

GLASTAR SERVICE BULLETIN 21

Subject: Lycoming cowling cooling inlets

Applicability: GlaStar Lycoming cowlings shipped prior to 7/26/96

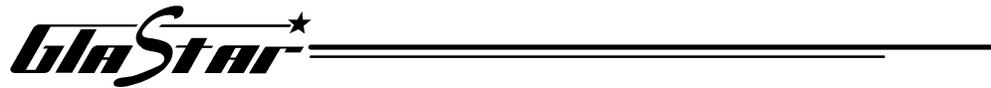
Discussion: Based on initial flight testing of the GlaStar prototype with the Lycoming O-320 engine, the first-run of approximately thirty engine cowlings was manufactured with cooling air inlets of approximately 25 square inches each in area. In normal flight operations here in the Pacific Northwest, these inlets provided ample cooling, and their small area contributed to the low-drag characteristics of the cowling.

However, subsequent flight experience in warmer climates demonstrated that the cowling produced more marginal cooling when the ambient air temperature was high, especially during prolonged, high-angle-of-attack climbs. Engine and oil temperatures did not exceed the manufacturer's maximum operating limits, but the cooling was sub-optimal.

For this reason, we upgraded the standard cowling beginning with the second run of parts, increasing the area of each inlet to approximately 35 square inches by dropping the lower edge of the opening about an inch. We also increased the radius of the opening, which reduced separation of the cooling air inflow. Testing reveals that these enlarged inlets provide ample cooling in all flight regimes, even in high ambient temperature conditions.

Many factors influence engine cooling, including the design and construction of the engine baffling, the way and the conditions under which the airplane is flown, and peculiarities of particular engines. Experience of a couple early builders with Lycoming O-320s and first-run cowlings suggests that this combination *can* be workable. However, we feel that many GlaStar builders with first-run cowlings will find the cooling performance of the cowling inadequate. For this reason, we are recommending action to upgrade these first-run cowlings, and we are offering a couple of special programs to help you do this with as little inconvenience and extra work as possible.

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Recommended Actions: If you wish to upgrade your cowling, two alternative courses of action are open to you.

Option 1: Lower Cowling Half Replacement

At your request, Stoddard-Hamilton will ship you a new lower cowling half [P/N 101-01020-02] at no charge. Because the new cowlings feature left-side landing light insets, we will also include a new landing light lens [P/N 067-00361-03]. Crating and shipping charges will be borne by Stoddard-Hamilton, and the old cowling half and lens need *not* be returned.

This is a limited-time offer. Orders for new lower cowling halves and left-side landing light lenses will be accepted until **March 31, 1997**; cowling halves and lenses ordered after that date will be **full price**. Orders received prior to March 31 will be shipped in the order in which they are received, although we will make a special effort to accommodate builders who notify us that they have *realistic* plans to fly their aircraft in the near future. The time it will take to fulfill all orders for new cowling halves will depend on how many builders choose this option, but we anticipate having all the new cowling halves produced and shipped by **October 1997**.

Option 2: Cooling Inlet Enlargement

Option 1 is obviously attractive if you have not yet installed your cowling. However, if you have already fit the cowling to the airframe and installed the attach hinges, cowl flap, oil door and so on, you may be reluctant to start from scratch. For this reason, we have developed a molded fiberglass insert incorporating the larger inlets that can be installed on first-run lower cowling halves. The installation procedures involve cutting out the portion of the lower cowling half that includes the cooling inlets, and then laminating the new inlets in place. Alternatively, if you wish to move your landing light to the left side of the cowling (as is now standard) you can also cut away the portion of the original cowling containing the landing light inset and install a one-piece insert that contains the new inset as well as both cooling inlets.

We estimate that approximately twenty-five hours of labor will be required to complete either of these modifications.

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Builders wishing to install the inlet enlargement should order the Cooling Inlet Enlargement Installation kit [P/N 930-02100-01], which includes the enlargement insert, detailed instructions and a left-hand landing light lens. Stoddard-Hamilton will provide and ship this kit at no charge.

This is a limited-time offer. Orders for the kit must be received by **March 31, 1997**; the kit will **not** be available for purchase after that date. Production of the inserts will be scheduled in a single run after that date. Depending on the rate of response to this offer, we anticipate that the insert kits will be ready to ship by **June 1997**.

If you choose to pursue Option 1 or Option 2, please call our Option Sales Department and refer to this service bulletin. We apologize for any inconvenience resulting from this design error.

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