Engine Starting Procedures

**CFIs:** It is important for you to be very familiar with the engine start procedures from the Pilot's Operating Handbook (POH) under all environmental conditions. Cold winter weather is particularly challenging and hard on starters. Be sure you know the procedures and follow them exactly for each engine start. We want to avoid the trend of improper starting procedures that we saw over the past year and a half that, in some cases, led to engine fire. Examination of each of these cases indicated poor checklist discipline. Please provide the example for your students and make sure we are doing all of our ground and flight procedures correctly in accordance with the POHs and checklists. Thanks for all you do and let's keep it safe.

Dr. C.

**CFIs:** As stated above poor checklist usage, made up tricks and tips, etc...especially pumping throttles has led to engine fires during our investigation on this particular problem. Research has shown that this is not peculiar to the Warrior but other aircraft have had this problem, even Cessna. It is generally the same situation. Please **FOLLOW THE CHECKLIST FOR COLD AND CHECKLIST FOR HOT STARTING, as well as the POH.** The CFI sets the standards for students coming up the ranks to eventually be CFIs themselves. One of the weakest areas of pilot training in the U.S. is systems knowledge. You have to understand your aircraft and why it “works” the way it does, especially piston engine aircraft, which believe it or not are more complicated than a jet engine or even a turbo-prop. It does not take much to damage or cause a problem. Cold weather can be especially challenging. If prime is used, use it sparingly; the first start according to the POH, whether hot or cold is no prime. If you prime, 3-5 secs is plenty for cold start; give it time in cold weather to atomize 20-30 seconds. Then start cranking according to the time specified in the POH, then the proper wait time after each start attempt. If 3 or 4 attempts are producing no result contact maintenance whether at FRG or another airport.

ASO John Kolmos

Hot Start Recommended Procedures

(For the Warrior III relating to priming)

Contributed by David Gardinier (Thanks David)

**This is not meant to replace the proper use of checklists, and POH procedures.** You should become familiar with the specific Warrior POH procedures as well as checklist procedures.

In the Warrior III POH it recommends no prime be used even during a normal start, then if the engine does not fire within five to ten seconds, disengage the starter, prime the engine and repeat the starting procedure.

After trying different procedures and priming techniques, this is the procedure I found to have the most success.

Follow proper checklists for Hot Start Procedure when if starting within 20 minutes of last flight or oil temperature **exceeds** 100°F.
When the checklist says PRIME AS REQUIRED during normal or cold start procedure, use the following chart as a guideline:

<table>
<thead>
<tr>
<th>Oil Temperature</th>
<th>Seconds of Prime</th>
</tr>
</thead>
<tbody>
<tr>
<td>100°F</td>
<td>1</td>
</tr>
<tr>
<td>75°F</td>
<td>2</td>
</tr>
<tr>
<td>50°F</td>
<td>3</td>
</tr>
<tr>
<td>Below 50°F</td>
<td>4-6</td>
</tr>
</tbody>
</table>

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In the Warrior III POH it recommends no prime be used even during a normal start, then if the engine does not fire within five to ten seconds, disengage the starter, prime the engine and repeat the starting procedure.

If you have any question whether the engine is hot, the hot start procedure should be done.

My only addition is give prime time to atomize...10 sec above 50°F 20 sec below (approximately) Use the timer (that you use during instrument training and approaches) in the aircraft so we can all follow the same “time frame”.