

DEPARTMENT OF COMMERCE  
CIVIL AERONAUTICS ADMINISTRATION

February 12, 1946

Luscombe Airplane Corporation  
P. O. Box 2128  
Dallas, Texa

Attention: Mr. E. W. Norris, Chief Engineer

Gentlemen:

This refers to your letter dated January 25, 1946, which requested information pertaining to the placarding of the subject model and other Model 8 series airplanes to require the use of carburetor heat on takeoff. A review of the technical data in this office has revealed the following information:

Prior to issuance of the Administration's Airworthiness Maintenance Bulletin No. 40, Luscombe Model 8A, dated February 25, 1941, a large number of power plant failures on takeoff were reported to the Administration and Luscombe. As a result, Luscombe conducted various flight tests in a Model 8A which demonstrated that due to the low fuel head on the fuel flow during takeoff acceleration, the engine would cut out with as much as 6 gallons of gasoline in the fuselage tank. To eliminate fuel flow deficiency on takeoff, Luscombe recommended in a letter dated June 25, 1940, that a pressure vent fuel cap be installed on the fuselage tank and the airplane be placarded requiring use of carburetor heat on takeoff. It was explained that the fuel tank pressure vent cap, by utilizing air ram, would increase the available carburetor fuel head and that by placing the carburetor heater in the "on" position, the required fuel head for satisfactory engine operation would be lowered. Use of carburetor heat causes essentially a lower engine horsepower output at full throttle due to a lower engine manifold pressure caused by the reduction of ram and increased carburetor air temperature. The lower output, accordingly, requires less fuel flow than when the engine is operating with the carburetor heater in the cold position.

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