It is the addition of this automatic lubrication system that eliminates problems associated with "dry start" wear that all engines face during the first 8 to 10 seconds when the engine is turned over and there is no immediate oil pressure present. It has been through improvements and the addition of our patent pending automatic operating and monitoring system that allow the system to become available to the general public today. The patented *Maxilube System* is still using the same time proven technology of oil purification as on yachts and vehicles of years ago, able to keep oil in a continual clean state maximizing engine life, enhancing performance and increasing efficiency. At *Maxilube Systems* our goal is to utilize methods of reducing engine wear by providing products and services that will increase equipment value, reduce our dependency on fossil fuels and protect our resources for future generations.

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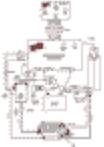
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## Maxilube Systems Operation



The patented *Maxilube System* can be operated by a push button remote switch, an on/off switch at the drivers seat/helm station or simply by turning the ignition switch to the "ON" position. This first position activates the pre-lube cycle of the oil lubrication pump. This oil pump timer is designed to run the pump for 1 minute. After this lubrication cycle is completed, the engine is now ready to be started. The engine has now been pre-lubricated, eliminating the "Dry Start" wear condition that is common to all engines. "Dry Start" wear accounts for 53 - 80 percent of all engine wear and is no longer a problem. Once the engine has been started and is running, the engine's oil pressure pump takes over to lubricate the engine's internal moving parts. The bypass oil filter heating element, located on top of the oil filter housing, is activated when oil pressure reaches 5 psi. raising the evaporation chamber temperature to 195 degrees which starts the process of eliminating the harmful liquid contaminates, fuel, water, and anti-freeze. A cotton fiber filter medium neutralizes acidity found in the oil. Flow rate of oil after warm up is regulated at 6 gallons per hour. This 1 micron oil filtration system offers superior cleaning properties not found in any other system in the marketplace. This "bypass" filtration system operates as an addition to the engine's full flow oil filtration system whenever the engine is running and does not affect oil pressure. Oil analysis is prescribed at the normal oil filter change indicating the condition of the oil as well as engine wear patterns and takes less than 2 minutes to perform. At engine shut down an automatic timer for the lubrication pump is again activated, providing post lubrication protection for 3 minutes then shuts off automatically. The oil initially enters the bottom of the bypass filter by way of a "T" fitting in the oil pressure sender path and returns via gravity to the crankcase. The electronic oil flow sensor, located down stream of the discharge flow returning to crankcase, sends a signal to an LED display panel indicating proper flow operation. The heater element sensor allows for indication and measurement of electrical current to be recognized on the display panel also. When oil flow has been interrupted or electrical current has been compromised on the heating element, an indicating LED informs the operator to "check oil flow" or "check heating element" needs addressing. The system is working properly when the operator sees both display LED's "ON" before start up. As soon as oil pressure exceeds 5 psi. the heating element LED turns "OFF" indicating proper heater activation. After the engine is started, the oil flow indicator LED also turns "OFF" indicating a positive flow condition. The display lights will automatically turn "ON" a short time after shut down and post lubrication is completed. The automatic cycle repeats every time the engine is operated.

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## Filter Specifics

### Why a bypass system is needed...

Newer engines, designed to meet strict emission regulations, generate greater amounts of soot in the oil. This soot, along with other solid contaminants, fuel, and water, cannot be effectively and completely removed by full-flow filters alone. This means, without a bypass filtration system designed to remove these contaminants, the oil will become dirty much faster — accelerating engine wear and requiring it to be changed more frequently.

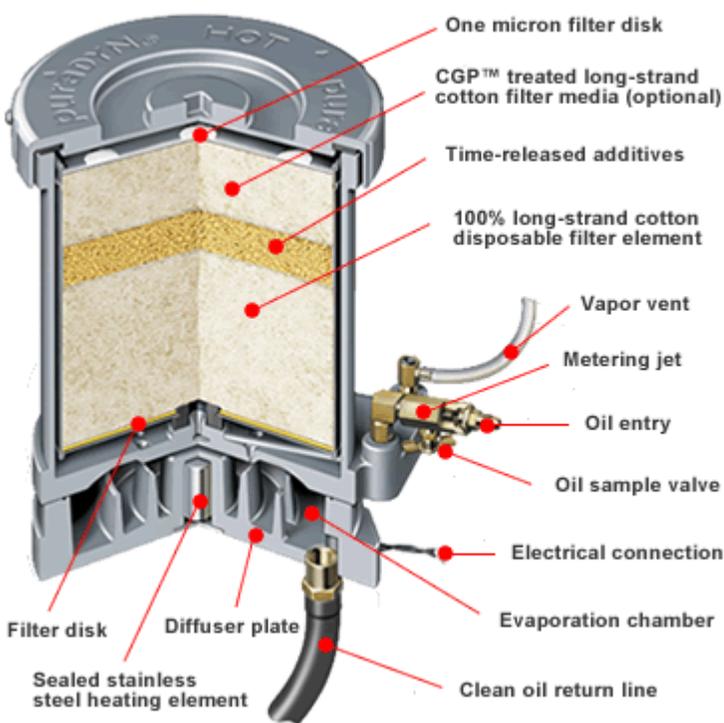
### How it works...

Contaminated oil enters through the metering jet at a slow measured flow rate.

The oil then passes through the replaceable filter element, where [total base number \(TBN\) additives](#) are replenished and the unbleached, [CGP® treated, long-strand cotton fibers](#), tightly compressed to resist channeling, remove contaminants down to less than one micron, while neutralizing acids and sulfur compounds.

The filtered oil then enters the heated evaporation chamber, where fuel and water are evaporated and immediately vented.

The clean oil is then gravity-fed back to the sump. The puraDYN® bypass oil filtration system does not affect the engine's oil flow or pressure.



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It does not replace the conventional full-flow filtration system - it enhances and works in conjunction with it. Complete publications of the following support documentation on the effects of bypass oil filtration can be obtained by contacting Society of Automotive Engineers (SAE International) for reprints:

<b>SAE Paper</b>	831317	"Extending Engine Life and Reducing Maintenance through the Use of a Mobile Oil Refiner"
<b>SAE Paper</b>	942032	"Impact of Electric Mobile Oil Refiners on Reducing Engine and Hydraulic Equipment Wear and Eliminating Environmentally Dangerous Waste Oil"
<b>SAE Paper</b>	66081	"A Modern Approach to Piston Ring-Bore Assembly Wear Determination"
SAE Customer Service - 1 877 606 7323 (US & Canada only) or 724 776 4970 (outside US & Canada) <a href="http://www.sae.org">http://www.sae.org</a>		

**Installation Notes...**

The unit is installed downstream of the existing full-flow filter. Contaminated oil, with abrasive particles, soot, liquids and oxidation by-products known as gum and/or varnish, enters the unit through a small metering jet under pressure supplied by the engine's pump. The metering jet prevents any drop in oil pressure and slows the oil down to a low, measured flow rate of six to eight gallons per hour.

Oil passes through the replaceable filter element where the TBN additives are maintained by the patented time-release additive package, while the long-strand cotton fibers trap solid particles down to below 1 micron and neutralize acid and removes sulfur compounds. In addition, **puraDYN**® filter elements with their optional process for chemical grafting, CGP®, can double the life of the replaceable filter element. The filtered oil then enters the **puraDYN**® heated evaporation chamber where fuel and water are evaporated and immediately vented. After the dangerous contaminants are removed, the clean oil is gravity-fed back to the engine.

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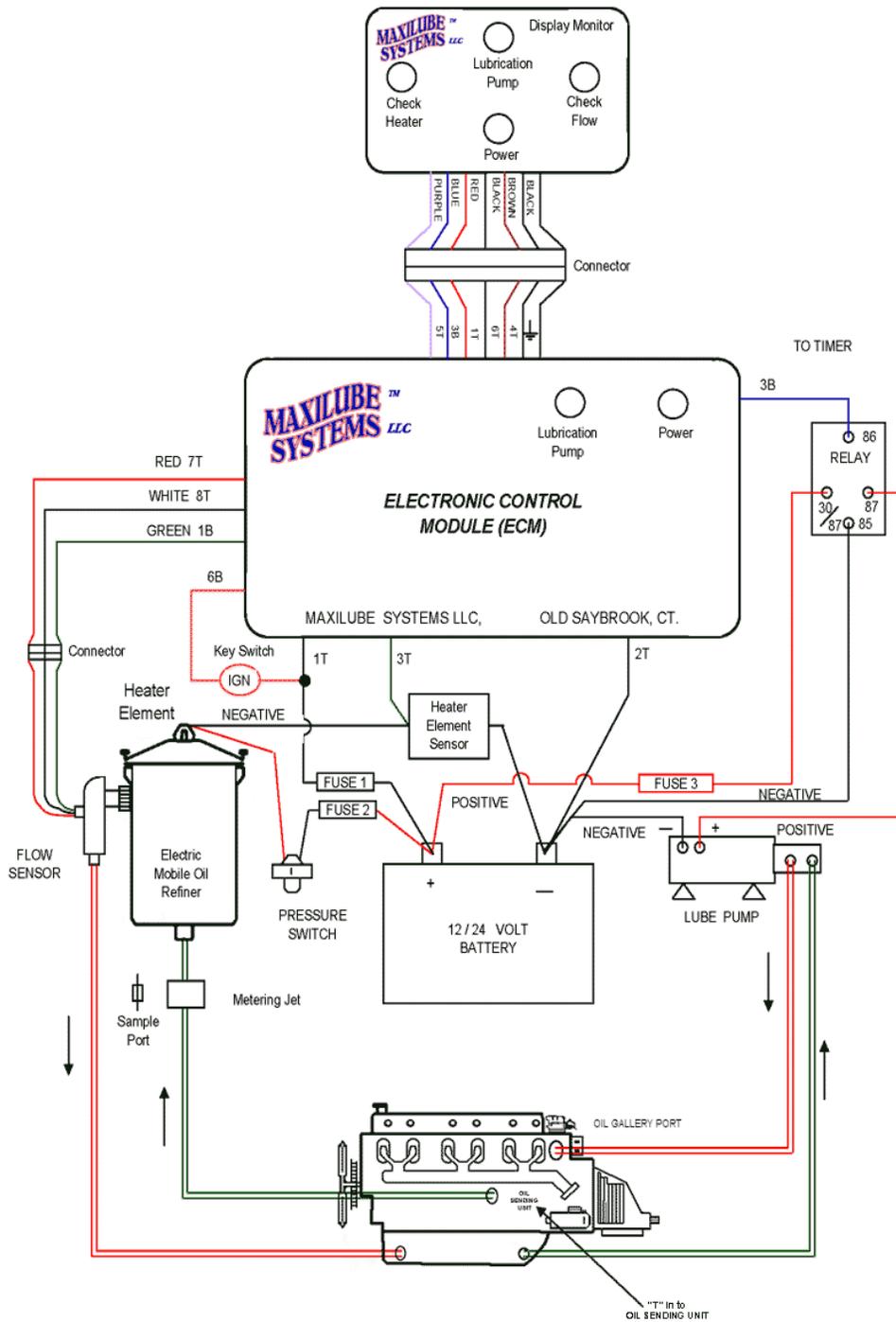
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**Maxilube Systems**    *What is it??*

The **Maxilube System** is a high tech onboard oil lubrication and purification system designed to reduce engine wear and greatly extend or eliminate the necessity for the common oil change on cars, trucks, boats and motor homes. This is accomplished by incorporating a bypass filter removing harmful liquid contaminants, neutralizing acidity and removing particulate matter down to 1 micron or less in size allowing the engine to operate on a continual flow of clean oil. The system also utilizes a custom pre and post lubrication system eliminating "dry start" and "coking" wear along with an electronic control module and display that operates and monitors the functions of the system.

**Frequently Asked Questions:**

***Does oil wear out??***

NO, Oil does not wear out but it does become contaminated due to insufficient filtration and that's why it needs to be changed. The base stock never wears out and under normal usage with a bypass filter such as ours, the additive package, normally designed to be depleted, is retained due to the continual cleaning and lubricating process of our system. Through the use of the **Maxilube System** the additive package is maintained at a much higher level than the manufactures recommendations.

***Why is additional filtration so important and if so, why doesn't the manufacturer install one on their engines??***

The full flow filter installed on your engine is designed to filter particulate matter in the 25 to 40 micron size. If this filter was designed to filter down to 1 micron, as our filter does, the actual flow of oil although very clean would not allow sufficient lubrication due to oil volume restrictions. Most engine wear takes place in the 5 to 15 micron range. Our 1 micron "Bypass" filtration system offers the finest filtration available and effectively removes harmful liquid contaminants and neutralizes acidity. The engine manufactures business is to sell motors, parts and filters, their loss of revenue is your gain as you protect your investment and maximize your engine's life expectancy.

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***Why do I need a pre and post lubrication system along with a bypass filter??***

At **Maxilube Systems** our purpose is to manufacture the finest lubrication and filtration system available, reducing the most amount of wear possible. Most people don't realize that most engine wear takes place when you first start it up for that first 8 to 10 seconds when there is no immediate oil pressure present to lubricate the engines vital moving parts. Experts estimate that 53 to 80% of all engine wear takes place when this "dry start" condition occurs. Our automatic system offers pre and post lubrication cycles that effectively eliminates this condition known as "coking" that occurs on turbo charged engines that may not have proper bearing lubrication after shutdown.

***How do I know how effective the system is??***

The only real way of determining the effectiveness of any oil filtration system is through oil analysis. At **Maxilube Systems** our analysis program is designed to monitor the integrity of the oil being used as well as engine wear patterns. Engine manufactures warranties are not void as long as you have proper documentation of oil analysis and comes back "good for continued use."

***Do I have to use special oil with your system??***

No, Any oil may be used as long as it is the type recommended by the engine manufacturer but since 90% of the oil stays within the engine for the life of the engine you can more easily justify the expense of the better grade oils which help to maximize the efficiency and offer greater protection.

***Will the system have any effect on the main oil pressure system??***

No, Since this is a bypass filtration system only a small amount of oil, approximately 6 gallons per hour, passes through the filter and has no negative effect on the oil pressure already present in the engine.

***I don't use my R.V. or boat that much. How do I justify the expense of this system??***

Whether your R.V. or boat is used often or only periodically, the importance of pre and post lubrication is undeniable and the cost of our system has been proven to increase the value of the R.V or boat when you sell. The next owner has more appreciation and assurance that his purchase has been maintained properly. The entire system can also be re-installed on another R.V or boat, reducing the expense of a new system.

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## Contact Information



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