The New Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, Florida, U.S.A. 32960

# SERVICE No. 1074 LETTER

Date: November 3, 2003 (S) (M)

# MAINTENANCE ALERT

**SUBJECT:** **S-TEC AUTOPILOT COMPONENT SEATING PROCEDURE**

**MODELS AFFECTED:**

All S-TEC autopilot equipped Piper aircraft

**SERIAL NUMBERS AFFECTED:**

**COMPLIANCE TIME:** Any time an autopilot component is removed and re-installed.

**APPROVAL:** Technical contents of this publication have been FAA approved.

**PURPOSE:** To provide instructions on the proper installation of either remote-mounted or panel mounted autopilot equipment to ensure that the interface connectors are sufficiently seated.

Units that are not fully seated can cause intermittent operation of avionics equipment during normal flight conditions.

**INSTRUCTIONS:**

1. Comply with the installation instructions contained in Section D. of Meggitt Avionics/S-TEC Service Information Letter SIL 03-001 when installing autopilot components.

(OVER)

ATA: 2210

**MATERIAL REQUIRED:** N/A

**AVAILABILITY OF FORMS:** N/A

**EFFECTIVITY DATE:** This Service Letter is effective upon receipt.

Please send all completed forms to:

THE NEW PIPER AIRCRAFT, INC.
Attn: Customer Service
2926 Piper Drive
Vero Beach, FL 32960

MEGGITT AVIONICS
S-TEC

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# SERVICE INFORMATION LETTER

NO. SIL 03-001
DATE: 05-05-03

**TO:** All MEGGITT S-TEC Dealers

**FROM:** Director of Flight Engineering

**SUBJECT:** Avionics Equipment with High Density Interface Connectors

## A. Reported Condition

Intermittent operation of avionics equipment during normal flight conditions.

## B. Potential Cause

Unit is not is not fully “seated” in its mounting tray or rack. This may be due to improper installation of the tray/rack, its interface connector, or the unit.

## C. Background

As avionics equipment technology becomes more advanced, several trends have occurred.

Since there have been no recent changes to basic cockpit design, only limited changes can be made to equipment package design. Traditional “high end” equipment tends to be remote-mounted, offering interfaces and features not typically available in panel-mounted equipment. However, such capabilities are becoming available in newer panel-mounted equipment at an affordable cost, but can quickly overwhelm aircraft panel space. In retrofit applications, when installing new equipment that incorporates the latest safety and flight enhancing technology, there are options that allow for selected legacy equipment to remain in the panel. In new aircraft installation applications, the original equipment manufacturer (OEM) generally strives to offer the most complete suite of equipment possible, in order to ensure a competitive advantage in the marketplace. Such equipment is factory installed.

Consequently there must be installation flexibility, which places the associated design burden onto new equipment being developed. To allow for interfacing with various other aircraft systems, the input and output requirements of new equipment is increasing. To minimize the required panel space, design effort is expended to maximize human factors (knobs, buttons, displays, etc.). To maximize functional capability, design effort is expended to include all required input and output parameters. As a result, there tends to be the design conflict of “space versus capability”.

To support the numerous input and output parameters required, “high density” interface connectors are used which have a large pin distribution. They may be located on either the front or rear of remote-mounted equipment, and employ the “turn-click-positive” locking system. However, panel-mounted equipment cannot support an optional connector located on the front, and so must rely on a rear connector. In addition, the use of a “turn-click-positive” connector is restricted due to the necessity of rear access, small package dimensions, and a locking mechanism. These limitations require that a panel-mounted unit slide into a panel-mounted tray, such that connector seating is achieved when the unit is completely installed into the tray. Connections between aircraft and unit rely on proper seating.

***FOR REFERENCE ONLY. NOT FAA APPROVED DATA.***

**D. Resolution Details and Recommendations**

**Observation One - Installation of Tray/Rack and Connectors**

The initial installation of a panel-mounted tray or remote-mounted rack must be done in accordance with the manufacturer's instructions. A tray or rack that is already installed should be inspected, to ensure that the unit will fully seat with its connector. The front of a panel-mounted tray should not be significantly inset from the panel, since otherwise the unit will not fully seat.

**Observation Two - Installation of Equipment with High Density Connectors**

High insertion forces are required to seat a unit with "high density" connectors into the tray/rack, which tends to limit the effectiveness of the first seating attempt. Thus several attempts may be required, each comprised of applying a force to the front of the unit and then tightening the locking mechanism. The sequential process below should ensure that a unit is properly installed, such that its connectors are sufficiently seated into the tray:

1) Carefully slide unit into tray/rack, and apply a moderate insertion force.
2) Tighten locking mechanism on front of unit to remove any slack, but do not try to "pull" unit into place.
3) Apply additional insertion force to front of unit.
4) Tighten locking mechanism again.
5) Apply additional insertion force to front of unit.
6) Finish tightening locking mechanism.
7) For panel-mounted equipment, ensure that unit bezel is "tight" against panel.
8) For remote-mounted equipment, ensure that aft end of unit is "tight" against front of mounting rack.

**E. Summary**

Using these basic principles should ensure the proper installation of either remote-mounted or panel-mounted equipment, such that the interface connectors are sufficiently seated.

William L. Shields
Director of Flight Engineering

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