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BUSINESS AIRCRAFT
Bombardier Inc.
P.O. Box 6087, Station Centre-Ville
Montreal (Quebec) H3C 3G9
www.cic.bombardier.com
TEL 514-855-2717
FAX 514-855-2770

# ADVISORY WIRE
# AW700-28-0177

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|---|---|
| **DATE:** October 7, 2005 | **PAGE:** 1 of 6 |

**FROM:** BOMBARDIER BUSINESS AIRCRAFT CUSTOMER SUPPORT

**ADVISORY WIRE**

**REFERENCE NO**: AW700-28-0177

**SUBJECT:** Fuel System – Auto Refuel Inhibit

**EFFECTIVITY:** BD700-1A10 (9002 & Subs
BD700-1A11 (9127 & subs)

**ATA:** 28-23

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## 1.0 REFERENCES:

**Note:** Applicable to BD-700 GX, BD-700 XRS and BD-700 Global 5000 manuals.

1.1 Aircraft Maintenance Manual AMM, task 12-11-01-650-801, Pressure Refueling.
1.2 Ground Handling & Servicing Information Manual Section 04, task 12-11-01-650-801, Pressure Refueling.
1.3 Fault Isolation Manual (FIM) task 28-23-00-810-804

## 2.0 INTRODUCTION:

This Advisory Wire is to inform operators on the Auto Refuel system operation, including the fuel allocation, distribution and limitations. It describes the conditions, which could cause the refuel process to abort and display various fault messages, and provides additional tips to prevent refueling inhibit.

## 3.0 DESCRIPTION:

We had several reports of RDCP posting an “INHIB” message before or while the aircraft is refuelled in Auto mode. The typical fuel system configurations are as follows:

- Fuel load is 5000 to 7000 Lbs, and may have fuel remaining in the Center or Aft Tank
- Auto Refuel is selected and a Pre-Selected fuel load of 32000 to 35000 Lbs is entered
- Auto Refuel is started, then auto refueling stops anywhere between 13000 to 19000 Lbs,
- “INHIB” message is displayed on the RDCP and the auto refueling is aborted.

The auto refueling can be re-initiated by cycling the knob to the “OFF” position and back to “AUTO” on the RDCP. Otherwise, the refueling must be completed in the Manual mode.

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In the AUTO Refueling mode, the fuel system computer (FMQGC) controls and monitors the Auto Refuel functions. It controls the refuel process by calculating the load allocation and distribution to each tank, as per the Fuel Allocation logic. Refer to Table 1 to 3. The FMQGC monitors the system status and will abort the refueling function if a fault, misconfiguration and /or system limitation excedence is detected.

**4.0 ACTION:**

In an effort to minimize the high rate of removal and no fault found (NFF) of the FMQGC due to the Refuel "INHIB" message, we recommend to observe the following additional precautions to
supplement the AMM Pressure Refueling procedure, TASK 12-11-01-650-801, when refueling in the AUTO Refueling Mode. The refueling procedures in the manuals will be revised to incorporate these details.

Ensure the following fuel system conditions are satisfied prior to starting the refuel process:

1. All Refuel/Defuel SOV switches are in the CLOSE position, before turning on the RDCP.

2. In Auto Refuel Mode, ensure the throttle quadrant "L Engine" and "R Engine" switches are selected "OFF".

3. CAIMS is not ACTIVE

4. RDCP or FMQGC operational test are completed successfully.

5. LH and RH wing fuel load imbalance is less than 1100 Lbs.

6. Ensure power to the RDCP is not interrupted and aircraft is Weight on Wheels

7. Ensure pre-selected fuel load allocations in the Auto Mode are within the following limitations: Refer to Table 1-3 for fuel allocation logics.

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a. LH and RH Wing tanks fuel QTY are not more than 250 Lbs above the wing tanks fuel target allocation.
b. Center tank fuel QTY is not more then 250 Lbs above the center tank fuel target allocation.
c. If the Pre-selected total fuel QTY is less than full wing QTY, ensure the Aft or Center tank fuel QTY is less than 250 Lbs
d. If installed, Forward tank fuel QTY is not more then 250 Lbs above than the Forward tank fuel target allocation.

8. SOV test is successful and "SOV FAIL" message is not displayed on the RDCP.

During refueling follow these precautions :

9. If the master RDCP (whichever is selected first) is selected to off and the slave RDCP is still powered, the refueling process will abort and all R/D SOV will be disarmed. To proceed with the refueling, a new refueling selection must be made from the new Master RDCP.

10. Changing the refueling mode from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and anyone of the R/D SOV switch is in the OPEN position will result with a display of "INHIB" in the RDCP pre-select window until all SOV switches are selected to the CLOSE position. Then, Manual refueling or defueling can resume by selecting the SOV OPEN, as required.

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## Fuel Load Allocation Logic Tables

**Note:**

1. Quantities in the following tables are based on Standard Density of 6.75 Lbs/US Gallon at 15 °C, rounded off to the nearest 50 Lbs or 25 kg. Actual fuel Loads will vary as a result of density change, which is directly affected by temperature changes.

2. The following tables are for reference only and should not be considered limiting, since the density value is recalculated throughout the refueling process and could differ from the Standard Density as explained above.

3. FWD Tank does not have dedicated quantity indication. Fwd Tank fuel load is incorporated into the CTR Tank quantity indication

| Total Pre-Selected (PS) Fuel Load (Lbs) | Fuel Load Allocation Logic - AUTO Refuel Mode Selected (GX) | | | | |
|---|---|---|---|---|---|
| | **LH Wing Tank (Lbs)** | **Center Tank (Lbs)** | **Aft Tank (Lbs)** | **RH Wing Tank (Lbs)** | **FWD Tank (Lbs)** |
| < 30000 | PS/2 | 0 | 0 | PS/2 | N/A |
| >30000 <30500 | (PS – 500)/2 | 0 | 500 (Min) | (PS – 500)/2 | N/A |
| >30500 <32300 | (PS – 2300)/2 | 0 | 2300 | (PS – 2300)/2 | N/A |
| >32300 <32800 | (PS-2800)/2 | 500 (Min) | 2300 | (PS-2800)/2 | N/A |
| >32800 < Full | 15000 | PS – 32300 | 2300 | 15000 | N/A |
| Full | 15000 | 11100 | 2300 | 15000 | N/A |
| **If Forward Tank Is Installed (GX 9003 & 9096 and XRS)** | | | | | |
| >43400 <Full | 15000 | 11100 | 2300 | 15000 | PS – 43400 |
| Full | 15000 | 11100 | 2300 | 15000 | 1500 |

Table 1

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| Total Pre-Selected (PS) Fuel Load (Lbs) | Fuel Load Allocation Logic - AUTO Refuel NO AFT Mode Selected (GX) | | | | |
|---|---|---|---|---|---|
| | LH Wing Tank (Lbs) | Center Tank (Lbs) | Aft Tank (Lbs) | RH Wing Tank (Lbs) | FWD Tank (Lbs) |
| < 30000 | PS/2 | 0 | 0 | PS/2 | N/A |
| >30000 <30500 | (PS – 500)/2 | 500 (Min) | 0 | (PS – 500)/2 | N/A |
| >30500 <Full | 15000 | PS – 30000 | 0 | 15000 | N/A |
| Full | 15000 | 11100 | 0 | 15000 | N/A |
| **If Forward Tank Is Installed (GX 9003 & 9096 and XRS)** | | | | | |
| >41100 <42600 | 15000 | 11100 | 0 | 15000 | PS – 41100 |
| Full | 15000 | 11100 | 0 | 15000 | 1500 |

Table 2

| Total Pre-Selected (PS) Fuel Load (Lbs) | Fuel Load Allocation Logic - AUTO Refuel (G5000) | | |
|---|---|---|---|
| | LH Wing Tank (Lbs) | Center Tank (Lbs) | RH Wing Tank (Lbs) |
| < 30000 | PS/2 | 0 | PS/2 |
| >30000 <30500 | (PS – 500)/2 | 500 (Min) | (PS – 500)/2 |
| >30500 <Full | 15000 | PS – 30000 | 15000 |
| Full | 15000 | 6100 | 15000 |

Table 3