

# FAULTY SPARK PLUG PLACEMENT

The Khwarzimidic Science Society

**Kenneth Mckenzie**

**Member KSS**

March 27 2000

<http://khwarzimidic.org/research/AUTO/>

---

On October 3, 1960 Tsuneji Matsuda the president of Toyo Kogyo (Mazda) and a group of five technical men went to visit NSU and were shown the bench tests of three single rotor Wankel engines. There was a lack of stability at idling speed but at high speed the engines were so stable that a coin could be balanced on them. An agreement was negotiated to commence research and a substantial crew, with up to 180 members was assigned to the project.

The first engine arrived from NSU in November of 1961 Which was immediately dismantled examined then reassembled and tested.

Mazda built their first prototype The test results were extremely discouraging The engine showed excessive vibration at idling speed, it emitted large amounts of white smoke, and its oil consumption put it beyond all practical use. After running 200 hours power output dropped. Upon tearing down the engine, it was found that the chamber surface had chatter marks, and they had caused the electroplating to fall off.

It is sad that not one of the 180 members of the research team took the time to evaluate to find the cause of the problem they instead directed themselves to a satisfactory solution. They concentrated on designing a superior chamber surface, superior tip seals and using two three or more rotors or rotary pistons so the engine would have greater stability.

Every driver who has driven an automobile with a tire out of balance knows that the problem dominates when the tire is subject to high speeds. At low speed it would not be noticed. This fact should have registered in at least one of the researchers mind. This fact shows that there is a problem when the engine vibrated at low speed. And balancing is not the solution.

If they looked at the pattern that took place in the chamber they would have discovered that the chatter marks start exactly at the trailing apex tip when the leading tip crosses the spark plug hole and momentarily releases the gas sealing pressure. The leading tip then passes the hole and the gas pressure hammers the trailing tip against the chamber causing the tip to bounce against the chamber providing a poor seal and poor compression stroke.

At high speeds when the leading tip crosses the spark plug hole it has sufficient exhaust stroke pressure to equalize the pressure loss.

In 1993 I wrote Mazda informing them of the wrong placement of their spark plugs and they chose to continue producing an inferior product. If the spark plug is placed at dead center there is no rapid pressure loss and there is a smooth transition as the rotary piston surfaces fluctuate between high pressure and minus pressures. The problem found with excessive heat at spark plug holes would also be eliminated.

# FAULTY SPARK PLUG PLACEMENT

The Khwarzimidic Science Society