PRESSURE REFUELING - SERVICING

TASK 12–11–01–620–801

1. Use of Fuel Biocide Additive When Pressure Refueling

A. Service Bulletin List

<table>
<thead>
<tr>
<th>SERVICE BULLETIN NO.</th>
<th>SERVICE BULLETIN TITLE</th>
</tr>
</thead>
</table>

B. Tools and Equipment

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercially Available</td>
<td>Pneumatic Injector</td>
</tr>
<tr>
<td>Commercially Available</td>
<td>Shop Air, 90 ±10 psi (620.53 ±68.95 kPa)</td>
</tr>
<tr>
<td>Commercially Available</td>
<td>Test Panel, Pressure Regulating, 0–100 psi (0–689.48 KPa)</td>
</tr>
</tbody>
</table>

NOTE: Refer to the BD–700 ILLUSTRATED TOOL AND EQUIPMENT MANUAL to make sure that you use the correct equipment configuration.

C. Consumable Materials

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
<th>MANUFACTURERS’ REFERENCE AND/OR SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>11−001</td>
<td>Fuel Additive, Biocide</td>
<td>MIL−S−53021A</td>
</tr>
</tbody>
</table>

EFFECTIVITY: ALL
D. **Job Set-Up**

**WARNING:** OBEY THE PRECAUTIONS THAT FOLLOW WHEN YOU USE A FUEL ADDITIVE. FUEL ADDITIVES ARE DANGEROUS BECAUSE THEY CAN BE FLAMMABLE, POISONOUS AND CAN CAUSE INJURY.
- USE SAFETY GOGGLES
- PUT ON PROTECTIVE CLOTHING
- DO NOT LET BIOCIDE FUEL ADDITIVE TOUCH YOUR SKIN, EYES, AND MOUTH
- DO THE WORK IN AN AREA THAT HAS A GOOD FLOW OF CLEAN AIR
- DO THE WORK IN AN AREA THAT HAS NO SPARKS, FLAME, OR HOT SURFACES
- OBEY THE MANUFACTURER'S INSTRUCTIONS
- GET MEDICAL AID IF YOU GET THE FUEL ADDITIVE IN YOUR EYES OR MOUTH, OR IF IRRITATION OCCURS.

(1) Obey all safety precautions when you use fuel biocide additives.

**CAUTION:** DO NOT PUT A CONCENTRATION OF BIOCIDE IN THE FUEL TANKS. USE THE METERED INJECTION METHOD TO MIX THE BIOCIDE DIRECTLY WITH A FLOW OF FUEL. IF YOU PUT BIOCIDE DIRECTLY IN THE FUEL TANK, SALT PARTICLES CAN OCCUR AND CAN CAUSE DAMAGE.

(2) Do not put concentrated fuel biocide additives directly in the fuel tank. This can cause damage to the equipment.

E. **Procedure**

(1) To add fuel biocide additive to the fuel, do as follows:

(a) Connect the fuel biocide injector to the fuel nozzle.

(b) Connect the test panel and shop air to the fuel biocide injector.

(c) Set the fuel biocide additive in the concentration that follows during the pressure refueling procedure.

(d) Add the fuel biocide additive at a mixture of 135 parts per million (ppm) by weight. To get the fluid ounces necessary to get the correct mixture of 135 ppm of fuel biocide additive, multiply the pounds of fuel needed by 0.002.
(e) Add fuel biocide additive as follows:

<table>
<thead>
<tr>
<th>Pounds</th>
<th>Gallons (U.S.)</th>
<th>Gallons (Imp.)</th>
<th>Liters</th>
<th>Pounds</th>
<th>Gallons (U.S.)</th>
<th>Ounces (Imp.)</th>
<th>Liters</th>
</tr>
</thead>
<tbody>
<tr>
<td>670</td>
<td>100</td>
<td>83.27</td>
<td>378.54</td>
<td>0.09</td>
<td>0.01</td>
<td>1.32</td>
<td>0.04</td>
</tr>
<tr>
<td>1340</td>
<td>200</td>
<td>166.54</td>
<td>757.08</td>
<td>0.18</td>
<td>0.02</td>
<td>2.63</td>
<td>0.08</td>
</tr>
<tr>
<td>2010</td>
<td>300</td>
<td>249.81</td>
<td>1135.62</td>
<td>0.28</td>
<td>0.03</td>
<td>3.95</td>
<td>0.12</td>
</tr>
<tr>
<td>2680</td>
<td>400</td>
<td>333.08</td>
<td>1514.16</td>
<td>0.37</td>
<td>0.04</td>
<td>5.26</td>
<td>0.16</td>
</tr>
<tr>
<td>3350</td>
<td>500</td>
<td>416.35</td>
<td>1892.70</td>
<td>0.46</td>
<td>0.05</td>
<td>6.6</td>
<td>0.20</td>
</tr>
<tr>
<td>6700</td>
<td>1000</td>
<td>832.68</td>
<td>3785.40</td>
<td>0.90</td>
<td>0.10</td>
<td>13.16</td>
<td>0.39</td>
</tr>
<tr>
<td>13400</td>
<td>2000</td>
<td>1665.36</td>
<td>7570.80</td>
<td>1.81</td>
<td>0.21</td>
<td>26.46</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Note 1:
Do not add to JP4 grade fuel if prepared to MIL−T−5624H. This fuel contains a 0.1 to 0.15% (by volume) concentration of the biocide.
TASK 12−11−01−650−801

2. Pressure Refueling

A. Service Bulletin List

<table>
<thead>
<tr>
<th>SERVICE BULLETIN NO.</th>
<th>SERVICE BULLETIN TITLE</th>
</tr>
</thead>
</table>

B. Reference Information

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASK 10−11−00−867−801</td>
<td>Grounding of the Aircraft</td>
</tr>
<tr>
<td>TASK 12−11−01−620−801</td>
<td>Use of Fuel Biocide Additive When Pressure Refueling</td>
</tr>
<tr>
<td>TASK 12−11−01−660−801</td>
<td>Use of Fuel Anti−Icing Additive When Pressure Refueling</td>
</tr>
<tr>
<td>TASK 24−00−00−861−801</td>
<td>Connect the Electrical Power to the Aircraft</td>
</tr>
<tr>
<td>TASK 24−00−00−861−802</td>
<td>Remove the Electrical Power from the Aircraft</td>
</tr>
<tr>
<td>TASK 28−00−00−910−801</td>
<td>Fuel−System Safety Precautions</td>
</tr>
<tr>
<td>TASK 28−11−00−210−801</td>
<td>General Visual Inspection of the Wing−Tank External Surfaces</td>
</tr>
<tr>
<td>TASK 28−11−09−710−801</td>
<td>Operational Test of the Pressure Relief Valves</td>
</tr>
<tr>
<td>TASK 28−11−21−710−801</td>
<td>Operational Test of the Center Tank Pressure−Relief−Valve</td>
</tr>
<tr>
<td>TASK 28−13−00−710−801</td>
<td>Operational Test of the Vent System</td>
</tr>
</tbody>
</table>

C. Job Set-Up

(1) Obey all fuel−system safety precautions (TASK 28−00−00−910−801).

(2) Move the wheel chocks approximately 6.0 in (152.4 mm) forward and aft of the tires (main landing gear and nose landing gear).

**NOTE:** You need to do this to easily remove the wheel chocks. It is possible for the tires to expand from the weight of the fuel.
WARNING: REMOVE ALL PERSONS, MATERIALS, AND EQUIPMENT FROM BELOW THE AIRCRAFT BEFORE YOU DO THE REFUEL PROCEDURE. THE WEIGHT OF THE FUEL ADDED WILL COMPRESS THE LANDING GEAR AND LOWER THE AIRCRAFT. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

(3) Make sure that you remove all personnel and equipment from below the aircraft.

(4) Make sure that the aircraft is on level ground.

(5) Make sure that the fuel tender and the aircraft are correctly grounded (TASK 10−11−00−867−801).

(6) Connect the electrical power to the aircraft (TASK 24−00−00−861−801).

NOTE: During refueling procedures, do not change sources of power used (APU to battery, battery to aircraft electrical system, etc.

(7) In the AUTO Refuel Mode, make sure the throttle quadrant L Engine and R Engine switches are set to OFF.

(8) CAIMS is not ACTIVE.

(9) Open the REFUEL/DEFUEL PANEL access door (142AR).

(10) Do the self−test of the FMQGC (TASK 28−41−01−740−801).

(11) Do the operational test of the pressure relief valves (TASK 28−11−09−710−801).

(12) Do the operational test of the center tank pressure−relief−valve (TASK 28−11−21−710−801).

(13) Do the operational test of the vent system (TASK 28−13−00−710−801).

(14) Make sure the fuel system conditions that follow are obeyed before you begin the refuel procedures:

   (a) LH and RH wing fuel load imbalance is less than 1100 lbs (498.95 kg)

      NOTE: During refueling procedures, do not change sources of power used (APU to battery, battery to aircraft electrical system, etc.)

   (b) Make sure power to the RDCP is not turned OFF while refueling and the aircraft is in a weight−on−wheels (WOW) configuration.

   (c) Make sure the pre−selected fuel load allocations in the Auto Mode are within the limits the follow. (Specific conditions and quantities are shown in the Fuel Load Allocation Logic Tables that follow.)

      LH and RH wing tanks fuel quantity is not greater then 250 lbs (113.40 kg) more than the wing tanks target allocation.
2. Center tank fuel quantity is not greater than 250 lbs (113.40 kg) more than center wing tank target allocation.

3. If the pre-selected total fuel quantity is less than full wing quantity, make sure the aft or center tank fuel quantity is less than 250 lbs (113.40 kg).

4. If installed, the forward tank fuel quantity is not greater than 250 lbs (113.40 kg) more than the wing fuel tanks target allocation.

**NOTE:** Quantities in the tables that follow are based on Standard Density of 6.75 lbs/US gallon at 15° C, rounded off to the nearest 50 lbs (25 kg). Fuel loads will vary as a result of density change, which is directly affected by temperature changes.

**NOTE:** The tables that follow are for reference only and should not be considered limiting, since the density value is calculated throughout the refueling process and could differ from the Standard Density as explained above.

**NOTE:** FWD tank does not have dedicated quantity indication. FWD tank fuel load is incorporated into the CTR tank quantity indication.

### Fuel Load Allocation Logic

<table>
<thead>
<tr>
<th>Total Pre-Selected (PS) Fuel Load (Lbs)</th>
<th>Fuel Load Allocation Logic – AUTO Refuel Mode Selected (GX)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LH Wing Tank (Lbs)</td>
</tr>
<tr>
<td>&lt; 30000</td>
<td>PS/2</td>
</tr>
<tr>
<td>&gt;30000 &lt;30500</td>
<td>0</td>
</tr>
<tr>
<td>&gt;30500 &lt;32300</td>
<td>0</td>
</tr>
<tr>
<td>&gt;32300 &lt;32800</td>
<td>0</td>
</tr>
<tr>
<td>&gt;32800 &lt;Full</td>
<td>500 (Min)</td>
</tr>
<tr>
<td>Full</td>
<td>15000</td>
</tr>
</tbody>
</table>
### Fuel Load Allocation Logic – AUTO Refuel Mode

<table>
<thead>
<tr>
<th>Total Pre-Selected (PS) Fuel Load (Lbs)</th>
<th>Fuel Load Allocation Logic – AUTO Refuel Mode Selected (GX)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LH Wing Tank (Lbs)</td>
</tr>
<tr>
<td>If Forward Tank Is Installed (GX 9003 &amp; 9096 and XRS)</td>
<td></td>
</tr>
<tr>
<td>&gt;43400</td>
<td>11100</td>
</tr>
<tr>
<td>&lt;Full</td>
<td>11100</td>
</tr>
</tbody>
</table>

### Fuel Load Allocation Logic – AUTO Refuel NO AFT Mode

<table>
<thead>
<tr>
<th>Total Pre-Selected (PS) Fuel Load (Lbs)</th>
<th>Fuel Load Allocation Logic – AUTO Refuel NO AFT Mode Selected (GX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH Wing Tank (Lbs)</td>
<td>Center Tank (Lbs)</td>
</tr>
<tr>
<td>&lt;30000</td>
<td>PS/2</td>
</tr>
<tr>
<td>&gt;30000 &lt; 30500</td>
<td>(PS−500)/2</td>
</tr>
<tr>
<td>&gt;30500 &lt; Full</td>
<td>15000</td>
</tr>
<tr>
<td>Full</td>
<td>15000</td>
</tr>
</tbody>
</table>

If Forward Tank Is Installed (GX 9003 & 9096 and XRS)

| <42600                                  | 15000 | 11100 | 0 | 15000 | PS−41100 |
| Full                                   | 15000 | 11100 | 0 | 15000 | 1500   |
### Fuel Load Allocation Logic

<table>
<thead>
<tr>
<th>Total Pre-Selected (PS) Fuel Load (Lbs)</th>
<th>Fuel Load Allocation Logic – AUTO Refuel G5000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LH Wing Tank (Lbs)</td>
</tr>
<tr>
<td>&lt; 30000</td>
<td>PS/2</td>
</tr>
<tr>
<td>&gt;30000</td>
<td>(PS–500)/2</td>
</tr>
<tr>
<td>&lt;30500</td>
<td>15000</td>
</tr>
<tr>
<td>&gt;30500</td>
<td></td>
</tr>
<tr>
<td>&lt;Full</td>
<td></td>
</tr>
<tr>
<td>Full</td>
<td>15000</td>
</tr>
</tbody>
</table>

**D. Procedure**

Refer to Figure 301.

Refer to Figure 302.

**NOTE:** If the master RDCP (the RDCP that is selected first) is set to OFF and the slave RDCP is ON, the refueling will stop and all R/D SOVs will be disarmed. To continue with the refueling, a new refueling selection must be made from the new master RDCP.

**NOTE:** If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to CLOSED. Refueling or defueling can be started by setting the SOV OPEN, as necessary.
On A/C 9002 to 9035

(1) To do the pressure refueling in the automatic mode, with the external REFUEL/DEFUEL PANEL, do the steps that follow:

NOTE: Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

If necessary, add fuel biocide additive to the fuel [TASK 12–11–01–620–801].

If necessary, add fuel anti–icing additive to the fuel [TASK 12–11–01–660–801].

NOTE: It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) Make sure that the switches on the REFUEL/DEFUEL PANEL are as follows:

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASTER</td>
<td>OFF</td>
</tr>
<tr>
<td>AFT</td>
<td>OFF</td>
</tr>
<tr>
<td>START/STOP</td>
<td>Center</td>
</tr>
<tr>
<td>REFUEL/AUTO REFUEL/DEFUEL</td>
<td>AUTO REFUEL</td>
</tr>
<tr>
<td>MANUAL LEFT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL CTR</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL RIGHT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL AFT</td>
<td>CLOSE</td>
</tr>
</tbody>
</table>

(b) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.

WARNING: MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

2. Connect the fuel nozzle ground to the aircraft grounding point.
3  Connect the fuel nozzle to the refuel/defuel adapter.

4  Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).

**WARNING:** WHEN YOU REFUEL THE AIRCRAFT (PRESSURE OR GRAVITY), OBEY THE INSTRUCTIONS THAT FOLLOW:

- DURING THE REFUELING PROCEDURE, THE “FUEL IMBALANCE” CAUTION MESSAGE MAY DISPLAY WHEN THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS MORE THAN 600 LBS (272.16 KG) TO 1100 LBS (498.96 KG) DEPENDING OF THE WING TANKS TOTAL FUEL QUANTITY.

- WHEN YOU COMPLETE THE REFUELING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

**NOTE:** The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.
- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and the aft tanks.
- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.

(c) Refuel the aircraft as follows:

1  Set the MASTER switch to ON.

   **NOTE:** When the MASTER switch is set to ON, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.

2  Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The fuel quantity in the TOTAL and PRESEL displays must be the same.

3  Use the INCR/DECR switch to set the quantity of fuel in the PRESEL display.

4  If it is necessary to have fuel in the aft tank, set the AFT ON/OFF switch to ON.

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5 Set the START/STOP switch to START.

6 Make sure that the fuel quantity increases on the display while you add fuel.

(d) Do a check of the refuel shutoff valves as follows:

1 Push and hold the SHUTOFF TEST switch.

   NOTE: The refueling stops and the message SOV TEST shows in the PRESEL display.

2 Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.

   NOTE: If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3 If the SOV STOP message shows, do as follows:
   a Release the SHUTOFF TEST switch.
   b Set the START/STOP switch to START.

4 If the SOV FAIL message shows, do as follows:

   CAUTION: IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.

   a Make sure that the fuel flow stops to the tanks that passed the test.

     NOTE: The FAIL message shows in window of tank with the defective shutoff valve.

     NOTE: The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.

   b Release the SHUTOFF TEST switch.
   c Set the START/STOP switch to START.
   d Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.
(e) When the pressure refueling procedure is completed, do the steps that follow:

NOTE: The pressure refueling procedure is completed when the quantity in the TOTAL and the PRESEL displays are equal.

1. Set the AFT ON/OFF switch to OFF.
2. Set the MASTER switch to OFF.

(f) Disconnect the fuel tender from the aircraft as follows:

1. Set the fuel pressure on the fuel tender to 0 psig (0 kPa).
2. Disconnect the fuel nozzle from the refuel/defuel adapter.
3. Disconnect the fuel nozzle ground from the aircraft grounding point.
4. Install the cap on the refuel/defuel adapter.

On A/C 9002 to 9035

(2) To do the pressure refueling in the manual mode with the external REFUEL/DEFUEL PANEL, do the steps that follow:

NOTE: Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

If necessary, add fuel biocide additive to the fuel [TASK 12–11–01–620–801].

If necessary, add fuel anti-icing additive to the fuel [TASK 12–11–01–660–801].

NOTE: It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) The table that follows is a list of error messages that you can see on the REFUEL/DEFUEL PANEL:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>When you will see this message</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB</td>
<td>When the MANUAL/AUTO REFUEL/DEFUEL switch is changed from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and one of the R/D SOV switches is in the OPEN position.</td>
</tr>
<tr>
<td>MESSAGE</td>
<td>When you will see this message</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>In pressure defuel mode when an ENGINE RUN switch is ON and the left and right engine fire handles are not pulled.</td>
</tr>
<tr>
<td></td>
<td>In auto mode when the pre–selected fuel quantity is not valid as follows:</td>
</tr>
<tr>
<td></td>
<td>- The pre–selected quantity is less than the total quantity in the aircraft</td>
</tr>
<tr>
<td></td>
<td>- The aircraft is in CAIMS maintenance mode</td>
</tr>
<tr>
<td></td>
<td>- The SOV shutoff test fails.</td>
</tr>
<tr>
<td>FULL:</td>
<td>When the high level shutoff is activated.</td>
</tr>
<tr>
<td>LOAD ERR:</td>
<td>In auto refuel mode when you selected an invalid fuel distribution.</td>
</tr>
<tr>
<td>IMBAL:</td>
<td>When there is a pre–determined fuel quantity imbalance between the left and right wings.</td>
</tr>
<tr>
<td>REPEATER:</td>
<td>In the PRESEL window of the last REFUEL/DEFUEL PANEL selected when the two panel are on. The first panel that is on is in control and the second panel has quantity display only.</td>
</tr>
<tr>
<td></td>
<td>Dashes displayed for a fuel quantity if the value is invalid.</td>
</tr>
<tr>
<td>FAILED:</td>
<td>Displayed in the PRESEL window if the REFUEL/DEFUEL PANEL is not functional.</td>
</tr>
<tr>
<td>FMQGC – FAILURE</td>
<td>FMQGC displayed in the TOTAL window and FAILURE in the PRESEL window if the REFUEL/DEFUEL PANEL does not communicate with the fuel management and quantity gauging computer.</td>
</tr>
</tbody>
</table>
NOTE: The external REFUEL/DEFUEL PANEL will not have control if you select it after the panel in the flight compartment is on (see the message REPEATER in the above table.

Make sure that the switches on the REFUEL/DEFUEL PANEL are set as follows:

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASTER</td>
<td>OFF</td>
</tr>
<tr>
<td>AFT</td>
<td>OFF</td>
</tr>
<tr>
<td>START/STOP</td>
<td>Center</td>
</tr>
<tr>
<td>REFUEL/AUTO REFUEL/DEFUEL</td>
<td>AUTO REFUEL</td>
</tr>
<tr>
<td>MANUAL LEFT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL CTR</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL RIGHT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL AFT</td>
<td>CLOSE</td>
</tr>
</tbody>
</table>

(b) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.

   WARNING: MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

2. Connect the fuel nozzle ground to the aircraft grounding point.

3. Connect the fuel nozzle to the refuel/defuel adapter.

4. Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).
WARNING: WHEN YOU REFUEL THE AIRCRAFT (PRESSURE OR GRAVITY), OBEY THE INSTRUCTIONS THAT FOLLOW:

- DURING THE REFUEILING PROCEDURE, THE “FUEL IMBALANCE” CAUTION MESSAGE MAY DISPLAY WHEN THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS MORE THAN 600 LBS (272.16 KG) TO 1100 LBS (498.96 KG) DEPENDING ON THE WING TANKS TOTAL FUEL QUANTITY.

- WHEN YOU COMPLETE THE REFUEILING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

NOTE: The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.

- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and the aft tanks.

- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.

(c) Refuel the aircraft as follows:

1. Set the MASTER switch to ON.

   NOTE: When the MASTER switch is set to ON, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.

2. Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The PRESEL display will show MANUAL.

   NOTE: If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to closed. Refueling or defueling can be started by setting the SOV OPEN, as necessary.

3. Set the REFUEL/AUTO REFUEL/DEFUEL switch to REFUEL.

4. Set the applicable manual tank switch to OPEN.

5. Make sure that the fuel quantity increases on the display while you add fuel.
(d) Do a check of the refuel shutoff valves as follows:

1. Push and hold the SHUT OFF TEST switch.
   
   **NOTE:** The refueling stops and the message SOV TEST shows in the PRESEL display.

2. Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.
   
   **NOTE:** If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3. If the SOV STOP message shows, do as follows:
   
   a. Release the SHUTOFF TEST switch.
   
   b. Set the START/STOP switch to START.

4. If the SOV FAIL message shows, do as follows:
   
   **CAUTION:** IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.
   
   a. Make sure that the fuel flow stops to the tanks that passed the test.
   
   **NOTE:** The FAIL message shows in window of tank with the defective shutoff valve.

   **NOTE:** The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.

   b. Release the SHUTOFF TEST switch.

   c. Set the START/STOP switch to START.

   d. Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.

(e) Stop the refueling procedure when the applicable tanks have the necessary fuel as follows:

1. Set the applicable manual tank switch to CLOSE.

2. Make sure that the quantity of fuel in the display for the applicable tank is the REFUEL/DEFUEL PANEL quantity that is necessary.

3. Set the MASTER switch to OFF.
(f) Disconnect the fuel tender from the aircraft as follows:

1. Set the fuel pressure on the fuel tender to 0 psig (0 kPa).
2. Disconnect the fuel nozzle from the refuel/defuel adapter.
3. Disconnect the fuel nozzle ground from the aircraft grounding point.
4. Install the cap on the refuel/defuel adapter.

On A/C 9036 and Subs

(3) To do the pressure refueling in the automatic mode with the external REFUEL/DEFUEL panel, do the steps that follow:

**NOTE:** Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

- If necessary, add fuel biocide additive to the fuel (TASK 12–11–01–620–801).
- If necessary, add fuel anti–icing additive to the fuel (TASK 12–11–01–660–801).

**NOTE:** It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) The table that follows is a list of error messages that you can see on the REFUEL/DEFUEL PANEL:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>When you will see this message</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB</td>
<td>When the MANUAL/AUTO REFUEL/DEFUEL switch is changed from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and one of the R/D SOV switches is in the OPEN position.</td>
</tr>
<tr>
<td></td>
<td>In pressure defuel mode when an ENGINE RUN switch is ON and the left and right engine fire handles are not pulled.</td>
</tr>
<tr>
<td></td>
<td>In auto mode when the pre–selected fuel quantity is not valid as follows:</td>
</tr>
<tr>
<td></td>
<td>– The pre–selected quantity is less than the total quantity in the aircraft</td>
</tr>
<tr>
<td></td>
<td>– The aircraft is in CAIMS maintenance mode</td>
</tr>
<tr>
<td></td>
<td>– The SOV shutoff test fails.</td>
</tr>
</tbody>
</table>
When you will see this message

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB</td>
<td>During pressure refueling, INHIB will also show on the REFUEL/DEFUEL PANEL when the center tank has fuel and the wing tanks are empty. You can do refueling only after you transfer fuel from the center tank.</td>
</tr>
<tr>
<td>FULL</td>
<td>When the high level shutoff is activated.</td>
</tr>
<tr>
<td>LOAD ERR</td>
<td>In auto refuel mode when you selected an invalid fuel distribution.</td>
</tr>
<tr>
<td>IMBAL</td>
<td>When there is a pre-determined fuel quantity imbalance between the left and right wings.</td>
</tr>
<tr>
<td>REPEATER</td>
<td>In the PRESEL window of the last REFUEL/DEFUEL PANEL selected when the two panels are on. The first panel that is on is in control and the second panel has quantity display only.</td>
</tr>
<tr>
<td>———</td>
<td>Dashes displayed for a fuel quantity if the value is invalid.</td>
</tr>
<tr>
<td>FAILED</td>
<td>Displayed in the PRESEL window if the REFUEL/DEFUEL PANEL is not functional.</td>
</tr>
<tr>
<td>FMQGC – FAILURE</td>
<td>FMOGQC displayed in the TOTAL window and FAILURE in the PRESEL window if the REFUEL/DEFUEL PANEL does not communicate with the fuel management and quantity gauging computer.</td>
</tr>
</tbody>
</table>

**NOTE:** The external REFUEL/DEFUEL PANEL will not have control if you select it after the panel in the flight compartment is on (see the message REPEATER in the above table).

(b) Make sure that the switches on the REFUEL/DEFUEL PANEL are set as follows:

**NOTE:** You can set the two MANUAL/AUTO rotary switches (on the external and flight compartment REFUEL/DEFUEL PANEL) out of the OFF position. The MANUAL/AUTO rotary switch which is first set out of OFF position will control the refuel/defuel system. If the first MANUAL/AUTO rotary switch is set to OFF, the second MANUAL rotary switch will then control the refuel/defuel system.

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUAL/AUTO</td>
<td>OFF</td>
</tr>
</tbody>
</table>
(c) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.

   **WARNING:** MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

2. Connect the fuel nozzle ground to the aircraft grounding point.

3. Connect the fuel nozzle to the refuel/defuel adapter.

4. Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).
WARNING: WHEN YOU REFUEL THE AIRCRAFT (PRESSURE OR GRAVITY), OBEY THE INSTRUCTIONS THAT FOLLOW:

- DURING THE REFUELING PROCEDURE, THE “FUEL IMBALANCE” CAUTION MESSAGE MAY DISPLAY WHEN THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS MORE THAN 600 LBS (272.16 KG) TO 1100 LBS (498.96 KG) DEPENDING OF THE WING TANKS TOTAL FUEL QUANTITY.

- WHEN YOU COMPLETE THE REFUELING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

NOTE: The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.
- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and the aft tanks.
- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.

(d) Refuel the aircraft as follows:

1. Set the MANUAL/AUTO switch as follows:

   NOTE: When the MANUAL/AUTO switch is set to a REFUEL position, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.

   a. To refuel the wing and center fuel tanks, set the switch to the AUTO/REFUEL NO AFT position.

      NOTE: If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to CLOSED. Refueling or defueling can be started by setting the SOV OPEN, as necessary.

   b. To refuel the wing, center and aft fuel tanks, set the switch to the AUTO/REFUEL position.

2. Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The fuel quantity in the TOTAL and PRESEL displays must be the same.
3 Use the INCR/DECR switch to set the quantity of fuel in the PRESEL display.

4 Set the START/STOP/SOV TEST switch to START.

   NOTE: The START message shows in PRESEL window and alternates with the preselected quantity.

5 Make sure that the fuel quantity increases on the display while you add fuel.

(e) Do a check of the refuel shutoff valves as follows:

1 Put the START/STOP/SOV TEST switch to the STOP/SOV TEST position and hold.

   NOTE: The refueling procedure stops and the message SOV TEST shows in the PRESEL display.

2 Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.

   NOTE: If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3 If the SOV STOP message shows, do as follows:
   a Release the START/STOP/SOV TEST switch.
   b Set the START/STOP/SOV TEST switch to START.

      NOTE: The START message shows in the PRESEL window and alternates with the preselected quantity.

4 If the SOV FAIL message shows, do as follows:

   CAUTION: IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.

   a Make sure that the fuel flow stops to the tanks that passed the test.

      NOTE: The FAIL message shows in window for the defective shutoff valve and alternates with the fuel quantity.

      NOTE: The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.
b Set the START/STOP/SOV TEST switch to START.

**NOTE:** The START message shows in the PRESEL window and alternates with the preselected quantity.

c Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.

(f) When the pressure refueling procedure is completed, do the steps that follow:

**NOTE:** The pressure refueling procedure is completed when the quantity in the TOTAL and the PRESEL displays are equal. The COMPLETE message shows in PRESEL window and alternates with the preselected quantity after all related valves close at the end of the auto refuel.

1 Set the MANUAL/AUTO switch to the OFF position.

(g) Disconnect the fuel tender from the aircraft as follows:

1 Set the fuel pressure on the fuel tender to 0 psig (0 kPa).
2 Disconnect the fuel nozzle from the refuel/defuel adapter.
3 Disconnect the fuel nozzle ground from the aircraft grounding point.
4 Install the cap on the refuel/defuel adapter.
On A/C 9036 and Subs

(4) To do the pressure refueling in the manual mode, with the external REFUEL/DEFUEL PANEL, do the steps that follow:

NOTE: Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

If necessary, add fuel biocide additive to the fuel (TASK 12–11–01–620–801).

If necessary, add fuel anti–icing additive to the fuel (TASK 12–11–01–660–801).

NOTE: It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) The table that follows is a list of error messages that you can see on the REFUEL/DEFUEL PANEL:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>When you will see this message</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB:</td>
<td>When the MANUAL/AUTO REFUEL/DEFUEL switch is changed from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and one of the R/D SOV switches is in the OPEN position.</td>
</tr>
<tr>
<td></td>
<td>In pressure defuel mode when an ENGINE RUN switch is ON and the left and right engine fire handles are not pulled.</td>
</tr>
<tr>
<td></td>
<td>In auto mode when the pre–selected fuel quantity is not valid as follows:</td>
</tr>
<tr>
<td></td>
<td>– The pre–selected quantity is less than the total quantity in the aircraft</td>
</tr>
<tr>
<td></td>
<td>– The aircraft is in CAIMS maintenance mode</td>
</tr>
<tr>
<td></td>
<td>– The SOV shutoff test fails.</td>
</tr>
<tr>
<td></td>
<td>During pressure refueling, INHIB will also show on the REFUEL/DEFUEL PANEL when the center tank has fuel and the wing tanks are empty. You can do refueling only after you transfer fuel from the center tank.</td>
</tr>
<tr>
<td>FULL:</td>
<td>When the high level shutoff is activated.</td>
</tr>
<tr>
<td>LOAD ERR:</td>
<td>In auto refuel mode when you selected an invalid fuel distribution.</td>
</tr>
</tbody>
</table>
MESSAGE | When you will see this message
---|---
IMBAL: | When there is a pre–determined fuel quantity imbalance between the left and right wings.
REPEATER: | In the PRESEL window of the last REFUEL/DEFUEL PANEL selected when the two panels are on. The first panel that is on is in control and the second panel has quantity display only.
———: | Dashes displayed for a fuel quantity if the value is invalid.
FAILED: | Displayed in the PRESEL window if the REFUEL/DEFUEL PANEL is not functional.
FMQGC – FAILURE: | FMQGC displayed in the TOTAL window and FAILURE in the PRESEL window if the REFUEL/DEFUEL PANEL does not communicate with the fuel management and quantity gauging computer.

NOTE: The external REFUEL/DEFUEL PANEL will not have control if you select it after the panel in the flight compartment is on (see the message REPEATER in the above table).

(b) Make sure that the switches on the REFUEL/DEFUEL PANEL are set as follows:

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUAL/AUTO</td>
<td>OFF</td>
</tr>
<tr>
<td>START/STOP/SOV TEST</td>
<td>Center</td>
</tr>
<tr>
<td>MANUAL LEFT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL CENTER</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL RIGHT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL AFT</td>
<td>CLOSE</td>
</tr>
</tbody>
</table>

NOTE: You can set the two MANUAL/AUTO rotary switches (on the external and flight compartment REFUEL/DEFUEL PANEL) out of the OFF position. The MANUAL/AUTO rotary switch which is first set out of OFF position will control the refuel/defuel system. If the first MANUAL/AUTO rotary switch is set to OFF, the second MANUAL rotary switch will then control the refuel/defuel system.
(c) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.

**WARNING:** MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

2. Connect the fuel nozzle ground to the aircraft grounding point.

3. Connect the fuel nozzle to the refuel/defuel adapter.

4. Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).

**WARNING:** WHEN YOU REFUEL THE AIRCRAFT (PRESSURE OR GRAVITY), OBEY THE INSTRUCTIONS THAT FOLLOW:

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- WHEN YOU COMPLETE THE REFUELING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

**NOTE:** The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.
- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and aft tanks.
- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.
Refuel the aircraft as follows:

1. Set the MANUAL/AUTO switch to the MANUAL/REFUEL position.

   **NOTE:** When the MANUAL/AUTO switch is set to a REFUEL position, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.

2. Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The PRESEL display will show MANUAL.

   **NOTE:** If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to CLOSED. Refueling or defueling can be started by setting the SOV OPEN, as necessary.

3. Set the applicable manual tank switch to OPEN.

4. Make sure that the fuel quantity increases on the display while you add fuel.

Do a check of the refuel shutoff valves as follows:

1. Put the START/STOP/SOV TEST switch to the STOP/SOV TEST position and hold.

   **NOTE:** The refueling procedure stops and the message SOV TEST shows in the PRESEL display.

2. Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.

   **NOTE:** If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3. If the SOV STOP message shows, do as follows:

   a. Release the START/STOP/SOV TEST switch.

   b. Set the START/STOP/SOV TEST switch to START.

      **NOTE:** The START message shows in the PRESEL window and alternates with the preselected quantity.
4 If the SOV FAIL message shows, do as follows:

**CAUTION:** IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.

a Make sure that the fuel flow stops to the tanks that passed the test.

**NOTE:** The FAIL message shows in the window for the defective shutoff valve and alternates with the fuel quantity.

**NOTE:** The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.

b Set the START/STOP/SOV TEST switch to START.

**NOTE:** The START message shows in the PRESEL window and alternates with the preselected quantity.

c Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.

(f) Stop the refueling procedure when the applicable tanks have the necessary fuel as follows:

1 Set the applicable manual tank switch to CLOSE.

2 Make sure that the quantity of fuel in the display for the applicable tank is the quantity that is necessary.

3 Set the MANUAL/AUTO switch to the OFF position.

(g) Disconnect the fuel tender from the aircraft as follows:

1 Set the fuel pressure on the fuel tender to 0 psig (0 kPa).

2 Disconnect the fuel nozzle from the refuel/defuel adapter.

3 Disconnect the fuel nozzle ground from the aircraft grounding point.

4 Install the cap on the refuel/defuel adapter.
On A/C Post SB 700-28-002

(5) To do the pressure refueling in the automatic mode with the REFUEL/DEFUEL PANEL in the flight compartment, do the steps that follow:

NOTE: Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

If necessary, add fuel biocide additive to the fuel [TASK 12–11–01–620–801].

If necessary, add fuel anti-icing additive to the fuel [TASK 12–11–01–660–801].

NOTE: It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) The table that follows is a list of error messages that you can see on the REFUEL/DEFUEL PANEL:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>When you will see this message</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB:</td>
<td>When the MANUAL/AUTO REFUEL/DEFUEL switch is changed from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and one of the R/D SOV switches is in the OPEN position.</td>
</tr>
<tr>
<td></td>
<td>In pressure defuel mode when an ENGINE RUN switch is ON and the left and right engine fire handles are not pulled.</td>
</tr>
<tr>
<td></td>
<td>In auto mode when the pre-selected fuel quantity is not valid as follows:</td>
</tr>
<tr>
<td></td>
<td>- The pre-selected quantity is less than the total quantity in the aircraft</td>
</tr>
<tr>
<td></td>
<td>- The aircraft is in CAIMS maintenance mode</td>
</tr>
<tr>
<td></td>
<td>- The SOV shutoff test fails.</td>
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<td>During pressure refueling, INHIB will also show on the REFUEL/DEFUEL PANEL when the center tank has fuel and the wing tanks are empty. You can do refueling only after you transfer fuel from the center tank.</td>
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<tr>
<td>FULL:</td>
<td>When the high level shutoff is activated.</td>
</tr>
<tr>
<td>LOAD ERR:</td>
<td>In auto refuel mode when you selected an invalid fuel distribution.</td>
</tr>
</tbody>
</table>
**MESSAGE**  |  **When you will see this message**
--- | ---
IMBAL: | When there is a pre-determined fuel quantity imbalance between the left and right wings.
REPEATER: | In the PRESEL window of the last REFUEL/DEFUEL PANEL selected when the two panels are on. The first panel that is on is in control and the second panel has quantity display only.
———: | Dashes displayed for a fuel quantity if the value is invalid.
FAILED: | Displayed in the PRESEL window if the REFUEL/DEFUEL PANEL is not functional.
FMQGC – FAILURE: | FMQGC displayed in the TOTAL window and FAILURE in the PRESEL window if the REFUEL/DEFUEL PANEL does not communicate with the fuel management and quantity gauging computer.

**NOTE:** The external REFUEL/DEFUEL PANEL will not have control if you select it after the panel in the flight compartment is on (see the message REPEATER in the above table).

(b) Make sure that the switches on the REFUEL/DEFUEL PANEL are set as follows:

**NOTE:** You can set the two MANUAL/AUTO rotary switches (on the external and flight compartment REFUEL/DEFUEL PANEL) out of the OFF position. The MANUAL/AUTO rotary switch which is first set out of OFF position will control the refuel/defuel system. If the first MANUAL/AUTO rotary switch is set to OFF, the second MANUAL rotary switch will then control the refuel/defuel system.

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUAL/AUTO</td>
<td>OFF</td>
</tr>
<tr>
<td>START/STOP/SOV TEST</td>
<td>Center</td>
</tr>
<tr>
<td>MANUAL LEFT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL CENTER</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL RIGHT</td>
<td>CLOSE</td>
</tr>
<tr>
<td>MANUAL AFT</td>
<td>CLOSE</td>
</tr>
</tbody>
</table>

**EFFECTIVITY: ALL**
(c) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.

**WARNING:** MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

2. Connect the fuel nozzle ground to the aircraft grounding point.

3. Connect the fuel nozzle to the refuel/defuel adapter.

4. Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).

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- DURING THE REFUELING PROCEDURE, THE “FUEL IMBALANCE” CAUTION MESSAGE MAY DISPLAY WHEN THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS MORE THAN 600 LBS (272.16 KG) TO 1100 LBS (498.96 KG) DEPENDING OF THE WING TANKS TOTAL FUEL QUANTITY.

- WHEN YOU COMPLETE THE REFUELING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

**NOTE:** The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.
- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and aft tanks.
- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.
Refuel the aircraft as follows:

1. Set the MANUAL/AUTO switch as follows:
   - **NOTE**: When the MANUAL/AUTO switch is set to a REFUEL position, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.
   - **a** To refuel the wing and center fuel tanks, set the switch to the AUTO/REFUEL NO AFT position.
   - **b** To refuel the wing, center, and aft fuel tanks, set the switch to the AUTO/REFUEL position.

2. Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The fuel quantity in the TOTAL and PRESEL displays must be the same.

3. Use the INCR/DECR switch to set the quantity of fuel in the PRESEL display.
   - **NOTE**: If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to CLOSED. Refueling or defueling can be started by setting the SOV OPEN, as necessary.

4. Set the START/STOP/SOV TEST switch to START.

5. Make sure that the fuel quantity increases on the display while you add fuel.

Do a check of the refuel shutoff valves as follows:

1. Put the START/STOP/SOV TEST switch to the STOP/SOV TEST position and hold.
   - **NOTE**: The refueling procedure stops and the message SOV TEST shows in the PRESEL display.

2. Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.
   - **NOTE**: If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3. If the SOV STOP message shows, do as follows:
   - **a** Release the START/STOP/SOV TEST switch.
b Set the START/STOP/ SOV TEST switch to START.

NOTE: The START message shows in the PRESEL window and alternates with the preselected quantity.

4 If the SOV FAIL message shows, do as follows:

CAUTION: IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.

a Make sure that the fuel flow stops to the tanks that passed the test.

NOTE: The FAIL message shows in window for the defective shutoff valve and alternates with the fuel quantity.

NOTE: The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.

b Set the START/STOP/ SOV TEST switch to START.

NOTE: The START message shows in the PRESEL window and alternates with the preselected quantity.

c Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.

(f) When the pressure refueling procedure is completed, do the steps that follow:

NOTE: The pressure refueling procedure is completed when the quantity in the TOTAL and the PRESEL displays are equal.

1 Set the MANUAL/AUTO switch to the OFF position.

(g) Disconnect the fuel tender from the aircraft as follows:

1 Set the fuel pressure on the fuel tender to 0 psig (0 kPa).

2 Disconnect the fuel nozzle from the refuel/defuel adapter.

3 Disconnect the fuel nozzle ground from the aircraft grounding point.

4 Install the cap on the refuel/defuel adapter.
On A/C Post SB 700–28–002

(6) To do the pressure refueling in the manual mode with the REFUEL/DEFUEL PANEL in the flight compartment, do the steps that follow:

NOTE: Make sure that you only use fuel specified in the applicable Global series Airplane Flight Manual.

If necessary, add fuel biocide additive to the fuel [TASK 12–11–01–620–801].

If necessary, add fuel anti–icing additive to the fuel [TASK 12–11–01–660–801].

NOTE: It is recommended that you use only the MANUAL REFUEL mode to refuel the aircraft to the maximum capacity.

(a) The table that follows is a list of error messages that you can see on the REFUEL/DEFUEL PANEL:

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>When you will see this message</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHIB:</td>
<td>When the MANUAL/AUTO REFUEL/DEFUEL switch is changed from OFF or Auto Refuel to Manual Refuel or Manual Defuel, and one of the R/D SOV switches is in the OPEN position.</td>
</tr>
<tr>
<td></td>
<td>In pressure defuel mode when an ENGINE RUN switch is ON and the left and right engine fire handles are not pulled.</td>
</tr>
<tr>
<td></td>
<td>In auto mode when the pre–selected fuel quantity is not valid as follows:</td>
</tr>
<tr>
<td></td>
<td>– The pre–selected quantity is less than the total quantity in the aircraft</td>
</tr>
<tr>
<td></td>
<td>– The aircraft is in CAIMS maintenance mode</td>
</tr>
<tr>
<td></td>
<td>– The SOV shutoff test fails.</td>
</tr>
<tr>
<td>FULL:</td>
<td>During pressure refueling, INHIB will also show on the REFUEL/DEFUEL PANEL when the center tank has fuel and the wing tanks are empty. You can do refueling only after you transfer fuel from the center tank.</td>
</tr>
<tr>
<td>LOAD ERR:</td>
<td>When the high level shutoff is activated.</td>
</tr>
<tr>
<td>LOAD ERR:</td>
<td>In auto refuel mode when you selected an invalid fuel distribution.</td>
</tr>
</tbody>
</table>
MESSAGE | When you will see this message
---|---
IMBAL: | When there is a pre-determined fuel quantity imbalance between the left and right wings.
REPEATER: | In the PRESEL window of the last REFUEL/DEFUEL PANEL selected when the two panels are on. The first panel that is on is in control and the second panel has quantity display only.
———: | Dashes displayed for a fuel quantity if the value is invalid.
FAILED: | Displayed in the PRESEL window if the REFUEL/DEFUEL PANEL is not functional.
FMQGC – FAILURE: | FMQGC displayed in the TOTAL window and FAILURE in the PRESEL window if the REFUEL/DEFUEL PANEL does not communicate with the fuel management and quantity gauging computer.

NOTE: The external REFUEL/DEFUEL PANEL will not have control if you select it after the panel in the flight compartment is on (see the message REPEATER in the above table).

(b) Make sure that the switches on the REFUEL/DEFUEL PANEL are set as follows:

NOTE: You can set the two MANUAL/AUTO rotary switches (on the external and flight compartment REFUEL/DEFUEL PANEL) out of the OFF position. The MANUAL/AUTO rotary switch which is first set out of OFF position will control the refuel/defuel system. If the first MANUAL/AUTO rotary switch is set to OFF, the second MANUAL rotary switch will then control the refuel/defuel system.

| DESIGNATION | POSITION |
---|---|
MANUAL/AUTO | OFF |
START/STOP/SOV TEST | Center |
MANUAL LEFT | CLOSE |
MANUAL CENTER | CLOSE |
MANUAL RIGHT | CLOSE |
MANUAL AFT | CLOSE |
(c) Connect the fuel tender to the aircraft as follows:

1. Remove the cap from the refuel/defuel adapter.
2. Connect the fuel nozzle ground to the aircraft grounding point.

**WARNING:** MAKE SURE THAT THE FUEL TENDER, THE AIRCRAFT, AND THE FUEL NOZZLE ARE GROUNDED BEFORE YOU REFUEL/DEFUEL THE AIRCRAFT. A STATIC ELECTRICAL SPARK DURING THE PROCEDURE CAN CAUSE AN EXPLOSION OR FIRE.

3. Connect the fuel nozzle to the refuel/defuel adapter.
4. Set the fuel pressure on the fuel tender to no more than 50 psig (344.74 kPa).

**WARNING:** WHEN YOU REFUEL THE AIRCRAFT (PRESSURE OR GRAVITY), OBEY THE INSTRUCTIONS THAT FOLLOW:

- DURING THE REFUELING PROCEDURE, THE “FUEL IMBALANCE” CAUTION MESSAGE MAY DISPLAY WHEN THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS MORE THAN 600 LBS (272.16 KG) TO 1100 LBS (498.96 KG) DEPENDING OF THE WING TANKS TOTAL FUEL QUANTITY.
- WHEN YOU COMPLETE THE REFUELING PROCEDURE, MAKE SURE THE WEIGHT DIFFERENCE BETWEEN THE LEFT AND RIGHT WING FUEL TANKS IS NOT MORE THAN 200 LBS (90.72 KG).

IF THE WEIGHT DIFFERENCE IS MORE THAN THE LIMIT, THE AIRCRAFT CAN MOVE AND CAUSE INJURY TO PERSONS AND DAMAGE TO THE EQUIPMENT.

**NOTE:** The fuel load supply to the tanks is as follows:

- If the total fuel load is less than 3000 lbs (1360.78 kg), all fuel will go in the wing tanks.
- If the total fuel load is between 3000 to 30000 lbs (1360.78 to 13607.77 kg), the fuel will go in the wing and aft tanks.
- If the total fuel load is more than 30000 lbs (13607.77 kg), the fuel will go in the wing, center, forward (if installed), and the aft tanks.
(d) Refuel the aircraft as follows:

1. Set the MANUAL/AUTO switch to the MANUAL/REFUEL position.
   
   **NOTE:** When the MANUAL/AUTO switch is set to a REFUEL position, a BITE test starts. The BITE test is completed when the fuel quantities for each tank show in the display.

2. Make sure that a fuel quantity shows in the display for each tank and in the TOTAL display. The PRESEL display will show MANUAL.
   
   **NOTE:** If the refuel mode is changed and one of the R/D SOV switches is set to OPEN, the RDCP will show INHIB until all SOV switches are set to CLOSED. Refueling or defueling can be started by setting the SOV OPEN, as necessary.

3. Set the applicable manual tank switch to OPEN.

4. Make sure that the fuel quantity increases on the display while you add fuel.

(e) Do a check of the refuel shutoff valves as follows:

1. Put the START/STOP/SOV TEST switch to the STOP/SOV TEST position and hold.
   
   **NOTE:** The refueling procedure stops and the message SOV TEST shows in the PRESEL display.

2. Make sure that in 30 seconds or less, the message SOV STOP or SOV FAIL shows in the PRESEL display.
   
   **NOTE:** If the test is successful, the SOV STOP message shows. If the test fails, the SOV FAIL message shows.

3. If the SOV STOP message shows, do as follows:
   
   a. Release the START/STOP/SOV TEST switch.
   
   b. Set the START/STOP/SOV TEST switch to START.

   **NOTE:** The START message shows in the PRESEL window and alternates with the preselected quantity.
4 If the SOV FAIL message shows, do as follows:

**CAUTION:** IF THE SOV FAIL MESSAGE SHOWS, FUEL FLOW WILL NOT STOP WHEN THE TANK IS FULL. STOP THE FUEL TENDER PUMP TO MAKE SURE THAT FUEL DOES NOT SPILL.

a Make sure that the fuel flow stops to the tanks that passed the test.

**NOTE:** The FAIL message shows in window for the defective shutoff valve and alternates with the fuel quantity.

**NOTE:** The FWD FAIL message will show in the center tank window if the forward refuel valve, if installed, fails the shutoff test. If both the center and forward tank refuel valve fail, the FAIL message will show.

b Set the START/STOP/SOV TEST switch to START.

**NOTE:** The START message shows in the PRESEL window and alternates with the preselected quantity.

c Shut off the fuel tender pump to make sure that fuel does not spill from the tank with the defective shutoff valve.

(f) Stop the refueling procedure when the applicable tanks have the necessary fuel as follows:

1 Set the applicable manual tank switch to CLOSE.

2 Make sure that the quantity of fuel in the display for the applicable tank is the quantity that is necessary.

3 Set the MANUAL/AUTO switch to the OFF position.

(g) Disconnect the fuel tender from the aircraft as follows:

1 Set the fuel pressure on the fuel tender to 0 psig (0 kPa).

2 Disconnect the fuel nozzle from the refuel/defuel adapter.

3 Disconnect the fuel nozzle ground from the aircraft grounding point.

4 Install the cap on the refuel/defuel adapter.

(7) Do a general visual inspection of the wing–tank external surfaces [TASK 28−11−00−210−802].

E. Close Out

(1) Remove all tools, equipment, and unwanted materials from the work area.
(2) Close the REFUEL/DEFUEL PANEL access door (142AR).

(3) Remove electrical power from the aircraft [TASK 24–00–00–861–802].
Pressure Refueling – Servicing
Figure 301

EFFECTIVITY: ALL
Pressure Refueling – Servicing (Post SB 700–28–002)
Figure 302
3. Use of Fuel Anti-Icing Additive When Pressure Refueling

A. Service Bulletin List

<table>
<thead>
<tr>
<th>SERVICE BULLETIN NO.</th>
<th>SERVICE BULLETIN TITLE</th>
</tr>
</thead>
</table>

B. Tools and Equipment

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercially Available</td>
<td>Pneumatic Injector</td>
</tr>
<tr>
<td>Commercially Available</td>
<td>Shop Air, 90 ±10 psi (620.53 ±68.95 kPa)</td>
</tr>
<tr>
<td>Commercially Available</td>
<td>Test Panel, Pressure Regulating, 0–100 psi (0–689.48 KPa)</td>
</tr>
</tbody>
</table>

NOTE: Refer to the BD–700 ILLUSTRATED TOOL AND EQUIPMENT MANUAL to make sure that you use the correct equipment configuration.

C. Job Set-Up

WARNING: Obey the precautions that follow when you use a fuel additive. Fuel additives are dangerous because they can be flammable, poisonous and can cause injury.

- USE SAFETY GOGGLES
- PUT ON PROTECTIVE CLOTHING
- DO NOT LET BIOCIDE FUEL ADDITIVE TOUCH YOUR SKIN, EYES, AND MOUTH
- DO THE WORK IN AN AREA THAT HAS A GOOD FLOW OF CLEAN AIR
- DO THE WORK IN AN AREA THAT HAS NO SPARKS, FLAME, OR HOT SURFACES
- OBEY THE MANUFACTURER’S INSTRUCTIONS
- GET MEDICAL AID IF YOU GET THE FUEL ADDITIVE IN YOUR EYES OR MOUTH, OR IF IRRITATION OCCURS.

(1) Obey all safety precautions when you use fuel anti-icing additives.
CAUTION: DO NOT PUT A CONCENTRATION OF BIOCIDE IN THE FUEL TANKS. USE THE METERED INJECTION METHOD TO MIX THE BIOCIDE DIRECTLY WITH A FLOW OF FUEL. IF YOU PUT BIOCIDE DIRECTLY IN THE FUEL TANK, SALT PARTICLES CAN OCCUR AND CAN CAUSE DAMAGE.

(2) Do not put concentrated fuel anti–icing additives directly in the fuel tank. This can cause damage to the equipment.

D. Procedure

(1) To add fuel anti–icing additive to the fuel, do as follows:

(a) Connect the fuel anti–icing injector to the fuel nozzle.

(b) Connect the test panel and shop air to the fuel anti–icing injector.

(c) Set the fuel anti–icing additive in the concentration that follows, during the pressure refueling procedure.

(d) Add the fuel anti–icing additive at a mixture of 100 parts per million (ppm) by weight. To get the correct mixture of 100 ppm of fuel anti–icing additive, multiply the pounds of fuel needed by 0.0001.

(e) Add fuel anti–icing additive as follows:

<table>
<thead>
<tr>
<th>FUEL (Note 1)</th>
<th>ANTI–ICING ADDITIVE (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounds</td>
<td>Gallons (U.S.)</td>
</tr>
<tr>
<td>670</td>
<td>100</td>
</tr>
<tr>
<td>1340</td>
<td>200</td>
</tr>
<tr>
<td>2010</td>
<td>300</td>
</tr>
<tr>
<td>2680</td>
<td>400</td>
</tr>
<tr>
<td>3350</td>
<td>500</td>
</tr>
<tr>
<td>6700</td>
<td>1000</td>
</tr>
<tr>
<td>13400</td>
<td>2000</td>
</tr>
</tbody>
</table>

EFFECTIVITY: ALL
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Pounds</td>
<td>Gallons (U.S.)</td>
</tr>
</tbody>
</table>

Note 1:
Do not add to JP4, JP5, and JP8 grade fuels. These fuels contain the additive.

Note 2:
The Gate–Pack Model 2000–B Injector automatically mixes the additive at a ratio of 1 gal (3.78 L) per 1000 gal (3785.40 L) of fuel.