SUBJECT: TCM IGNITION SYSTEM SERVICE BULLETIN SB660

PURPOSE: To inform customers of the subject TCM Ignition Systems Service Bulletin.

COMPLIANCE: As indicated on the subject service bulletin.

MODELS AFFECTED: All TCM engine models that use the Push-To-Start Ignition/Starter switches.

Teledyne Continental Motors requires that the subject service bulletin be complied with on all TCM engine models using the Push-To-Start Ignition/Starter switches.
SUBJECT: POSSIBLE MALFUNCTION IN CERTAIN PUST-TO-START IGNITION / STARTER SWITCHES

PURPOSE: To advise of the potential for uncommanded starter engagement and consequent propeller rotation as a result of malfunction in some Push-To-Start Ignition/Starter Switches, and to provide corrective action.

COMPLIANCE: At the next and each subsequent 100 hour, annual, or progressive inspection, (whichever occurs most often) inspect affected switches for proper function. If improper function is found, replace the switch prior to further flight.

NOTE: All TCM Ignition switches, regardless of the part number, date code or manufacturing number are to be functionally tested in accordance with the latest revision of TCM Ignition Systems Service Bulletin SB653 to insure the integrity of the magneto grounding circuit.

EQUIPMENT AFFECTED: Push-To-Start Ignition/Starter switches, part numbers 10-357210-1 (with key), and 10-357240-1 (with lever) with the following date codes or manufacturing numbers ONLY:

1. Units built by Bendix: date codes 8049 (1980, 49th week) and later.
2. Units built by TCM: all manufacturing numbers up to but not including H0192--H (August 1, 1992). Refer to SIL642 to interpret manufacturing numbers.

NOTE... 10-357210-1 switches are supplied individually or as part of a kit, such as but not limited to 10-357210-9 (Switch supplied with three keys) and 10-357210-10 (Switch with matching door lock set). All such kits have base part number 10-357210 followed by a suffix number.

NOTE... Switch part number and date code or manufacturing number appear on the side of the aluminum switch housing. Switches built prior to 1976, outside the affected date code range, are not marked with any date code. Similar switches with functions other than Push-to-Start carry different part numbers and are not affected by this bulletin.

GENERAL INFORMATION:

Field reports and examination of a returned switch indicate that affected switches, under certain circumstances, may allow a "short circuit" condition between the "BAT" terminal (Battery/Bus Power) and the "S" terminal (Starter Solenoid) when the switch is in the OFF position. If this occurs, uncommanded propeller rotation may result any time the Aircraft Battery Master Switch is in the ON position and the Ignition/Starter Switch is in the OFF position.

WARNING

DO NOT PLACE OBJECTS OR PERSONS IN THE PATH OF PROPELLER ROTATION. DAMAGE, INJURY, OR DEATH MAY RESULT.
This condition is the result of internal damage to the Ignition/Starter Switch which may be caused by incorrect operation. In some affected switches, this action makes and then breaks continuity to the starter solenoid, resulting in overheating and insulation breakdown. Damage to the switch, however, is not evident until the switch is rotated to the OFF position.

Correct operation of the Push-to-Start Switch requires rotating the key or lever FULLY clockwise to the START position, THEN pushing in on the key or lever to engage the starter. If the starter cannot be engaged in the normal manner, discontinue the start procedure and investigate the cause of the difficulty. DO NOT rock the key or lever to hunt for a position to engage the starter, as repeated make-and-break of the inductive DC circuit will cause overheating and consequent damage.

Because only some units of affected equipment will make continuity when the key or lever is pushed in and rotated clockwise the first few degrees from the BOTH position, only those switches that display this condition must be replaced. A continuity lamp/buzzer or similar device is used for this test because the condition may occur too quickly to actuate the starter solenoid and starter motor.

Because wear may be a factor for all affected equipment, recurrent inspections are required.

**DETAILED INSTRUCTIONS**

1. With the Aircraft Battery Master Switch OFF, and the Ignition/Starter Switch OFF, attach a continuity lamp/buzzer, timing light, or similar device across the BAT and S terminal as shown in Figure 1.

2. If continuity is indicated with the Ignition/Starter Switch in the OFF position, remove and replace the switch.

3. If continuity is not indicated with the Ignition/Starter Switch in the OFF position, rotate the Ignition/Starter Switch key or lever clockwise to the BOTH position. Push in firmly on the key or lever and slowly rotate it toward the START position.

3.1 Normal function occurs if continuity is indicated ONLY as the key or lever approaches the full clockwise START position.

3.2 The Switch must be removed and replaced prior to further flight if continuity is indicated, however briefly, as the key or lever is rotated the first few degrees away from the BOTH position. If this happens, it is expected that continuity will be broken as the key or lever continues clockwise rotation, and continuity will be indicated again as the key or lever approaches the full clockwise START position.

**WARNING**

WHENEVER A MAGNETO P-LEAD WIRE OR GROUND WIRE IS DISCONNECTED FROM THE SWITCH, THE MAGNETOS ARE IN A "HOT" CONDITION. THE ENGINE MAY INADVERTENTLY EXPERIENCE IGNITION OR START-UP ANY TIME THE PROPELLER IS MOVED. DEATH, INJURY, OR DAMAGE TO PROPERTY MAY RESULT.

4. Make a logbook entry for each action in compliance with this Service Bulletin.
FIGURE 1. CONTINUITY TEST CONNECTIONS; OUTSIDE VIEW

NOTE: S MAY APPEAR AT EITHER LOCATION SHOWN

CONNECT CONTINUITY INDICATOR BETWEEN BAT TERMINAL AND S TERMINAL

STARTER SOLENOID TERMINAL (NEAREST TERMINAL WITH THREADED FLANGE TO "S")