



CHAMPION AEROSPACE LLC

02/12/2015

Champion Aerospace Technical Tips for A/C Ignition parts manufactured by Champion.

Slick by Champion magnetos: Reference L-1363 for complete servicing instructions for 4300/6300 series magnetos.

- 1) Champion recommends resetting internal e-gap whenever cumulative timing drift exceeds 5 degrees in either advanced or retarded condition. Once this situation has occurred the magneto output is limited and firing the fuel air mixture becomes marginal, which can usually be identified by hard starting.
- 2) Champion defines excessive timing drift to be a cumulative of more than 4 degrees per 100 hours, time in service (TIS) in either direction.

Example: On a 20 degree base timing engine, if the timing is found to be 15 degrees BTDC or 25 degrees BTDC, in a 100 hour interval, this would be considered excessive timing and should be investigated for cause.

- 3) Timing drift occurs every time a mag fires and retards when the cam face erodes quicker than the point face and advances when the point face erodes quicker than the cam. This is called a balanced wear design and when everything works well, timing drifts continually around e-gap.
- 4) Remember, if you don't track drift and direction you never know where you're at!



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Champion Sparkplugs: Reference Champion's AV6-R for complete plug serving.

- 1) Correctly testing Champion Sparkplugs is done by cleaning and gapping the plug to 16 Thou and testing it in a calibrated CT-475 Champion sparkplug tester.

If it doesn't leak and sparks a bright blue spark it is recommended for reinstallation in the engine. If it is found to be leaking through the ceramic or not producing a bright blue spark it should be discarded. The CT-475 tests the integrity of the ceramic seal and the internal resistor by firing thousands of volts through the plug, simulating the magneto.

- 2) Cracked ceramics in either end of the plug is cause for rejection of the plug.

Cracked ceramics are normally caused by one of 4 factors.

- a) Dropping the plug, though ceramics are very tough, they are susceptible to cracking when dropped.
- b) Side loading the shell of the plug when installing, usually caused by not using a 6 point aviation sparkplug socket.
- c) Prying between the center electrode and the ground electrode to attempt to "open" a plug which has been gapped to tightly. If a plug is gapped below 14 Thou throw it away, if 14 Thou or above reinstall and it will "wear in".
- d) Detonation or pre-ignition of the engine. In this case the plug should be considered "the canary in the coal mine", it is telling you that either of these are bad for your engine.



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Slick by Champion Ignition Harnesses: Reference L-1499 harness manual for complete service instructions.

Harnesses generally fail due to damage to the inner insulation material. This can be caused by several things but main culprits are as listed. All parts of a Slick harness are completely repairable.

1) Chaffing of the lead on the engine or cowling.

After enough chaffing the shielding material is damaged and the inner insulator becomes compromised allowing the spark to fire to the engine or airframe and not to fire the plug. In the early stages this appears as a slight “bump” to the pilot. Properly route the harness on initial installation and inspect, reroute or repair as needed at regular intervals.

2) Damage to the plug end near the ferrule swedge caused by not using the 7/16 wrench when tightening or loosening the harness nut to the plug. The prevention of this damage is simply to hold the harness lead from rotating when doing installation or removal of the nut.

3) Age, harnesses don't last forever! As the inner conductor ages it hardens and in some cases can crack causing insulation resistance leaks, again, these appear as bumps or misses to the pilot.

A new harness lays in neat coils on a desk, an age hardened harness holds the shape of the engine and you can sometimes stand it the corner. Once a harness has reached 12 – 15 years of age or becomes age hardened replace it with a new Slick by Champion!



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Champion appreciates you taking the time to read this material and would be glad to discuss any of these topics directly with you. For technical assistance please call the **Slick Piston Hotline 904-772-1909** or e-mail us at slicksupport@champaero.com

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