

Gulfstream G650ER



AIRCRAFT SERVICE CHANGE

NUMBER 069

SUBJECT

FLIGHT CONTROLS (ATA 27)
PRIMARY FLIGHT CONTROL ACTUATION
SYSTEM (PFCAS) REMOTE ELECTRONICS UNIT
(REU) SOFTWARE UPDATE

SEPTEMBER 28, 2017

PILOTS INFORMATION SHEET

PRIMARY FLIGHT CONTROL ACTUATION SYSTEM (PFCAS) REMOTE
ELECTRONICS UNIT (REU) SOFTWARE UPDATE

This service change updates the software of the Primary Flight Control Actuation System (PFCAS) Remote Electronics Units (REUs). The updated software provides improvements to the aircraft PFCAS including improved LVDT disconnect and oscillatory monitoring, force fight mitigation, troubleshooting, and rectification of several problem reports.

There are no cockpit procedural changes as a result of this installation.

PLEASE DETACH AND GIVE TO FLIGHT DEPARTMENT PERSONNEL

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PLEASE RETAIN THIS COPY WITH THE AIRCRAFT SERVICE CHANGE (ASC) BOOKLET

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The design change effected by this Aircraft Service Change (ASC) has been classified as Major by the United States Federal Aviation Administration (FAA) and Level 2 Major by the European Aviation Safety Agency (EASA). The design change data contained herein and effected by this document is approved and accepted by the FAA under Gulfstream Organization Designation Authorization (ODA) project number: TD-01-2014-0029 and EASA accepted under the provisions of the EU/USA BASA effective 05/01/2011.

The design of this ASC is approved by aircraft type design data for installation on aircraft registered for operation in accordance with applicable regulations of the FAA and EASA.

The design of an ASC is configured to a standard (green) production aircraft. If spare wires, pin connections or locations called out have been used for another modification, the installing agency must ensure the development, documentation and approval of any required deviations.

The following instructions, in step-by-step form, are written as a guide to perform this ASC. Compliance with safe maintenance practices as defined in the Aircraft Maintenance Manual (AMM), and by the FAA and EASA is required.

Gulfstream considers this ASC a means to enhance aircraft capabilities to meet individual operator requirements.

Subject: Flight Controls (ATA 27) – Primary Flight Control Actuation System (PFCAS) Remote Electronics Unit (REU) Software Update

Purpose / Discussion: This service change updates the software of the PFCAS REUs from Label 34 to Label 35. The units are updated by the manufacturer (Parker Hannifin Corporation) in accordance with their Service Bulletin (SB) 469000-27-003 – Parker Service Bulletin – REU Software Upgrade. The updated software provides improvements to the aircraft PFCAS including improved LVDT disconnect and oscillatory monitoring, force fight mitigation, troubleshooting, and rectification of several problem reports.

Description / Labor-Hours Required Per Aircraft: This service change updates sixteen (16) REUs with new software from the manufacturer. The units may be updated by one of the following methods:

- Remove and exchange REUs for new or modified units
- Remove REUs and have units modified by manufacturer representatives onsite
- Provide access to REUs and have units modified by manufacturer representatives on-wing

Approximately 386 labor-hours are required for this modification.

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Description / Labor-Hours
Required Per Aircraft continued:

Note: Previous installations of this ASC, incorporated during the validation process, are in compliance with the released ASC. Operators of those aircraft should return the attached service reply card marked "Previously complied with" noting the date of installation.

Approved Engineering Data:

The source data for this aircraft service change is:
60A2700069-001 Rev " A " ASC 069 Configuration Control Document - G650 Flight Controls REU Software Update

Prerequisites:

Aircraft 6001 – 6164 must have ASC 037 – FCC Software Update, or equivalent, installed.

Concurrent Requirement:

Customer Bulletin No. 201 – Primary Flight Control Actuation System (PFCAS) Remote Electronics Unit (REU) Software Update (ASC 069)

Planning Considerations:

It is recommended the following ASCs be installed concurrently to minimize aircraft downtime and labor:

ASC 092 – Primary Flight Control Actuation System (PFCAS) Motor Control Electronics (MCE) Software Update

ASC 097 – Primary Flight Control Actuation System (PFCAS) Remote Electronics Unit (REU) Connector Updates

Associated Documents:

Aircraft Maintenance Manual (AMM), Chapters 20 & 27

Flight Manual Revision /
Supplement Required:

None

Publications Data:

Data concerning this service change will be published in a future revision of the affected manual(s). This booklet will provide technical data until the revision(s) is published.

Effectivity:

This ASC is applicable to aircraft serial numbers 6001 - 6274.

This or a similar change will be installed during production on aircraft serial numbers 6275 and subsequent.

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Effect on Spares:

The following REU part numbers must have Label 35 (or later approved version) software installed as a result of this service change listed here by GAC and Parker Part Numbers (PNs):

- 60P2715001Z004 / 469000-1007 or -1009
- 60P2715001Z005 / 469000-1011
- 60P2715001Z006 / 469000-1017 or -1019
- 60P2715001Z007 / 469000-1013

Special Equipment / Tools
Required:

None

Skill Type Required:

Knowledge of the G650ER flight control system is required for this installation.

Only Parker Hannifin Corporation authorized technicians will perform the REU software update portion as described within this ASC.

Price:

Contact your Regional Sales Manager for pricing information after the 36 month period has expired.

NOTE:	This ASC is a managed program that may only be accomplished at approved Gulfstream Aerospace G650ER Authorized Warranty Facilities. This ASC must be coordinated through the program office via e-mail at pmoretro@gulfstream.com or by calling Gulfstream Scheduling at 800-810-GULF (4853), or 912-965-4178.
NOTE:	This ASC will be installed at no charge for a period of 36 months from the release date noted on the cover of this Aircraft Service Change if installed at Gulfstream Aerospace, a Gulfstream Authorized Warranty Facility, or a Gulfstream Factory Authorized Service Center, and the aircraft is within the applicable labor warranty period. After the 36-month period has expired, this installation will become billable.
NOTE:	Coverage is granted per the terms and conditions of the Gulfstream Aircraft Sales Agreement to the original purchaser or subsequent owner with appropriate Assignment of Warranties on file with Gulfstream.

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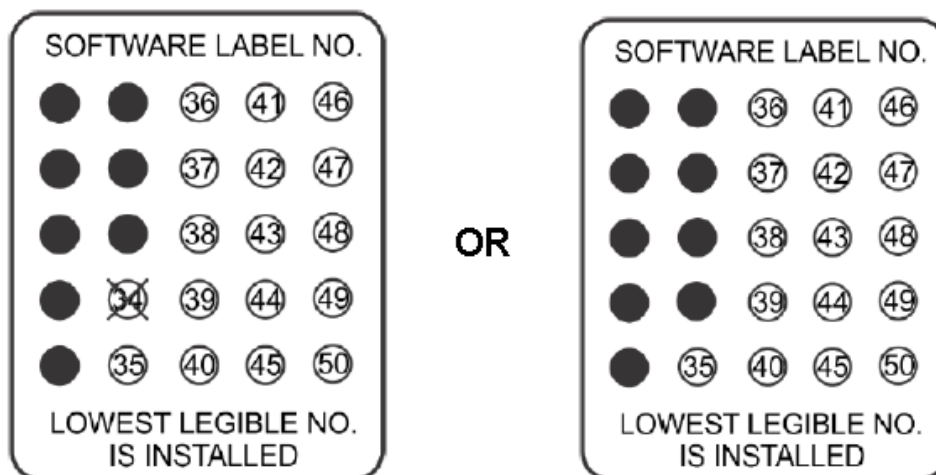
MODIFICATION INSTRUCTIONS:

CAUTION:	PROTECT WIRE BUNDLES, CONNECTORS AND SURROUNDING STRUCTURE DURING ANY MAINTENANCE PROCEDURE FROM SHAVINGS, DEBRIS AND CONTAMINATION. MAINTAIN A PROPERLY CLEANED WORK AREA THROUGHOUT THE PROCEDURE TO ENSURE THE INTEGRITY OF THE AFFECTED COMPONENT / SYSTEM. VISUALLY INSPECT WORK AREA USING ADDITIONAL LIGHT AS NECESSARY TO VERIFY ABSENCE OF ANY DEBRIS PRIOR TO COMPLETION OF PROCEDURE. FAILURE TO COMPLY MAY RESULT IN DAMAGE TO COMPONENTS AND / OR SYSTEMS.
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A. Preparation for modification:

1. Review pages 1 – 3 of this ASC for any applicable actions or requirements. Ensure aircraft meets all configuration requirements prior to beginning modification.
2. Remove electrical power. Refer to AMM, Chapter 20.
3. Gain access to the REUs in accordance with AMM procedures listed in Table 1.
4. Identify REUs requiring update to Label 35.

NOTE:	The potential exists for REUs of both Label 34 and Label 35 to be installed on the same aircraft. Any REU already containing Label 35 software will not require software update. Some REUs may have been updated or replaced on an attrition basis due to individual component removals. If an REU already contains the physical marking for software Label 35 (see examples of physical label possibilities in Figure 1), then software update in accordance with this ASC is not applicable and may be omitted for that particular unit. However, if there is any question as to which particular software is loaded to a unit, then the unit should be updated via this ASC. The intent of this ASC is for every REU on the aircraft to contain the REU Label 35 software upon completion of the ASC.
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**FIGURE 1. REU PHYSICAL SOFTWARE LABELS SHOWING REU 35 INSTALLED**

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B. Component modification:

1. If REUs are to be updated on-wing by manufacturer representatives, disconnect electrical connectors to provide access for supplier personnel. On-wing modification may require loosening additional clamps or partial removal of associated brackets to permit full access for modification and / or label updates.

If REUs are exchanged or updated off-wing, fully remove REUs requiring software update using appropriate AMM procedures listed in Table 1.

CAUTION:	FAILURE TO OBSERVE ELECTROSTATIC DISCHARGE PROCEDURES MAY CAUSE DAMAGE TO SYSTEM COMPONENTS. ELECTRICAL CONNECTORS SHALL BE IDENTIFIED WITH LABELS PRIOR TO REMOVAL TO PREVENT POSSIBLE SYSTEM DAMAGE WHEN CONNECTED. USE CAUTION WHEN REMOVING ELECTRICAL CONNECTORS OR CONNECTOR PINS MAY BE DAMAGED. FAILURE TO INSTALL PROPER PROTECTIVE CAPS AND PLUGS ON ELECTRICAL CONNECTORS, LINES, TUBES, PORTS AND FITTINGS MAY RESULT IN DAMAGE TO EQUIPMENT.
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REU #	LOCATION	Applicable AMM REU Procedure			
		Chapter	Removal	Installation	RTS
1 / 2	L/R Aileron EHSA	27-15-01	Sections 1.A.-.C.	Section 1.D.	Section 1.E.
3 / 4	L/R Aileron EBHA				
5 / 6	L/R Outboard Spoiler EBHA	27-65-05			
7 / 8	L/R Mid Spoiler EHSA				
9 / 10	L/R Inboard Spoiler EHSA	27-35-01			
11 / 12	L/R Elevator EHSA				
13 / 14	L/R Elevator EBHA	27-25-01			
15 / 16	Rudder EHSA				

TABLE 1

NOTE:	On-wing or off-wing update of REUs will be done in accordance with Parker Service Bulletin 469000-27-003 – REU Software Upgrade by Parker Hannifin Corporation authorized technicians.
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2. Install / reconnect new / updated REUs using appropriate AMM procedures listed in Table 1.

C. Follow on:

WARNING:	CLOSING ANY FLIGHT CONTROL SYSTEM CIRCUIT BREAKER MAY CAUSE THE FLIGHT CONTROL SURFACES TO MOVE. FAILURE TO ENSURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF FLIGHT CONTROL SURFACES BEFORE CLOSING ANY FLIGHT CONTROL SYSTEM CIRCUIT BREAKER MAY RESULT IN SERIOUS INJURY, DEATH OR DAMAGE TO AIRCRAFT.
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NOTE:	It is acceptable to perform the applicable REU RTS procedure one (1) time per flight control surface, after all REUs on the applicable surface have been installed / updated in accordance with the applicable AMM procedures.
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1. Perform return to service procedures using appropriate AMM procedures listed in Table 1.
- D.** Ensure work area is clean and clear of foreign object debris (FOD).
- E.** Record compliance with this aircraft service change in the aircraft's permanent maintenance records and return aircraft to flight status.
- F.** Report compliance with this service change to CMP by uploading the attached service reply card, along with the CMP task card(s) sign-off using MyGulfstream, MyCMP Document Upload, or e-mail to cmp.docproc@campsystems.com, or fax to Gulfstream CMP at 800-944-1775 or 912-963-0265.

WEIGHT AND BALANCE DATA:	The effect of this change with regard to aircraft basic weight and balance is 0:		
	MOD	Δ WEIGHT	Δ MOMENT
	ASC 069	≈ 0.0 lb	≈ 0.0 in·lb

ELECTRICAL LOAD ANALYSIS DATA:	The aircraft's electrical loading is not affected by this change.
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PARTS REQUIRED PER AIRCRAFT:	No modification kit is required for this installation. New units are procured outside of the ASC or existing units are updated.
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SERVICE REPLY CARD (Sheet 1 of 2)

Please upload this page, along with the CMP task card(s) sign-off using MyGulfstream, MyCMP Document Upload, or e-mail to cmp.docproc@campsystems.com or fax to Gulfstream CMP at 800-944-1775 or 912-963-0265.

THE FOLLOWING AIRCRAFT SERVICE CHANGE HAS BEEN COMPLIED WITH:

ASC NUMBER	A/C	AIRCRAFT TYPE	COMPLIANCE DATE
970690		G650ER	

AIRCRAFT HOURS: _____

AIRCRAFT LANDINGS: _____

PREVIOUSLY
COMPLIED WITH (PCW): _____ DATE: _____

NOT APPLICABLE: _____ DATE: _____

COMPONENT		PART NUMBER	SERIAL NUMBER	CMP CODE
L Aileron EHSA	OFF:			
	ON:			
R Aileron EHSA	OFF:			
	ON:			
L Aileron EBHA	OFF:			
	ON:			
R Aileron EBHA	OFF:			
	ON:			
L Outboard Spoiler EBHA	OFF:			
	ON:			
R Outboard Spoiler EBHA	OFF:			
	ON:			
L Mid Spoiler EHSA	OFF:			
	ON:			
R Mid Spoiler EHSA	OFF:			
	ON:			
L Inboard Spoiler EHSA	OFF:			
	ON:			

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SERVICE REPLY CARD (Sheet 2 of 2)

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ASC NUMBER	A/C	AIRCRAFT TYPE	COMPLIANCE DATE
970690		G650ER	

COMPONENT		PART NUMBER	SERIAL NUMBER	CMP CODE
R Inboard Spoiler EHSA	OFF:			
	ON:			
L Elevator EHSA	OFF:			
	ON:			
R Elevator EHSA	OFF:			
	ON:			
L Elevator EBHA	OFF:			
	ON:			
R Elevator EBHA	OFF:			
	ON:			
Rudder EHSA	OFF:			
	ON:			
Rudder EBHA	OFF:			
	ON:			

SIGNATURE	TITLE / CERTIFICATE NUMBER	COMPANY

COMMENTS / SUGGESTIONS / ACTIONS TAKEN:

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