

# PILOTS INFORMATION SHEET

MODEL BD-700-1A10 (BD-700)

ATA 28-41

FUEL

<p><b>MODIFICATION - FUEL MANAGEMENT AND QUANTITY GAUGING SYSTEM (FMQGS) - UPGRADE OF THE FMQGS COMPUTER TO PART NO. GP546-1501-9</b></p>
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This Service Bulletin installs a software-upgraded FMQGC Part No. GP546-1501-8.

The software changes are as follow:

- The number of configuration jumpers available has been increased.
- The high temperature limit for the WING FUEL TEMP HI Caution has been increased to 54 degree C (was 43 degree C) with FRTT Off. The WING FUEL TEMP HI limit with FRTT On has been increased to 10 degree C (was 0 degree C). The average temperature threshold for displaying the coldest temperature vs. the inboard (feed) cell temperatures has been decreased to -10 degree C (was -5 degree C).
- The center transfer pump break delay has been reduced to 5 minutes (was 25 minutes) when scavenge is installed to minimize pump wear, since the scavenge system will assure the center tank empty. Likewise, the center wing transfer Lo Limit has been increased to 37 gallons on the ground and 22 gallons in the air.
- Per CAIMS specification, the FMQGC software has been modified to echo Clear CAIMS command. This is a minor protocol change, which reduces the user waiting time for FMQGC results to display on the PMAT.
- Degraded accuracy has been disabled in flight when fuel is above 90% full for each wing. Also, the time delay for degraded accuracy in flight and on the ground has been increased from 1 minute to 3 minutes.
- Center transfer CAIMS faults, which will not result in EICAS faults, have been removed. These occurred only when the center tank is at a very low fuel level.
- A software change to reduce the occurrence of wing transfer fail messages that can occur has been implemented.

**NOTE:** When this Service Bulletin is done, the Airplane Flight Manual issue that follows **MUST** be used:

- Airplane Flight Manual, CSP 700-1, Temporary Revision TR BD700/36.

# SERVICE BULLETIN

This Service Bulletin is available at:  
[www.cic.bombardier.com](http://www.cic.bombardier.com)

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**MODIFICATION - FUEL MANAGEMENT AND QUANTITY GAUGING SYSTEM  
(FMQGS) - UPGRADE OF THE FMQGS COMPUTER TO PART NO. GP546-1501-9**

## 1. PLANNING INFORMATION

### A. Compliance

Recommended

NOTE: When this Service Bulletin is done, the Airplane Flight Manual issue that follows MUST be used:

- Airplane Flight Manual, CSP 700-1, Temporary Revision TR BD700/36.

### B. Approval

The technical content of this Service Bulletin has been approved under the authority of Transport Canada Civil Aviation (TCCA) Design Approval Organization (DAO) No. DAO #93-Q-02.

This Service Bulletin is also accepted by the FAA under the Canada/USA Bilateral Aviation Safety Agreement and by the JAA in accordance with the JAA/TCCA Post-Type Validation Procedures.

### C. Effectivity

BD-700-1A10 aircraft, Serial No. **9003, 9096, 9115 to 9132.**

BD-700-1A10 aircraft, Serial No. 9133 to 9999 are scheduled for the modification in production (Ref.: Modification Summary, 700T804116).

NOTE: The instructions given in this Service Bulletin are only applicable to the systems and parts installed at the time of delivery of the aircraft or as changed by Bombardier Aerospace Service Bulletin(s).

Before you do this bulletin, examine all STC, STA or equivalent action changes to make sure that this bulletin can be completed.

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#### **D. Reason**

This Service Bulletin introduces a software upgrade to the Fuel Management and Quantity Gauging Computer (FMQGC). The new software build incorporates the functional improvements that follow:

- Change in-flight fuel quantity degrade advisory logic,
- Fuel high temperature limits change,
- Fuel temperature display logic change,
- Center transfer pump break delay,
- FMQGC/CAIMS communication update,
- Increase of jumper configuration available, and
- Automatic operation of the fuel re-circulation system (configuration option – provision only)

#### **E. Description**

This Service Bulletin gives instructions to:

- Get access to the aft equipment compartment and to the avionics bay,
- Remove the FMQGC Part No. GP546-1501-7,
- Send the old FMQGC to Bombardier Aerospace, Spare Parts Center, in exchange for a software-upgraded unit, and
- Do the necessary tests to make sure the software-upgraded unit operates correctly.

#### **F. Manpower**

NOTES: 1. The man-hours given are estimates to help you schedule the tasks given in this bulletin. The estimates are for direct labor performed by an experienced crew and do not include the time for familiarization, planning, aircraft preparation in hangar such as towing and positioning of scaffolds, removal of interior furnishings, repainting, supervision and inspection.

For more information related to the manpower estimates, refer to SB 700-00-002.

2. This Service Bulletin may require consumable materials that have specific curing times (refer to paragraph 3.). The accumulated curing time is not included in the labor estimates and should be considered for planning purposes before you schedule this Service Bulletin.

2 man-hours are necessary to do this modification.

For aircraft in new aircraft warranty, labor is at no cost if the work is done at Bombardier Business Aviation Services (BBAS) or Authorized Service Facilities. For Bombardier Aerospace to pay for the labor, this Service Bulletin must also be scheduled in less than 12 months from its release date.

**G. Material - Cost and Availability**

No kit is necessary to do this modification.

For aircraft in new aircraft warranty, the software-upgraded FMQGC is available at no cost.

Send the old FMQGC, Part No. GP546-1501-7, to the address shown below in exchange for a software-upgraded -9 FMQGC:

Attention: Global Express

**Learjet Inc.**

761 E Kellogg, Dock 3  
Wichita, Kansas 67209  
USA

- NOTES:
1. Bombardier Aerospace is maintaining a rotatable pool of replacement FMQGC, to be supplied to the operators under the terms and conditions given below:
    - To ensure a timely and effective return/rework program, Bombardier Aerospace will be contacting the operators for the scheduling of this modification.
    - The removed FMQGC, Part No. GP546-1501-7 must be returned to Bombardier Aerospace, Spare Parts Center in less than 10 days of receipt of replacement unit, with documentation showing the serial number of the aircraft.
    - If the removed FMQGC is not returned in less than 10 days, the operator will be charged for the replacement unit.
  2. On the no-charge purchase order, write "For incorporation of Service Bulletin 700-28-045".

During or after the above free period, Smart Parts Plus does not pay for the part upgrade.

**H. Tooling - Price and Availability**

No equipment or special tools are necessary.

**I. Weight and Balance**

No change

**J. Electrical Load Data**

No change

**K. References**

- Bombardier Aerospace, Modification Summary 700T01908, Rev. A
- Bombardier Aerospace, Modification Summary 700T804116, Rev. A-1
- BD-700 Aircraft Maintenance Manual, Chapters 6, 24 and 28
- BD-700 Aircraft Illustrated Parts Catalog (IPC), Chapter 28.

**L. Other Publications Affected**

- BD-700 Aircraft Illustrated Parts Catalog (IPC), Chapter 28
- Airplane Flight Manual, CSP 700-1, Temporary Revision TR BD700/36.

**M. Equivalent Service Bulletin**

None

**2. ACCOMPLISHMENT INSTRUCTIONS**

- NOTES:
1. All TASKs referenced in the procedures that follow are from the BD-700 Aircraft Maintenance Manual, unless otherwise specified.
  2. All references made to zones, access panels and/or doors, are from the BD-700 Aircraft Maintenance Manual, Chapter 6.

**A. Aircraft Setup**

WARNING: ON AIRCRAFT PRE SB 700-24-045, MAKE SURE YOU DO NOT SET THE EMS CDU CIRCUIT BREAKERS TO 'LOCK'. IF YOU DO THIS AND YOU APPLY ELECTRICAL POWER, THE CIRCUIT BREAKERS WILL AUTOMATICALLY BE SET TO THEIR ORIGINAL POSITION. THIS WILL PUT THE AIRCRAFT IN A DANGEROUS CONDITION FOR MAINTENANCE.

- (1) For aircraft pre SB 700-24-045, on the ELECTRICAL control panel, set the BATT MASTER switch to ON and on the Electrical Management System (EMS) Control Display Unit (CDU), installed on the pilot's and co-pilot's side panel, set the circuit breakers that follow to OUT:

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
FUEL	FUEL COMP A	BATT
FUEL	FUEL COMP B	DC ESS

- (2) For aircraft post SB 700-24-045, on the ELECTRICAL control panel, set the BATT MASTER switch to EMS and on the pilot's or co-pilot's EMS CDU, set the circuit breakers in the previous table to LOCKED.

NOTE: All other electrical power must be removed from the aircraft to set circuit breakers to LOCKED.

- (3) For aircraft pre SB 700-24-045, on the ELECTRICAL control panel, set the BATT MASTER switch to OFF.

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**WARNING:** ON AIRCRAFT POST SB 700-24-045, AFTER THE CIRCUIT BREAKERS ARE SET TO LOCKED, MAKE SURE TO SET THE BATT MASTER SWITCH TO ON BEFORE IT IS SET TO OFF. IF THE BATT MASTER SWITCH IS SET TO OFF FIRST, THE CIRCUIT BREAKERS WILL NOT STAY IN THE LOCKED POSITION. THIS WILL PUT THE AIRCRAFT IN A DANGEROUS CONDITION FOR MAINTENANCE.

- (4) For aircraft post SB 700-24-045, on the ELECTRICAL control panel, set the BATT MASTER switch to ON, and then to OFF.
- (5) Open the door 311BB to get access to the aft equipment compartment.
- (6) Open and tag the circuit breakers that follow:

LOCATION	CB NO.	NAME	ZONE
ASCA	A5	FUEL COMP RD A	310
ASCA	A6	FUEL COMP RD B	310

**B. Modification**

**CAUTION:** OBEY ALL ELECTROSTATIC DISCHARGE SAFETY PRECAUTIONS WHEN YOU DO MAINTENANCE ON ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) COMPONENTS. STATIC VOLTAGE CAN CAUSE DAMAGE TO ESDS COMPONENTS.

- (1) Obey all electrostatic discharge safety precautions. Refer to TASK 24-00-00-910-802.
- (2) Remove the FMQGC, Part No. GP546-1501-7 and send it to the address given below. Refer to TASK 28-41-01-000-801.

Attention: Global Express

**Learjet Inc.**  
761 E Kellogg, Dock 3  
Wichita, Kansas 67209  
USA

- (3) Upon reception, install the software-upgraded FMQGC, Part No. GP546-1501-9. Refer to TASK 28-41-01-400-801.

**C. Testing**

(1) Remove the tags and close the circuit breakers that follow:

LOCATION	CB NO.	NAME	ZONE
ASCA	A5	FUEL COMP RD A	310
ASCA	A6	FUEL COMP RD B	310

(2) For aircraft pre SB 700-24-045, set the circuit breakers in the table below to IN, as follows:

- (a) On the ELECTRICAL control panel, set the BATT MASTER switch to ON.
- (b) On the EMS CDU, push the CIRCUIT BREAKER – SYSTEM or BUS key.
- (c) Push the line select key to highlight the system name or bus name.
- (d) Push the left line select key to highlight the circuit breaker name.
- (e) Push the right line select key to change the state of the circuit breaker from OUT to IN.

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
FUEL	FUEL COMP A	BATT
FUEL	FUEL COMP B	DC ESS

(3) For aircraft post SB 700-24-045, set the BATT MASTER switch to EMS and on the pilot's or co-pilot's EMS CDU, set the circuit breakers in the previous table that are in the LOCKED position to OUT:

- NOTES:
- 1. All other electrical power must be removed from the aircraft to unlock circuit breakers.
  - 2. It is necessary to make the selection of each circuit breaker two times: the first time to show the status (LOCKED) and the second time to change the status from LOCKED to OUT.

(4) Set the BATT MASTER switch to ON and on the pilot's or co-pilot's EMS CDU, set the circuit breakers in the previous table to IN.

- NOTES:
- 1. For aircraft post SB 700-24-045, circuit breakers cannot be set from LOCKED to IN. If one or more of the previous circuit breakers is forgotten in the LOCKED position, it will be necessary to repeat the previous step and this step to set the circuit breakers to IN.
  - 2. For aircraft post SB 700-24-045, if the BATT MASTER switch is set to OFF before it is set to ON, the previous circuit breakers will not stay in the OUT position but will automatically return to the LOCKED position.

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MODEL BD-700-1A10

- (5) Connect and energize the external ac power. Refer to TASK 24-41-00-861-801.
- (6) Do the self-test of the FMQGC. Refer to TASK 28-41-01-740-801.
- (7) Remove the external ac power. Refer to TASK 24-41-00-861-802.

**D. Close-out**

- (1) Remove all tools, equipment and unwanted materials from the aircraft.
- (2) Install the avionics bay access panel 140BB.
- (3) Close the access panel 311BB to the aft equipment compartment.

**E. Recording**

When this Service Bulletin is completed, make an entry in the aircraft log and send the attached Incorporation Notice to Bombardier Business Aviation Services.

**3. MATERIAL INFORMATION**

**A. Part**

The part that follows is necessary to do this Service Bulletin:

<b>NEW PART NO.</b>	<b>QTY</b>	<b>KEY WORD</b>	<b>USED PART NO.</b>	<b>INSTRUCTIONS - DISPOSITION</b>
GP546-1501-9	1	FMQGC	GP546-1501-7	Refer to paragraph 1.G.

NOTE: The part number for the item listed above is subject to change without revision to this Service Bulletin. In case of discrepancy between this list and any other list, the Illustrated Parts Catalog prevails and shall be used to determine the latest part number.

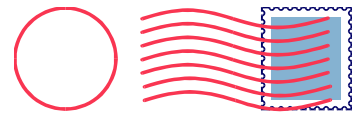
**SERVICE BULLETIN EVALUATION FORM**  
(YOUR IDEAS WILL HELP US PROVIDE BETTER BULLETINS)

<b>SERVICE BULLETIN</b> <u>700-28-045</u>	<b>ISSUE:</b> <u>Basic</u>	<b>DATED:</b> <u>Dec 15/2003</u>
<b>TITLE:</b> Modification - Fuel Management and Quantity Gauging System (FMQGS) - Upgrade of the FMQGS Computer to Part No. GP546-1501-9		

- |  | POOR                     | FAIR                     | GOOD                     | VERY GOOD                | EXCELLENT                |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <ul style="list-style-type: none"> <li>• <b>How easy is the bulletin to understand?</b><br/>Comments:</li> </ul>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>• <b>Does the bulletin tell you all you need to know about the job?</b><br/>Comments:</li> </ul>                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>• <b>Do you think the bulletin conveys the best way to do the job?</b><br/>Comments:</li> </ul>                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>• <b>How realistic are the man-hour estimates?</b><br/>Comments:</li> </ul>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>• <b>What is your appreciation of the illustration(s), figure(s), and/or kit drawing(s)?</b><br/>Comments:</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

<b>FORWARD ALL INQUIRIES TO:</b>	<b>PLEASE SUPPLY US WITH THE FOLLOWING DATA:</b>
NAME: Jean-Pierre Martineau	OPERATOR: _____
TELEPHONE: (514) 855-5000, ext.: 50626	AIRCRAFT SERIAL NO.: _____
FACSIMILE: (514) 855-7894	TELEPHONE: _____
	FACSIMILE: _____
	NAME (Please print) _____

**UPON COMPLETION OF THIS EVALUATION FORM, PLEASE FOLD, AND RETURN**



**Bombardier Business Aviation Services**

P.O. Box 6087, Station Centre-ville  
Montréal, Québec, Canada H3C 3G9

Attention: Supervisor, Service Bulletin Group  
Department 631

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## SERVICE BULLETIN INCORPORATION SHEET – “700-28-045”

Upon completion of the Service Bulletin, please fill-in, fold and return/or fax to (514) 855-8798.  
Attention: Dept. 051

**NOTE:** For configuration control purposes, please fill out one form for each Service Bulletin.

Service Bulletin Number	Rev.	* Parts Completed	Further Action Required	
			YES	NO
700-28-045	Basic	-	<input type="checkbox"/>	<input type="checkbox"/>
“	“	-	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	<input type="checkbox"/>	<input type="checkbox"/>

\* **NOTES:** 1. Where the Service Bulletin is divided into a number of parts (e.g., PARTS A, B, C, D, etc.) which can be carried out separately, indicate only those parts completed at this time.

2. For repetitive checks (usually PART A) only the initial check should be reported unless otherwise stated in the Service Bulletin.

3. When more than one part is carried out at the same time, each part should be reported.

<b>Is the aircraft enrolled on the CIMMS computerized maintenance program?</b>	<b>Yes</b>	<b>No</b>
	<input type="checkbox"/>	<input type="checkbox"/>

Aircraft Serial No. _____	Aircraft Reg. No. _____
Airframe Landings _____	Airframe Hours _____
Date of Incorporation _____	Service Order No. _____
Facility & Location Incorporation Bulletin _____	
SIGNED: _____	DATE: _____



**Bombardier Business Aviation Services**

P.O. Box 6087, Station Centre-ville  
Montréal, Québec, Canada H3C 3G9

Attention: Maintenance Engineering  
Department 051

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