2-CYCLE, 250cc ENGINE OIL MIGRATION CHARACTERISTICS

Tests were made using these gas/oil ratios: 25:1, 40:1, and 60:1. The figures below reflect a 41.6 oil/gas ratio – an average taken from the three test ratios.

- **OIL MIGRATION ELAPSED TIME THRU ENTIRE ENGINE**
  - Idle (500-1,000 RPM): 600 Seconds
  - 1/2 Throttle (4-6,000 RPM): 105 Seconds
  - Full Throttle (8-14,000 RPM): 4 Seconds

- **OIL MIGRATION DWELL TIMES**
  - Idle (500-1,000 RPM)
    - 1. up to 30 secs
    - 2. up to 60 secs
    - 3. up to 210 secs
    - 4. up to 300 secs
  - 1/2 Throttle (4-6,000 RPM)
    - 1. up to 4 secs
    - 2. up to 11 secs
    - 3. up to 37 secs
    - 4. up to 53 secs
  - Full Throttle (8-14,000 RPM)
    - 1. up to .2 secs
    - 2. up to .4 secs
    - 3. up to 1.4 secs
    - 4. up to 2 secs

- **% OF UNBURNED OIL & OIL COMBUSTION PRODUCTS DISCHARGED IN EXHAUST GAS**
  - Idle (500-1,000 RPM): 98.6%
  - 1/2 Throttle (4-6,000 RPM): 99.4%
  - Full Throttle (8-14,000 RPM): 99.7%

- **OIL RETENTION WHEN ENGINE IS STOPPED**
  - Of the oil remaining in the engine after it is stopped, 4.5% is retained on the piston/skirt and cylinder wall (1); 4.5% on the piston ring (2); 1.3% on the piston pin bearing (3); and 2.5% is retained at the crank pin (4). 24% is retained in the crankcase, and 63.2% is retained on other components, such as rod and cylinder wall surfaces.

**CONCLUSIONS**

- Many engines are over-lubricated at idle, sufficiently lubed at half throttle, and marginally lubed at full throttle. At full throttle for long periods of time, severe engine damage may result from insufficient lubrication.
- As the engine size decreases and RPMs increase, oil migration times decrease dramatically.
- Oil moves through and around internal engine components at various rates.
- Oil retention on major engine components (after engine is stopped) decreases as RPMs increase.

**MAXIMA RECOMMENDS:**

- Oil/gas ratio must vary according to anticipated use:
  - **RECREATIONAL**
    - 50-125 cc: 50-60:1
    - 125-250 cc: 50-60:1
    - 250 cc+: 50-60:1
  - **MOTOCROSS/ENDURO/ X COUNTRY**
    - 25-32:1
    - 32-40:1
    - 40:1
  - **ROAD RACING/ FLAT TRACK TT**
    - 20-25:1
    - 20-32:1
    - 25-32:1

- Many lubricant producers recommend the same gas/oil ratio for all types of riding and racing. Maxima feels this approach is too general, and urges motorcycle owners to make their decisions based on the above research.
- All of the above measurements are approximations, and should not be considered 100% accurate. They are meant to provide the reader with a basic understanding of two cycle engine lubrication characteristics.