



# SERVICE BULLETIN NO. 10

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ISSUED APRIL, 1962

SUBJECT: Oil Loss Through Breather Ass'y-Vertical Shaft Gem Engines.

A number of engines have been checked due to the complaint of rapid oil loss through breather assembly. The problem on these engines was found to be that too much oil had been added to the engine and the excess oil was being expelled through the breather assembly. This problem has been especially prevalent on equipment where the engine is tilted due to position of equipment. The engine must be level when filling or checking.

- A. The oil capacity for a vertical shaft Gem or Clintalloy engine is a **maximum** of one pint of oil. This can be checked with the engine base level. The oil level is **2-1/2 to 3 threads** from the top of the oil fill (Fig. 1) and an oil level above this will result in loss of oil through the breather assembly. This is especially true on engines with camshaft slinger lubrication.

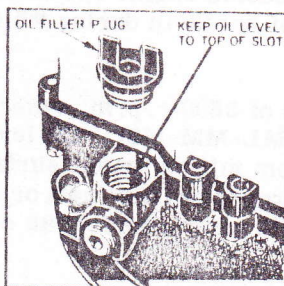
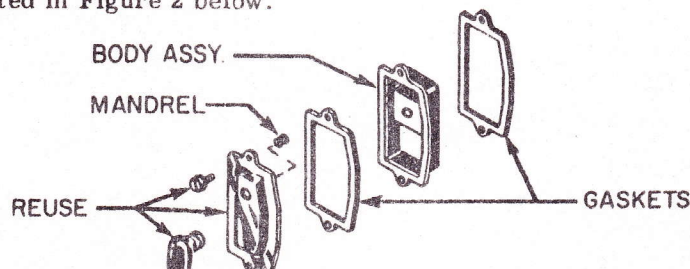


FIGURE 1.

- B. Use SAE 30 weight oil of ML-MM or ML-MM-MS above 32°F. Use SAE 10W oil MM or MS below 32°F. Use SAE 5W oil MM or MS below -10°F.
- C. Change oil after the first five hours of operation for a new engine and a maximum of each 25 hours thereafter. Diluted oil can result in this problem.
- D. Check for overspeed as engine r.p.m. above 3600 can cause rapid loss of oil through the breather regardless of lubrication system or condition of oil. Engine speed above 4000 r.p.m. definitely does cause an early failure of the engine due to oil loss through breather to the point that the engine is low on oil resulting in rod failure. Use a tachometer to be certain engine speed is below 3600 r.p.m.
- E. Oil loss can be caused by oil return hole, from valve chamber to crankcase, being blocked. This should be checked when breather is checked.
- F. A few cases have been reported where the plug was **not** installed in the block after the oil passage was drilled to upper bearing. (Some of these **blocks** are made to work for either oil pump or slinger lubrications system). Failure to install this plug can cause this problem. Please check.
- G. Breather Assembly - The breather assembly can cause oil carry over. A breather valve jammed in open position can add to the problem or cause the problem. Dirt in the breather assembly can also affect the breather operation and can cause oil loss. **IMPORTANT:** When problem is encountered a breather change should be performed due to possible mal-function. It is recommended that kit number 149-564 be used as it includes a new breather assembly and is installed as illustrated in Figure 2 below.



- H. Damage or extreme wear in piston, ring and/or cylinder area can cause oil loss through breather and any of the preceding comments including a new breather assembly will not correct a problem due to wear. Dirt entering engine by by-passing filter (or dirty oil due to lack of maintenance) can cause rapid wear and scoring which will result in **piston blow-by** causing excessive oil loss



through breather plus heavy oil consumption past rings. This condition may show up in spark plug fouling, heavy carbon formation in combustion area, heavy exhaust due to oil as well as heavy oil vapor through breather assembly. Disassembly and inspection of rings, piston and cylinder would indicate wear or scoring from dirt, if this is the cause. NOTE: Dirt by-passing damaged filter or going through improperly serviced filter can wear an engine out in 1/2 of a day as noted by inspection of moving parts. The thickness of rings have been reduced by 50% in as little as 2 hours where dirt has had unrestricted entry into engine.

Another possibility would be rings not seating in due to improper oil such as a very high detergent oil in a new engine which can retard rings seating to cylinder. Oil rated ML-MM-MS-DG-DM is not to be used. Oil rated ML-MM or ML-MM-MS would be best for break in and usage after break in. It is possible that blow-by can be due to a wavy ring groove on piston which would not allow the rings sufficient freedom of movement to seat to cylinder properly, also a very high cylinder finish can lengthen the time required for rings to set in. Either wavy ring grooves in piston or high cylinder finish could cause the oil to be moved through the breather assembly. If it is suspected that this is the problem, deglaze the cylinder with a finish hone and install new piston and rings. Rapid carbon formation in the combustion chamber can indicate ring, piston or cylinder problems. High oil consumption on a new engine would indicate the same problem. Please consider that a new air cooled engine should have the same consideration as a new automobile engine in that there is a period of break-in during which oil should be checked more often due to higher consumption as rings seat in.

In summary, first operate engine at a maximum of 3600 r.p.m. (check with tachometer) with a maximum of one (1) pint of oil (SAE 30-rating ML-MM or ML-MM-MS). Oil level is to be checked with engine level and oil level is to be 2-1/2 to 3 threads down from milled gasket surface of oil fill. Re-check the oil level after working engine a few minutes as improper oil can foam or carry air during engine use which will increase volume during operation resulting in same problem as over-filling. Increased volume would require use of a proper oil.

NOTE: ML oil has been tested in new engines. 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 engines during operation had a very heavy vapor expelled from the breather assemblies due to the ML oil. The problem, if due to "Improper oil" (ML), is not warranty, as Owner's Guide specifies, correct oil.