

REVISION TRANSMITTAL

This sheet transmits Revision 1 to MTL-34-01, which:

- A. Revised the compliance statement.

NOTE: This revision replaces the original issue of MTL-34-01 in its entirety.

REVISION COMPLIANCE

NO EFFECT. Airplanes previously modified by this service letter are not affected by this revision.

LOG OF REVISIONS

| | |
|----------------|-----------------|
| Original Issue | May 14, 2020 |
| Revision 1 | October 6, 2021 |

MANDATORY**MTL-34-01****TITLE**

NAVIGATION - GPS-4000S GLOBAL POSITIONING SYSTEM SOFTWARE UPDATE

EFFECTIVITY

| MODEL | SERIAL NUMBERS |
|---------------------------|----------------------|
| King Air 90 Series | LJ-2151 thru LJ-2173 |
| Super King Air B200GT | BY-324 thru BY-379 |
| Super King Air B300 | FL-1140 thru FL-1222 |
| Super King Air B300/B300C | FM-76 thru FM-85 |

REASON

To correct an anomaly with the UTC Time Offset issue and the LRU not supporting Localizer Performance Vertical (LPV) approaches in the impacted region of +/- 20 degrees around 180 degrees West Longitude in the Software of the GPS-4000S, CPN 822-2189-100.

DESCRIPTION

This service document provides parts and instructions to install new software and remove and replace the identification plate.

COMPLIANCE

MANDATORY. This service letter must be accomplished by May 12, 2023.

A service document published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

- 1) The mechanic must complete all of the instructions in the service document, including the intent therein.
- 2) The mechanic must correctly use and install all applicable parts supplied with the service document kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.
- 3) The mechanic or airplane owner must use the technical data in the service document only as approved and published.
- 4) The mechanic or airplane owner must apply the information in the service document only to aircraft serial numbers identified in the *Effectivity* section of the document.
- 5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service document or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-owned Service Center.

REFERENCES

King Air C90GTi Fusion Maintenance Manual

Super King Air B200/B200CGT Fusion Maintenance Manual

Original Issue - May 14, 2020

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Textron Aviation Customer Service, P.O. Box 7706, Wichita, KS 67277, U.S.A. 1-316-517-5800

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Super King Air B300/B300C Fusion Maintenance Manual

Rockwell Collins Service Information Letter GPS-4X00()-19-3 Revision No. 1 (or latest revision).

Rockwell Collins SB GPS-4X00()-34-510 Initial Release (or latest revision).

PUBLICATIONS AFFECTED

None

ACCOMPLISHMENT INSTRUCTIONS

1. Prepare the airplane for maintenance.
 - A. Make sure that the airplane is electrically grounded.
 - B. Make sure that all switches are in the OFF/NORM position.
 - C. Disconnect electrical power from the airplane.
 2. Remove the 822-2189-100 GPS-4000S Global Positioning System (GPS) Units GPS1 and GPS 2 (if installed). (Refer to the applicable model Maintenance Manual, Chapter 34, Global Positioning System Receiver (GPS-4000) - Removal/Installation.)
 3. Return the removed 822-2189-100 GPS-4000S Global Positioning System (GPS) Units to Textron Aviation for exchange.
- NOTE:** The existing 822-2189-100 GPS-4000S Global Positioning System (GPS) Unit may be returned to Textron Aviation Parts Distribution, Warranty Administration, 285 South Greenwich Road, Bldg B89, Docks 1-4, Wichita, KS 67206, USA, and exchanged for an upgraded unit. Due to limited availability, advance scheduling is required, please expedite the return of the removed part.
4. Install the 822-2189-101 GPS-4000S Global Positioning System (GPS) Units GPS1 and GPS2. (Refer to the applicable model Maintenance Manual, Chapter 34, Global Positioning System Receiver (GPS-4000) - Removal/Installation.)
 5. Make an entry in the airplane logbook that states compliance and method of compliance with this service document.

NOTE: Textron Aviation recommends that compliance with all service documents is reported to a maintenance tracking system provider.

- Complete a record of compliance. (Maintenance Transaction Report, Log Book Entry, or other record of compliance.)
- Put a copy of the completed record of compliance in the airplane logbook.
- Send a copy of the completed record of compliance to the maintenance tracking system provider used.

MANDATORY**MTL-34-01****MATERIAL INFORMATION**

Order the quantity below for each GPS Unit to install this modification.

| NEW P/N | QUANTITY | KEY WORD | OLD P/N | INSTRUCTIONS/ DISPOSITION |
|----------------|-----------------|--|----------------|--------------------------------------|
| 822-2189-101 | 1 | GPS-4000S Global Positioning System | 822-2189-100 | Return Removed Part |

The existing 822-2189-100 GPS-4000S Global Positioning System (GPS) unit may be returned to Textron Aviation Parts Distribution, Warranty Administration, 285 South Greenwich Road, Bldg B89, Docks 1-4, Wichita, KS 67206, USA, and exchanged for an upgraded unit. Due to limited availability, advance scheduling is required, please expedite the return of the removed part.

* Please contact Textron Aviation Parts Distribution for current cost and availability of parts listed in this service document. Phone at 1-800-835-4000 (Domestic) or 1-316-517-5603 (International). Send email to: parts@txtav.com.

Based on availability and lead times, parts may require advanced scheduling.

TITLE

NAVIGATION - GPS-4000S GLOBAL POSITIONING SYSTEM SOFTWARE UPDATE

TO:

King Air Model Aircraft Owner

REASON

To correct an anomaly with the UTC Time offset issue starting the week of June 11, 2023 in the Global Navigation Satellite System (GNSS) software of the GPS-4000S, CPN 822-2189-100. The LRU will not support Localizer Performance Vertical (LPV) approaches in the impacted region of +/- 20 degrees around 180 Degrees West Longitude.

COMPLIANCE

MANDATORY. This service letter must be accomplished by May 12, 2023.

LABOR HOURS

Refer to the Manpower section of the Rockwell Collins SB GPS-4X00()-34-510 Initial Release (or latest revision).

MATERIAL AVAILABILITY

| PART NUMBER | AVAILABILITY | COST |
|--------------|--------------|------|
| 822-2189-101 | * | * |

* Please contact Textron Aviation Parts Distribution for current cost and availability of parts listed in this service document. Phone at 1-800-835-4000 (Domestic) or 1-316-517-5603 (International). Send email to: parts@txtav.com.

WARRANTY

This service document is *mandatory*. Eligible airplanes may qualify for parts and labor coverage to the extent noted in the *Labor Hours* and *Material Availability* sections of this document.

Eligibility: Airplanes identified within the serial number effectivity of this service document.

Parts Coverage: Textron Aviation-owned and Textron Aviation-authorized Service Facilities, operators, or other maintenance facilities may submit a claim for the parts required to accomplish this service document as defined in the *Material Availability* section of this document.

Labor Coverage: Textron Aviation-owned and Textron Aviation-authorized Service Facilities rated to perform maintenance on the specific model of Beechcraft Aircraft may submit a claim for the labor necessary to accomplish this service document as defined in the *Labor Hours* section of this document.

Credit Application: After this service document has been accomplished, a claim must be submitted to Textron Aviation within 30 days of the service document completion. Claims for compliance of this service document are to be filed as a W4 type claim.

Please submit your claim form online at ww2.txtav.com/Parts or email the completed Textron Aviation Claim Form to warranty@txtav.com. If submitted on-line a Return Authorization will be provided. If a paper claim is submitted your claim will be entered into the system and a Return Authorization will be sent to you.

The Return Authorization must accompany any required return parts (see *Material Availability*), to the point of purchase.

Parts to be returned to Textron Aviation Parts Distribution should be forwarded to:

Textron Aviation Parts Distribution
Warranty Administration
285 South Greenwich Road
Bldg B89, Docks 1-4
Wichita, KS 67206
USA

Expiration: May 12, 2023 (after this date the owner/operator assumes the responsibility for compliance costs)

Textron Aviation reserves the right to void continued airplane warranty coverage for the parts affected by this service document until the service document is accomplished.

NOTE: As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the Customer Access link at www.txtavsupport.com to register.

Service Information Letter GPS-4X00()-19-3 REVISION NO. 2

**NO SUPPORT TO PERFORM LOCALIZER PERFORMANCE WITH VERTICAL (LPV)
AND REQUIRED NAVIGATION PERFORMANCE (RNP) LESS THAN 0.3 NAUTICAL
MILE APPROACHES OVER ALASKA**

TRANSMITTAL INFORMATION SUMMARY

Summary

This is revision 2 of Service Information Letter (SIL) GPS-4X00()-19-3 for the GPS-4000S Global Positioning System.

This revision adds affected airports, which updates Step D.(2)(b) table.

Black bars in the margins indicate the changes.

Replace revision 1 with this revision.

Service Information Letter Revision History

| REVISION | DATE OF RELEASE |
|-----------------|-------------------|
| Initial Release | December 18, 2019 |
| Revision 1 | January 27, 2020 |
| Revision 2 | March 25, 2020 |

Notice

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A. Effectivity

The information in this SIL is applicable to the GPS-4000S Global Positioning System listed in the following table.

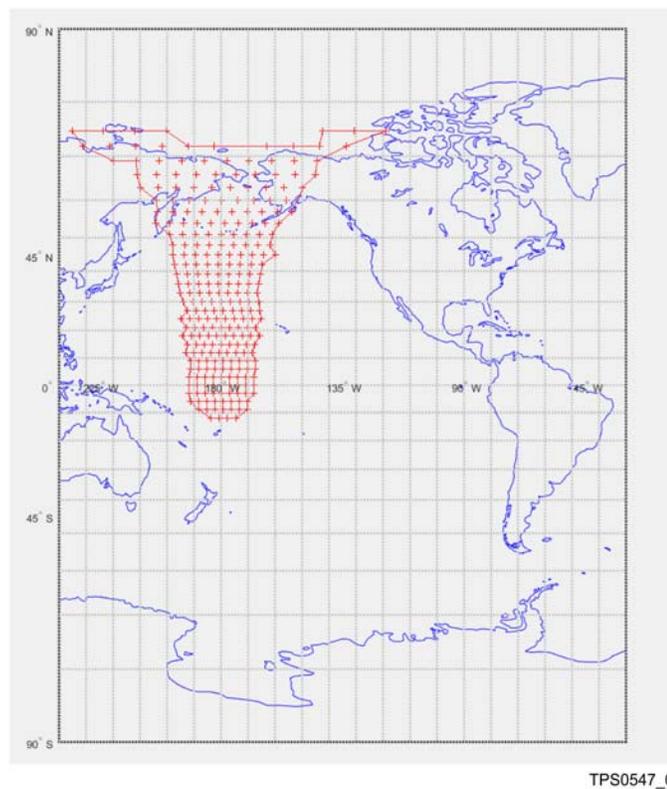
| UNIT | NOMENCLATURE | ROCKWELL COLLINS PART NUMBER (CPN) |
|-----------|---------------------------|---------------------------------------|
| GPS-4000S | Global Positioning System | 822-2189-100 |

B. Purpose

- (1) Recent Collins Aerospace investigation has discovered an anomaly in the Global Navigation Satellite System (GNSS) software of the GPS-4000S, CPN 822-2189-100.
- (2) This anomaly is due to an improper implementation within the software that impacts certain regions that are +/- 20 degrees of 180 degrees West (W) Longitude.
- (3) Due to this anomaly, the position accuracy may be diminished such that the GPS-4000S, CPN 822-2189-100, will not support Localizer Performance Vertical (LPV) approaches in this region. Required Navigation Performance (RNP) less than 0.3 Nautical Mile (NM) (For example, 0.1, 0.11, 0.15, etc.) should not be performed with the GPS-4000S, CPN 822-2189-100, in this region.

C. General Information/Background Information

- (1) The Root Cause has been identified as an improper implementation in the computation of the longitude at which the GPS signal penetrates the ionosphere when the satellite is located across 180 degrees W Longitude.
- (2) The affected region is limited to the area within the solid red line boundary indicated in the attached map. The region extends 20 degrees on either side of 180 degrees W Longitude and extends from the Northern Hemisphere to 10 degrees Latitude in the Southern Hemisphere. Refer to Figure 1.



Map
Figure 1

- (3) The potential reduction in position accuracy caused by the computational issue prevents the GPS-4000S, CPN 822-2189-100, from supporting LPV approaches at LPV-equipped airports in the affected region.
- (4) Un-announced, but bounded reduced positional accuracy in the affected region limits operations to RNP 0.3 NM, or higher (Positional error will be bounded to 0.3 NM but may not be bounded by the protection level (HPL) that is output by the GNSS).

D. Corrective Action/Recommendation

- (1) A software update that corrects this issue is targeted to be available in Q1 2020.
- (2) Until that software update is available, operational limitations will need to be applied. The operational limits are:
 - (a) Do not use the GPS-4000S, CPN 822-2189-100, to perform LPV approaches at airports in Alaska listed below. There are no airports outside of Alaska that are in the affected region that support LPV approaches at the time of this SIL publication. LPV-equipped airports will be monitored on every database update and if additional LPV-equipped airports are identified, this SIL will be updated.
 - (b) Do not perform operations that require an accuracy better than RNP 0.3 NM (For example, 0.1, 0.11, 0.15, etc.) in the region identified in the above map (+/- 20 degrees of 180 degrees W Longitude) or at the airports in Alaska listed below.

| AIRPORT IDENTIFICATION |
|------------------------|
| PAAD |
| PABE |
| PABL |
| PABR |
| PACD |
| PACH |
| PADE |
| PADL |
| PAEM |
| PAEN |
| PAFA |
| PAFM |
| PAGA |
| PAGM |
| PAHL |
| PAHO |
| PAHX |
| PAIL |

| AIRPORT IDENTIFICATION |
|------------------------|
| PAKI |
| PAKN |
| PAKU |
| PAKV |
| PALP |
| PAMK |
| PAMO |
| PANA |
| PANC |
| PANI |
| PAOM |
| PAOT |
| PAPB |
| PAPM |
| PAPO |
| PAPR |
| PAQH |
| PAQT |
| PARY |
| PASC |
| PASD |
| PASK |
| PASM |
| PAWI |
| PAWN |
| PAWS |
| PFCL |
| PFEL |
| PFKT |

| AIRPORT IDENTIFICATION |
|------------------------|
| PFKU |
| PFKW |
| PFNO |
| PFSH |
| PFWS |
| PFYU |

- (c) Other GPS-based approach types that require a position accuracy greater than or equal to RNP 0.3 NM (For example, 0.3, 1, 2, 4, 10, etc.) can be flown (i.e. Lateral Navigation (LNAV) / Vertical Navigation (VNAV)).

SERVICE BULLETIN GPS-4X00()-34-510 REVISION NO. 1

NAVIGATION - GPS-4X00() - SOFTWARE UPDATE FOR UNIVERSAL TIME COORDINATED
(UTC) TIME OFFSET AND GNSS POSITION NEAR 180 DEGREES WEST LONGITUDE
(CONVERTS BLACK LABEL CPN 822-2189-100 TO BLACK LABEL CPN 822-2189-101)

TRANSMITTAL INFORMATION SUMMARY

Summary

This is revision 1 of Service Bulletin (SB) GPS-4X00()-34-510 for the GPS-4000S Global Positioning System.

This revision fixes a typo in Section 2.A.

Black bars in the margins indicate the changes.

Replace the initial release with this revision.

Service Bulletin Revision History

| REVISION | DATE OF RELEASE |
|-----------------|-------------------|
| Initial Release | February 18, 2020 |
| Revision 1 | March 6, 2020 |

NOTE: This service bulletin may be installed only by a Rockwell Collins representative or an authorized Rockwell Collins Service Center.

Notice

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Feb 18/20
1-Mar 6/20

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NOTE: Refer to the referenced All Avionics Service Information Letter 3-03, titled "Disposal of Retired TSO Nameplates", for disposal of old unit identification plate.

NOTE: Implied by reference from this service bulletin, previously released service bulletins applicable to the old unit (to be converted) are also applicable to the unit created by this service bulletin. Mark out all Service Bulletins (SBs) that are incorporated. The new unit part number indicates the installation of this service bulletin. Do not mark out Service Bulletin 510.

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Should the customer have any questions concerning the scope of permitted use, please contact your Rockwell Customer Service Engineer.

Rockwell Collins' General Conditions of Sale 074-8431-866 (Rev 04/15) are incorporated herein by reference.

1. Planning Information

A. Effectivity

The modification procedure described in this service bulletin changes the part number of the GPS-4000S Global Positioning System listed in the following table.

| UNIT | ROCKWELL COLLINS PART NUMBER (CPN) | |
|-----------|------------------------------------|------------------|
| | BEFORE CONVERSION | AFTER CONVERSION |
| GPS-4000S | 822-2189-100 | 822-2189-101 |

NOTE: The modification contained in this service bulletin is strictly applicable to the status(es) listed and not applicable to additional status(es) within the GPS-4000S type number.

NOTE: Installation of units modified in accordance with this service bulletin requires a change to the aircraft Type Certificate/Supplemental Type Certificate (TC/STC) data unless the new equipment part number is already included in the data.

B. Concurrent Requirements

None required.

NOTE: If several service bulletins that contain top level software are installed at the same time, only the latest version of the top level software needs to be installed. Installation of intermediate service bulletin top level software may be disregarded.

C. Reason

(1) Description of Existing Condition

For the UTC Time Offset Issue, the Line Replacable Unit (LRU) could exhibit an anomaly that results in loss of Global Positioning System (GPS) during the week starting June 11, 2023. For the Global Navigation Satellite System (GNSS) Position Issue, the LRU will not support Localizer Performance Vertical (LPV) approaches in the impacted region of +/- 20 degrees around 180 Degrees West Longitude.

(2) Extent Condition Encountered

Any GPS-4000S, CPN 822-2189-100, may be affected.

(3) Expected Benefits of Modification

(a) Units will not exhibit an anomaly that results in loss of GPS due to the UTC Time offset issue and can perform LPV approaches in the region of +/- 20 degrees around 180 Degrees West Longitude.

(b) Implementation of this service bulletin is total and permanent.

(4) Safety Intent of Corrective Action

Not applicable.

(5) Regulatory Action

Not applicable.

D. Description

Install new software and remove and replace the Identification plate.

E. Compliance

| | |
|---|--|
| | Optional - Service Bulletin for convenience or option. |
| | Recommended - Service Bulletin to introduce improvements. |
| X | Highly Recommended - Service Bulletin recommended to be accomplished to prevent significant operational disruptions. |
| | Mandatory - Service Bulletin must be accomplished. |

F. Approval

GPS-4000S, CPN 822-2189-101, conforms to Federal Aviation Administration (FAA) Technical Standard Order (TSO) C145d Class Beta 3.

G. Manpower

The total estimated time to accomplish the work in this service bulletin is 3.5 man hours.

| TASK | ESTIMATED HOURS |
|--------------|-----------------|
| Preparation | 1.0 |
| Installation | 1.0 |
| Testing | 1.5 |
| Total | 3.5 |

H. Weight and Balance

None.

I. Electrical Load Data

Not changed.

J. Software Accomplishment Summary

Software Accomplishment Summary document, CPN 946-0NV9-101, for GPS-4000S Global Positioning System, is written in accordance with Software Considerations in Airborne Systems and Equipment Certification, Radio Technical Commission for Aeronautics (RTCA)/DO-178C.

K. References

The following publications were used as source data to develop this service bulletin and are available if requested.

- (1) GPS-4000S Global Positioning System Component Maintenance Manual (with illustrated parts list) (CMMPL), CPN 523-0808221 (34-54-41)
- (2) GPS-4000() Global Positioning System, Instruction Manual (IM), CPN 523-0780545
- (3) Avionics Standard Shop Practices Instruction Book, CPN 523-0768039 (20-00-01)
- (4) All Avionics Service Information Letter 3-93, titled "Non-Procurement Equipment Cleaning Solutions", CPN 523-0804806
- (5) All Avionics Service Information Letter 3-03, titled "Disposal of Retired TSO Nameplates", CPN 523-0806251
- (6) All Avionics Service Information Letter 05-2, titled "Clarification and Information on Usage and Ordering of Collins Nameplates and Modification Plates", CPN 523-0806340

L. Other Publications Affected

The next full revision to the referenced CMMPL and IM will include the information contained in this service bulletin.

M. Interchangeability and Intermixability of Parts

The GPS-4000S, CPN 822-2189-100 and CPN 822-2189-101, are interchangeable. Aircraft operating with a mixed configuration of CPN 822-2189-100 and CPN 822-2189-101 are subject to the aircraft level limitations described in Service Information Letter GPS-4X00()-19-3. GPS-4000S CPN 822-2189-100 and CPN 822-2189-101 should not be used in a mixed configuration with previous versions of the GPS-4000(), CPN 822-2189-001/-002/-003/-004/-005/-006/-007/-010/-011.

2. Material Information

A. Material - Price and Availability

No kit required.

NOTE: The current charge to install this service bulletin is \$2,270 United States Dollars (USD) and may be subject to future price adjustments. Pricing is only valid through December 31, 2020. However, this service bulletin will be installed Free of Charge (FOC) until December 31, 2023.

B. Industry Support Information

- (1) This service bulletin may be installed only by a Rockwell Collins representative or an authorized Rockwell Collins Service Center.
- (2) For units in warranty, Rockwell Collins will install this service bulletin at no charge for the materials and labor. Units out of warranty must have the service bulletin installation completed prior to December 31, 2023 to qualify for the no charge installation.

NOTE: The in-warranty and out-of-warranty expiration date is December 31, 2023.

C. Material Necessary For Each Component

NOTE: Material pricing is included in total service bulletin price. Refer to Section 2.A.

- (1) Materials to be purchased.

Use the following materials to modify one (1) GPS-4000S Global Positioning System.

| NEW PART NUMBER | KEY WORD | DESCRIPTION | OLD PART NUMBER | QUANTITY | SPECIAL INSTRUCTION/ DISPOSITION |
|-----------------|----------------------|-----------------------|-----------------|----------|----------------------------------|
| 072-2781-005 | Software | Software Deliverable | 072-2781-004 | 1 | Not Applicable (N/A) |
| 983-8579-004 | Identification Plate | Plate, Identification | 983-8579-004 | 1 | N/A |

- (2) Materials supplied by operator.

None required.

D. Material Necessary for Each Spare

None required.

E. Reidentified Parts

None required.

- F. Tooling – Price and Availability
None required.

3. Accomplishment Instructions

A. Modification Procedure

WARNING: BEFORE HANDLING ANY UNIT OR UNIT COMPONENT, GROUND THE REPAIR OPERATOR THROUGH A CONDUCTIVE WRIST STRAP OR OTHER DEVICE THAT USES A 470 K Ω OR 1 M Ω SERIES RESISTOR TO PREVENT PERSONAL INJURY BY LIMITING CURRENT THROUGH THE WRIST STRAP TO GROUND.

CAUTION: TURN OFF POWER BEFORE DISCONNECTING ANY UNIT FROM WIRING. DISCONNECTING THE UNIT WITHOUT TURNING POWER OFF MAY CAUSE DAMAGE.

CAUTION: THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) COMPONENTS THAT CAN BE DAMAGED BY STATIC VOLTAGES PRESENT IN MOST REPAIR FACILITIES.

NOTE: For detailed repair/cleaning instructions, refer to the referenced Avionics Standard Shop Practices Instruction Book and the referenced All Avionics Service Information Letter 3-93, titled "Non-Procurable Equipment Cleaning Solutions".

NOTE: Refer to the Disassembly and Assembly instructions in the referenced IM and CMMPL.

Using Software, CPN 072-2781-005, refer to the Testing and Fault Isolation section of the referenced CMMPL and perform the Software Load Procedures for the GPS-4000S.

B. Testing Procedure

Test the unit in accordance with the test procedures in the Testing and Fault Isolation section of the referenced CMMPL. Confirm Program CPN 096-0DJ6-004 was loaded.

C. Identification Procedure

NOTE: The identification procedure must be accomplished in order for the service bulletin to be complete.

- (1) Weigh unit and record weight to the nearest one-tenth (0.1) pound.
- (2) Order a new identification plate CPN 983-8579-004 reflecting the unit weight noted in Step 3.C.(1) and new CPN 822-2189-101.

NOTE: Refer to the referenced All Avionics Service Information Letter 05-2, titled "Clarification and Information on Usage and Ordering of Collins Nameplates and Modification Plates", for ordering new identification plates.

- (3) Verify the new identification plate has the correct part number and unit weight. Remove the existing identification plate from the unit.

NOTE: Refer to the referenced All Avionics Service Information Letter 3-03, titled "Disposal of Retired TSO Nameplates", for disposal of old unit identification plates.

- (4) Install new identification plate.
- (5) Due to the change of the part number of this unit, the customer must be notified of the change by including the following statement, with the appropriate part numbers on the repair work sheet/service memorandum.

"This unit was received with a part number of CPN 822-2189-100 and has been modified to a unit with a part number of CPN 822-2189-101 (refer to Service Bulletin GPS-4X00()-34-510). Installation of units modified in accordance with Service Bulletin GPS-4X00()-34-510 requires a change to the aircraft TC/STC data unless the new part number is already included in the data."

NOTE: Installation of Service Bulletin GPS-4X00()-34-510 is indicated by the Top Level CPN on the nameplate. SB 510 is NOT marked on the product modification plate.

