

THE ABC'S OF ABC ENGINES

Published in the December 2005 issue of the Central Coast Flyer, the newsletter of SAM 26, Bob Angel, Editor

Besides just SAM members, I've met several "back and forth" fliers, who aren't familiar with the more modern ABC engines, so if you're an expert in this area, just forgive me and glide on past while we review a few basics. ABC refers to Aluminum, Brass and Chrome, or the metallic composition of piston and cylinder. There are other metal and alloy variations, but the parts are usually a hard ring-less aluminum piston, precisely fitted to a chrome plated brass cylinder liner. These are chosen for their expansion properties to give the best fit under the heat of combustion. The engines are taper fitted to be very tight at top center when cold. They are normally hard to turn over by hand, and often even squeak a little bit at the top of the stroke when cold. I've worked with some so tight that it was necessary to loosen the glow plug to allow a starter to get them turning. Then a pit man had to quickly tighten the plug and apply glow heat while the starter kept turning. But when they start, the combustion heat expands the brass cylinder faster than the aluminum piston and that little rascal loosens up and really honks. The hotter it gets, the looser the fit. So unlike older metallurgy, if the mixture is set a little lean, the cylinder just expands more, instead of seizing up and stopping, and/or overheating and doing damage. But these qualities call for some different rules for break-in and running. First, the engines like to be fed high nitro fuel, and you want to use the highest percentage of nitro you ever expect to run from the very beginning. The idea is to get the parts up to temperature quickly to avoid excess wear. You don't want to run them sloppy rich to break them in. Just needle them back a bit richer from peak RPM to a fast comfortable speed. And not much break-in is needed. Some makers just give an instruction similar to that for the Cox 049's: Just run two or three tanks through until it will hold a setting for a flight, then be a little conservative about running too lean for the first few flights.