



# SERVICE BULLETIN NO. 9

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ISSUED APRIL, 1962

**SUBJECT: PROPER LUBRICATING OIL - (4-Cycle Clinton Engines)**

There has been much discussion on detergent and non-detergent oils. In the present Owner's Guide and Instruction Manuals the oil recommendations read MM or MS. Please assist in informing the customer as to the proper use of lubricating oils. In order to help clarify the proper oils for use in Clinton 4-cycle engines listed below is a brief comment on what each particular rating means. All oil containers have a rating marked on the container, such as ML-MM.



Fig. 1



Fig. 2



Fig. 3

**SERVICE ML** - This is a service typical of gasoline engines used under light and favorable operating conditions. It includes moderate speed or moderate load operation most of the time with no severe low or high engine temperature operations. **NOTE:** NOT acceptable in a Clinton 4-cycle engine and use of ML rated oil voids engine warranty.

**SERVICE MM** - Oil usage is for service typical of gasoline engines used under moderate to severe operating conditions. It does not include extensive operation under the severe type of low engine temperature service such as prolonged idling or much starting and stopping of the engine. **NOTE:** This rating is acceptable for use in Clinton 4-cycle engines, but is the minimum rating to be used.

**SERVICE MS** - This service is typical of gasoline engines used under unfavorable or severe types of operating conditions. Service MS represents the most severe service encountered in the operation of gasoline engines and includes two different types (the severe or adverse) of operating condition. Start and stop operation would be an adverse condition. The second adverse condition would be operation at high temperature, high load or overload or extreme or maximum speed. **NOTE:** This rating of oil should be adequate under most any possible application of a Clinton 4-cycle engine.

The above listed oils would be what many people consider as non-detergent, however, the oils do have additives. The MS oil is excellent oil for 4-cycle air-cooled engines on all types of usage; MS is a high additive oil and may or may not have some detergent additive.

The following oils are commonly considered as detergent to high detergent oil:

**SERVICE DG** - This service is typical of diesel engines in any operation where there are no severe requirements. This oil is also commonly used in automobiles and especially automobiles with hydraulic valve lifters. **NOTE:** This is the highest rating to be used in a Clinton engines but is not especially recommended. An MS oil is preferable.

**SERVICE DM** - This service is typical of diesel engines operating under severe conditions. Again this oil is commonly used in automobiles and especially where hydraulic lifters are used. **NOTE:** Oil of this rating is NOT RECOMMENDED and warranty is VOIDED by use of oil of this rating.

Owner's Guide calls for MM or MS, past Owner's Guides called for non-detergent, so customer has been informed. Figure 1 illustrates how a can would be marked for MM rated oil. Please note that it would carry both the ML and the MM marking. Figure 2 illustrates the container that would be marked for MS rated oil and this is marked ML-MM-MS. Figure 3 illustrates a can marked for DG rated oil and again it carries the marking ML-MM-MS-DG.

It is recommended that an oil of a rating no lower than MM be used and warranty will not be allowed on engines operating on an ML rated oil. The maximum rating to be used would be DG and this is not especially recommended. Either MM rated oil or preferably MS rated oil should be adequate for normal usage and from review of the comments on the ratings MS oil would be adequate for most any operating conditions at most any engine speed and most any engine load.

Following are listed the SAE weights of oil based on temperature and when an oil is specified for customer summer use the statement can be made to the customer that SAE 30 oil should be used of a rating ML-MM or ML-MM-MS. Please review the following temperature-weight recommendations.

Above 32°F. use SAE 30 of MM or MS Rating.

Below 32°F. to -10°F. use SAE 10W of MM or MS Rating.

Below -10°F. use SAE 5 W of MM or MS Rating.

In conclusion, any legitimate manufacturer's oil should be adequate for the Clinton 4-cycle engine if the above is considered as to weight, temperature and rating.

NOTE: ML oil has been tested in new engine. In a few hours of partial load operation, the oil had changed to the color and viscosity of dark brown molasses or very heavy transmission lubricant. The engine during operation had a very heavy vapor expelled from the breather assemblies due to the ML oil. The change in the oil (ML) from SAE 30 to a heavy consistency results in engine failure to "improper oil" which equals "no warranty".

The following should be considered when engine service performed and failure of customer to do the following removes any warranty consideration.

- A. Use proper SAE weight oil
- B. Use proper API oil rating
- C. Maintain proper oil level
- D. Multi Viscosity oil such as 10W-30, has not been recommended in past or present owners guide. The use of multi viscosity oil is not recommended and use of multi viscosity oil could remove engine from warranty consideration if an oil problem is cause of problem.
- E. Change oil at regular intervals. NOTE: Lack of oil changes can result in dilution and contamination to the point that the oil does not meet specifications of point A or B above. NOTE: The proper changing of oil will assist in keeping the engine clean internally. In some cases it may be necessary to periodically flush the crankcase to maintain clean engine internally.
- F. Keep engine free from foreign material. Many rod failures or bearing failures can be traced to grass or other debris entering engine (at time oil is checked or added) and moving through or into oil pump or oil passages resulting in the reduction or stoppage of oil flow. Foreign material in the engine is under the control of the user and is not subject to warranty consideration.
  1. Points of entry of foreign material could be:
    - A. Oil fill
    - B. Spark Plug - Improper cleaning of spark plugs can cause damage to moving parts due to traces of cleaner on plug. Other foreign material can enter at this point if care not used in checking or changing spark plugs.
    - C. Intake System - Improper service of air cleaners, loose parts, worn gaskets, etc.
- G. Maintain engine speed below 3600 r. p. m.

Engine r. p. m. in excess of 3600 r. p. m. can drop the oil level in relation to the overspeed. The average 4-cycle Clinton engine can readily operate at 4800 r. p. m. if governor overridden, improperly adjusted, or by-passed. No load full throttle r. p. m. could be in excess of 7000 r. p. m. Overspeed will drop oil level rapidly (matter of minutes) causing failure.

#### Engine R. P. M. :

If an air cooled engine operating at 3600 r. p. m. were to be compared in miles per hour to an automobile engine operating at 3600 r. p. m., the speed would be over 80 miles per hour.

Many recent automobiles have approximately the following engine r. p. m. vs m. p. h. ratio:

2000 r. p. m. ----45 m. p. h.  
3000 r. p. m. ----75 m. p. h.  
4000 r. p. m. ----105 m. p. h.

Perhaps, some review of the above by the user may help them understand the demands that they may be placing on an engine.