STARTER/GENERATOR - DESCRIPTION AND OPERATION

1. General

A. Starting system consists of a starter/generator, a starter switch, and a starter annunciator light. Starter/generator functions as a motor for engine starting and will motor the gas generator section until a speed of 46 percent N_g is reached, at which time start cycle will automatically be terminated by a speed sensing switch located in the starter/generator. Starter/generator is controlled by a three-position starter switch located on left sidewall switch and circuit breaker panel. The switch has OFF, START and MOTOR positions. The OFF position deenergizes ignition and starter circuits and is the normal position at all times except during engine start. START position of the switch motors starter/generator and rotates gas generator portion of engine for starting. Also, the START position supplies ignition to engine, provided ignition switch is in NORMAL position. When engine has started, starter switch must be manually placed in OFF position to de-energize ignition system. MOTOR position of switch motors the engine without having ignition circuit energized and is used for motoring engine when an engine start is not desired. This can be useful for clearing fuel from engine, performing compressor washes, etc. MOTOR position is spring-loaded back to OFF position. Also, an interlock between the MOTOR position of starter switch and ignition switch prevents starter from motoring unless ignition switch is in NORMAL position. This prevents unintentional motoring of engine with ignition on. Starter operation is indicated by an amber light on annunciator panel, labeled STARTER ENERGIZED.

NOTE: Refer to Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for starting procedures and starter cycle limitations.

NOTE: Ground power unit starts are required if battery was left connected on an airplane parked longer than ten days and especially in cold weather (temperatures 0°F or lower).

NOTE: Ground power unit output should conform to the following specifications: 28.0 VDC, capacity 800 amperes minimum, 1700 amperes maximum.

2. Description and Operation

A. The airplane can be equipped with one of the four following starter/generators:

(1) Lucas Model 23081-023 Starter/Generator.

(2) Lucas Model 23081-023A Starter/Generator.

(3) Aircraft Parts Corporation Model 200SGL119Q Starter/Generator.

(4) Aircraft Parts Corporation Model 300SGL153Q-1 Starter/Generator.

(5) For Airplanes 208B5000 and On, the Skurka Aerospace Model 200SGL153Q Starter/Generator is installed as the standard equipment.

B. Starter/generator housing encloses all working components and a terminal block is located on top of the housing to attach electrical leads. Starter/generator is mounted to engine accessory gearbox at the 12 o'clock position and drives engine in start mode through a splined shaft. A drive coupling and shear section is incorporated in the starter/generator between drive spline and armature to prevent damage to engine accessory gearbox should a failure occur; drive ratio is 0.2931:1. Starter/generator drive splines require lubrication from engine.

C. Cooling for starter/generator is provided by an integral fan attached to aft side of armature. Supplemental cooling during flight is provided by ram air from an intake in right nose cap through a blast tube and hose to a fan housing inlet at the rear of starter/generator.