RC Gassers – OILS
by Richard Geertson

For the sake of brevity, I must begin from a starting point of assuming you have a gasser in good working order, with a properly functioning carburetor/intake (no air leaks, good pump diaphragm); correct spark plug in good condition; good compression; quality fuel, etc. If you do not, you will need to correct/troubleshoot or send the engine in for service. You should always follow the manufacturer's recommended break-in procedure: fuel/oil mixture, oil type, propeller, length of run time, needle adjustments.

From my experience, most RC gassers come already adjusted to run right out of the box; how well can vary, depending upon the differences between density altitude/humidity between the engine's origin and its final running destination. But for the most part, gassers will start and run quite well with factory high and low needle settings. Moreover, usually the engines are set to run somewhat rich as per manufacturer's break-in parameters.

OIL – 2 cycle oil is a subject over which many discussions have ensued. Quite frankly, for most sport applications, the choice of 2 cycle oil is not that critical. Again, follow manufacturer's recommendations for break-in. Contrary to popular belief, "break-in" is not the time to protect your engine from ALL wear and tear – it is as the name implies – a wearing-in of critical engine parts, specifically the piston rings. If excessive oil or a high performance synthetic is used for break-in, the rings may not wear-in (seat) properly, resulting in poor compression and excessive blow-by. It is also the heating and cooling of the engine that anneals the metals for proper fit and internal finish, resulting in potentially years of superb performance.

If you intend to depart from manufacturer's recommended oils after break-in, I suggest you consult their service department OR (and this comes with some hesitation), use what seems to be working for a fellow modeler with many years of RC gasser experience. Hey, if *Speed Racer* has been running his Zenoah, Quadra, or 3W engine on XYZ Super Oil, trouble-free for years, THAT carries some weight. It's your call if you choose to follow his recommendations for a good 2 cycle oil.

The only 2 cycle oil NOT RECOMMENDED is that designed for water-cooled 2 strokes. These oils are not designed to accommodate the wide range of temperatures encountered by air-cooled engines.

It seems most of the 'competition' gassers (DA comes to mind) recommend a specific synthetic, after break-in, mixed at 100:1. Sounds kinda scary and makes one wonder if their manufacturing tolerances are that much better than some of the sport gassers? Consider this: Fuji offers a synthetic 2 cycle oil that mixes at up to 250:1!!! Now THAT is a lean oil to fuel ratio!!! Fuji gassers aren't exactly at the pinnacle of RC gasser technology, so what gives?

Clearly, the safe thing to do is to follow manufacturer's recommendations and always keep in mind that Amsoil Saber at 100:1 or Fuji synthetic at 250:1 may offer the absolute highest performance with the least amount of mess on your airframe, but at what cost? Not only are the oils somewhat pricey, but their use REQUIRES the engine owner/tuner to know what he is doing. Those oils provide adequate protections and optimum performance as long as the engines in which they are utilized are:

a) designed for those types of cutting edge synthetics
b) tuned for correct fuel/air mixture settings

When running a mix of 32:1, your engine is going to be more tolerant of lean or hot running. Reduce the oil content to 1 part oil to 100+ parts gasoline, and overly lean or hot settings WILL COOK THE ENGINE – it doesn't matter how miraculous (or expensive) the synthetic 2 cycle oil is.

I questioned Desert Aircraft about their recommendation for Amsoil 100:1 and was assured that the **absolute worst thing a modeler can do to his engine is to run it overly lean – and I not talking about a lean oil/fuel ratio, I am talking about lean needle adjustments or air/fuel ration.** You can tell when a DA has been run lean as it will begin to look like Ted Kennedy – *pink and ruddy*. This can void the manufacturer's warranty.

It is also NOT RECOMMENDED to run high performance synthetics at substantially richer mixes than recommended. This can cause poor engine performance.

When used as recommended, in a properly tuned gasser, the high quality synthetics are designed to prevent carbon build-up, plug fouling, excess oil residue on the airframe, and the highest ratio (densest) charge of **fuel to air** with each intake/power stroke – theoretically resulting in the highest output.

Next month, we will talk about gasoline and proper carburetor adjustment.