



SynMax Performance Lubricants

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Q & A TECHNICAL BULLETIN – MAZADA ROTARY APPLICATIONS

Q: Can SynMax Motor Oil be used in a rotary engine?

A: Yes. A rotary engine is a modified four-cycle engine that recommends the use of motor oil for street applications. In a rotary engine, motor oil lubricates the eccentric shaft bearings, thrust needle bearings and rotor bearings (similar to a crank and rod bearing of a piston engine). Motor oil also is injected into the combustion chambers to lubricate the apex seals, corner seals, and side seals, all of which helps to create the sealing mechanism (the equivalent job of the piston rings). SynMax™ provides outstanding protection for the e-shaft, rotor bearings and thrust bearings and is suitable for the oil injection system as it has proven to run clean and is an excellent choice for rotary apex, corner and side seals.

Q: Mazda made a previous statement in the older owner's manual not to use synthetic oils in a rotary engine, why do you say there is no problem?

A: Synthetic oils in the early development years had some seal compatibility issues. Today's synthetic oils do not have compatibility issues with modern designed engines. There is no substantiated evidence of seal compatibility issues with Titan SynMax™. Here are some facts:

- The Mazda Factory racing departments recommend and use 'synthetic' oils including the winning 1991 Lemman's 20-G 4 rotor Mazda 787B.
- MazdaComp USA printed manual (now Mazdaspeed) recommends the use of synthetic oils for high performance and racing conditions.
- Titan SynMax™ is compatible with the bearing material, sealing elastomers and combustion seals used in a rotary engine.

Q: Should I go longer or shorter between oil changes?

A: SynMax™ recommends that the maximum oil drain / filter change interval listed in the Owner's Manual be followed while under warranty (new RX8). For FA, FB, FC, FC Turbo and FD rotaries, extending drain intervals from 3,000 to 7,000 miles is possible if monitored properly. Since the rotary engine injects oil through the use of a metered oil pump, either adding oil into the carburetor / throttle base plate air / fuel mixture or directly injecting oil into the rotor housing, rotary engines will consume oil of one quart per 1000 – 3000 miles. It is important to maintain the proper crankcase oil level in your rotary engine if you decide to extend oil drain intervals.

Q: Can I use API rated street application oil for competition racing in my rotary motor?

The general answer is NO – always use Professional Competition Race Motor Oil for the racing application. The premium protection far outweighs the little extra in cost. Please reference SynMax Technical Bulletins: Q & A Race Motor Oil General Applications and API Question: Race Motor Oil vs. Street Motor Oil.



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Q: If I pre-mix my fuel for the rotary engine, do I use the same ratio as with mineral based oils? Does it burn at the same rate?

A: In an ideal world, the rotary engine metered oil pump should inject ashless oil designed to burn in the combustion chamber and use a four-cycle oil in the crankcase for the eccentric shaft, rotor bearings and thrust bearings. For the street, Mazda simplified the OE system to use just one oil, that being a typical four-cycle oil for both the e-shaft as well as the combustion chamber.

If the metered oil pump is still enabled SynMax™ recommends using a premium moly 2-Cycle TCW oil. The two-cycle oil being added to the fuel tank is in addition to what Mazda designed to inject and acts as a supplement for durability. Depending upon engine design, level of modifications (street port, peripheral port, nitrous turbocharged) and application, the typical mix ratio could vary from 200:1 to 800:1.

Competition racing application where the metered oil pump has been disabled or removed, again based on the actual engine and modification level, the ratio could vary from 150:1 to 600:1. For this application, we again recommend a moly 2 Cycle TCW oil

Stock FD twin turbo 13B with the MOP oil injection system can typically use about one quart per 1500 miles under hard street driving. If this vehicle is getting 15 mpg, the gasoline to oil ratio is 400:1. If the oil consumption on this vehicle reduces to 1 quart per 2500 miles and fuel efficiency increases to 20 mpg, the gasoline to oil ratio increases to 600:1. The stock metering oil pump is a great system as it varies with throttle position (load on the engine). Pre-mixing has to be calculated for the 'worst case' that will be seen by the engine for that fuel load. Under racing conditions, that's wide open throttle at racing rpm's. At idle, this ratio may be slightly fat (rich).