

# SERVICE BULLETIN REVISION TRANSMITTAL SHEET

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

Discard the Basic Issue of this Service Bulletin dated Feb 28/2005 and the Information Sheets dated May 06/2005 and Jun 16/2005, replace in its entirety with this Revision 01.

Service Bulletin No. 700-31-020

Date of Basic Issue Feb 28/2005

Revision No. 01 Dated Apr 23/2007

**This revision has no effect for aircraft on which the Basic Issue of this Service Bulletin was done thus no other action is necessary.**

This revision is issued to:

1. Correct, in steps 2.D. (8) and (11), typographical errors in the Part No. of the elevator sensors and the left and right rudder sensors.
2. Replace, in step 2.F. (50), negative signs with positive signs and, in step 2.F. (53), positive signs with negative signs. These typographical errors were in conflict with information given in the Note that follows these steps.
3. Correct, in Paragraph 3.A., the Part No. of the last item and its alternate.
4. Make miscellaneous minor changes, as necessary, with no change of context.

# SERVICE BULLETIN SUMMARY

This Service Bulletin is available at:  
 www.cic.bombardier.com

MODEL BD-700-1A10

ATA 31-31

## INDICATING/RECORDING SYSTEM

**MODIFICATION – FLIGHT DATA RECORDING (FDR) SYSTEM –  
 INSTALLATION OF THE FORCE TRANSDUCER UNITS (FTU) AND ACTIVATION  
 OF THE CREW FORCE MEASURING SYSTEM (CFMS) 2002**

The information below is provided for your reference. For full details, please see corresponding paragraph contained within this bulletin.

<b>EFFECTIVITY</b>	<b>PART A:</b> A/C Serial No. 9107 and 9119 to 9147		
	<b>PART B:</b> A/C Serial No. 9119 to 9999		
<b>COMPLIANCE</b>	Alert		<input type="checkbox"/>
	Recommended		<input type="checkbox"/>
	Optional		<input checked="" type="checkbox"/>
<b>MANPOWER</b>	<b>PART A:</b> 6 man-hours		
	<b>PART B:</b> 94 man-hours		
<b>KITS and/or PARTS</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>No</b> <input type="checkbox"/>
<b>TOOLING</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>No</b> <input type="checkbox"/>
<b>GSE</b>	<b>YES</b>	<input checked="" type="checkbox"/>	<b>No</b> <input type="checkbox"/>
<b>REQUIRED FOR SMART PARTS</b>	<b>YES</b>	<input type="checkbox"/>	<b>No</b> <input checked="" type="checkbox"/>
<b>PREREQUISITE BULLETINS</b>	SB 700-31-019 is a prerequisite for aircraft, Serial No. 9119 to 9128 and must be done before or at the same time as this Service Bulletin.		

To place an order for material or kits, please call Bombardier Spare Parts Sales at:  
 1-888-222-1428 (in North America)  
 1-316-946-2377 (outside North America)

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

ATA 31-31

INDICATING/RECORDING SYSTEM

**MODIFICATION - FLIGHT DATA RECORDING (FDR) SYSTEM –  
INSTALLATION OF THE FORCE TRANSDUCER UNITS (FTU) AND ACTIVATION  
OF THE CREW FORCE MEASURING SYSTEM (CFMS) 2002**

## 1. PLANNING INFORMATION

### A. Compliance

Optional

NOTE: SB 700-31-019 is a prerequisite for aircraft, Serial No. 9119 to 9128 and must be done before or at the same time as this Service Bulletin.

### 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.

NOTES:

1. The technical content of this Service Bulletin is accepted by the FAA under the Canada/USA Bilateral Aviation Safety Agreement.
2. The technical content of this Service Bulletin is accepted by the JAA and by EASA in accordance with established procedures.

Refer to applicable governmental agency regulations and requirements and make sure that the work described in this Service Bulletin is performed in compliance with manufacturer's recommendations and/or acceptable industry standards.

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### C. Effectivity

PART A: BD-700-1A10 aircraft, Serial No. **9107** and **9119** to **9147**.

PART B: BD-700-1A10 aircraft, Serial No. **9119** to **9999**.

For PART A only, all other subsequent BD-700-1A10 aircraft are scheduled for the modification in production (Ref: Modification Summary 700T804315 and 700T900043).

**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 Supplemental Type Certificates (STCs), Supplemental Type Approvals (STAs) or equivalent action changes to make sure that this bulletin can be completed.

### D. Reason

This Service Bulletin upgrades the Flight Data Recorder (FDR) and the four Data Acquisition Units (DAU) and installs eight CFMS Force Transducer Units (FTU). It also activates the CFMS to meet the requirements of the Federal Aviation Regulations (FAR) Part 135.152, Paragraph (j) and Appendix F. Under this Part 135.152 regulation, all turbine-engine powered aircraft must have the FAR part 135.152 additional parameters 58 to 88 recorded by their FDR system if they: 1) operate under FAR Part 135 (Air Carriers and Operators for Hire), 2) carry more than 10 passengers and 3) were manufactured after August 19, 2002.

**NOTE:** Parameters 59, 73 and 81 are not applicable to the Global Express aircraft.

After the modification, input force data for the flight controls (rudder pedals, control wheels and control columns) will be measured (converted to signal voltage) by the FTUs and sent to the FDR, via the upgraded DAUs. The DAUs will process and transmit force input data to the FDR via the ARINC 717 broadcast data bus. The upgraded FDR will log the input forces at the correct resolution.

Configuration strapping provisions for the DAUs are installed by the provision SB 700-31-019 for the operation of the FDR system with or without the FTUs. After the activation of the CFMS, the DAUs continuously monitor the FTUs and log malfunctions on their maintenance page that is accessible to ground crews. No Engine Indicating and Crew Alerting System (EICAS) message will be shown in case of a FTU malfunction.

## **E. Description**

This Service Bulletin gives instructions in PART A to:

- Get access to the aft equipment compartment and to the avionics compartment,
- Remove the DAU 1, DAU 2, DAU 3, DAU 4 and, on specific aircraft, the FDR,
- Install the upgraded DAU 1, DAU 2, DAU 3, DAU 4 and, on specific aircraft, the upgraded FDR,
- Do the operational test of the DAU and, on specific aircraft, the FDR system, and
- Close the door of the aft equipment compartment and install the access panel to the avionics compartment.

This Service Bulletin gives instructions in PART B to:

- Get access to the flight compartment under-floor area, to the aft equipment compartment and to the avionics compartment,
- Remove Pitot-static visual drains and some components of the oxygen system,
- Remove the Junction Box (JB) 6 and the DAU 1, DAU 2, DAU 3, DAU 4 or only the DAU 4, as necessary,
- Remove and discard the adapter disk of the aileron torque tube sub-assemblies installed by the provisions in SB 700-31-019 and remove and discard the control rods of the elevator and rudder control systems,
- Install the FTU for the aileron, the elevator and the rudder control systems and make the electrical connections to the connectors installed by the provisions in SB 700-31-019 (these provisions were capped and stowed),
- Do an inspection of the clearances of the harnesses to make sure they are not snagged and that there is free movement of the flight controls,
- Connect all the wiring that was installed capped and stowed,
- Do the rigging of the elevator and rudder control systems,
- Install the DAU 1, DAU 2, DAU 3, DAU 4 or only the DAU 4 as necessary, and the JB6,
- Do the operational test of the JB6, the DAUs, the elevator, rudder and aileron control systems and the other necessary tests to make sure the affected systems operate correctly,
- Install the Pitot-static visual drains and the components of the oxygen system removed for access,
- Do the necessary tests to make sure the oxygen system operates correctly,
- Close the doors and install the panels opened or removed to do the modification given in PART B, and
- On aircraft, Serial No. 9119, 9120, 9124, 9129 and 9137, do the FTU output check on the ground and in flight.

**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 (CT) is not included in the labor estimates and should be considered for planning purposes before you schedule this Service Bulletin.

6 man-hours are necessary to do PART A of this modification.

94 man-hours are necessary to do PART B of this modification.

Bombardier does not pay for the labor to do this Service Bulletin.

**G. Material - Cost and Availability**

Kit 700K31-020 is necessary to do PART B of this modification. Only the U.S. domestic price is shown:

<b>KIT NO.</b>	<b>PRICE</b>
700K31-020	\$170.00

The above price can change. For the price outside of the U.S., refer to the last applicable Spare Parts Price Catalog. This data is also available from Business Aviation Services at the addresses shown in the catalog.

20 kits were available when this Service Bulletin was released. Sufficient kits will be kept for the estimated amount of orders.

In addition to the kit shown above, the parts given in Paragraph 3.B. are necessary to do this Service Bulletin.

Bombardier does not pay for the kit and the parts necessary to do this Service Bulletin.

**H. Tooling - Price and Availability**

<b>GSE REFERENCE NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
27X-00-03	-	Kit, Rigging Pins, Rudder/Elevator
27X-11-02 (See NOTE 2)	-	Kit, Control Column Rigging Fixture
-	Commercially Available	Clinometer
-	Commercially Available	Straightedge
-	Refer to Figure 2	Retaining Bar, Elevator Tension Regulator
-	Commercially Available	Keyboard, Portable Maintenance Access Terminal (PMAT)
-	Commercially Available	Force Gauge, Digital or Analog, 0 to 100 lbs (0 to 45.36 kg) with V-Grooved Adapter and Extension Rod
31X-31-01 (See NOTE 3)	964-0446-001 Upgraded with Software Part No. 998-1743-508 Ref: Honeywell SB 012-0681-104 "Ground Equipment – Hand Held Download Unit Software Update"	Hand Held Down-Load Unit Cage Code 99193
31X-31-02 (See NOTE 3)	704-2554-001	Cable, Hand Held Down-Load Unit

- NOTES:**
1. Refer to the Global BD-700 Illustrated Tool and Equipment Manual to make sure you use the correct equipment configuration.
  2. You must use only this fixture. No equivalent tool is permitted.
  3. Necessary for aircraft, Serial No. 9119, 9120, 9124, 9129 and 9137.

**I. Weight and Balance**

<b>WEIGHT</b>	<b>MOMENT</b>
+14 pounds (6.3 kg)	+3360 pound-inches (38.7 kgm)

**J. Electrical Load Data**

This modification increases the continuous load as follows:

BUS	AMPS	KW	KVAR
DC BUS 2	160 mA (continuous)	-	-

**K. References**

- Bombardier Aerospace, Restriction and/or Special Instruction (RSI), C-01230, Rev. A1
- Bombardier Aerospace, Modification Summary, 700T91044, Rev. A
- Bombardier Aerospace, Modification Summary, J700T01772, Rev. C1
- Bombardier Aerospace, Modification Summary, 700T02109, Rev. A
- Bombardier Aerospace, Modification Summary, 700T804315, Rev. B
- Bombardier Aerospace, Modification Summary, 700T900043, Rev. A1
- Bombardier Aerospace, Modification Summary, R700T400211, Rev. A
- Bombardier Aerospace, Kit Drawing KGC991-3101, Rev. B
- Bombardier Aerospace, Kit Drawing KGC991-1275, Rev. NC
- Bombardier Aerospace, Kit Drawing KGC991-1183, Rev. NC
- Bombardier Aerospace, SB 700-24-045, "Modification – AC and DC Power Distribution– Unit Change and Activation of Build 4 Electrical System"
- Bombardier Aerospace, SB 700-31-019, "Modification – Flight Data Recording (FDR) System – Provisions for the Crew Force Measuring System (CFMS) 2002"
- Global Express BD-700 Aircraft Maintenance Manual (AMM), Chapters 20, 24, 25, 27, 29, 31, 35, 52, 53 and 55
- Global Express BD-700 Aircraft Illustrated Parts Catalog (IPC), Chapters 27, 31 and 35
- Global Express BD-700 Wiring Manual, Chapters 20, 27 and 31
- Global BD-700 Structural Repair Manual, Chapter 51
- Global BD-700 Illustrated Tool and Equipment Manual, Chapters 27 and 31
- Allied Signal Inc. User Manual Drawing No. 998-1743-600.

**L. Other Publications Affected**

- Global Express BD-700 AMM, Chapters 27 and 31
- Global Express BD-700 Time Limits and Maintenance Checks, Part 3, Section 5-21-10
- Global Express BD-700 Wiring Manual, Chapters 27 and 31
- Global Express BD-700 Aircraft IPC, Chapters 27 and 31.

**M. Equivalent Service Bulletin**

For the Global 5000 BD-700-1A11 aircraft, use SB 700-1A11-31-001.

## 2. ACCOMPLISHMENT INSTRUCTIONS

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

### A. Aircraft Setup (Applicable to PART A Only)

- (1) Obey all electrical/electronic safety precautions. Refer to TASK 24-00-00-910-801.
- (2) Set the circuit breakers that follow to OUT (on aircraft pre-SB 700-24-045) or LOCKED (on aircraft, Serial No. 9123 and subsequent or aircraft post-SB 700-24-045) (refer to TASK 24-00-00-863-801):

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
IND/RECORD	DAU 1 CH A	BATT
IND/RECORD	DAU 1 CH B	DC 1
IND/RECORD	DAU 2 CH A	BATT
IND/RECORD	DAU 2 CH B	DC 2
IND/RECORD	DAU 3 CH A	BATT
IND/RECORD	DAU 3 CH B	DC 2
IND/RECORD	DAU 4 CH A	BATT
IND/RECORD	DAU 4 CH B	DC 1
IND/RECORD	FDR (See NOTE)	DC 2
IND/RECORD	FDR ACCELEROMETER (See NOTE)	DC 2

**NOTE:** Applicable to aircraft, Serial No. 9119 to 9131 only.

- (3) Open the door 311BB of the aft equipment compartment.
- (4) Remove the access panel 140BB to get access to the avionics compartment. Refer to TASK 52-45-11-000-801.

**B. Aircraft Setup (Applicable to PART B Only)**

- (1) Obey all electrical/electronic safety precautions. Refer to TASK 24-00-00-910-801.
- (2) Connect and energize the external ac power. Refer to TASK 24-41-00-861-801.
- (3) On the center pedestal and on the Engine Indicating and Crew Alerting System (EICAS), make sure of the indications that follow:

REFERENCE	POSITION/INDICATION
Flap selector handle	Set to 0 degree
AIL trim on the AIL/RUD/STAB TRIMS control panel	Set to the neutral position
REVERSION CONTROLLER Panel	EICAS Switch to NORM
EICAS Controller Panel	SYSTEMS SELECT Switch to NORM and FLT CTRL Switch Pushed
EICAS primary page	The TRIMS / NL-RUDDER-NR and LWD – AIL- RWD trim indicators are at the center position
	The STAB indicator shows the position pointer at -2.0 degrees $\pm 0.1$ degree
EICAS FLIGHT CONTROLS page	AIL, ELEV and RUDDER indicators show position pointers in the middle position
	FLAPS indicator shows 0 degree

- (4) Remove the electrical power from the aircraft. Refer to TASK 24-00-00-861-802.
- (5) Install a warning placard on the ELECTRICAL control panel to make sure that power is not applied to the aircraft.
- (6) Install warning placards on the control wheels, the AIL/RUD/STAB TRIMS control panel and on the aileron control surfaces.
- (7) Remove the access panels 131AL and 132AR to get access to the forward equipment compartment. Refer to TASK 52-45-05-000-801.
- (8) Remove the six Pitot-static visual drains located at FS235.00 left side and right side. Refer to TASK 34-11-03-000-801.
- (9) Remove the four oxygen storage cylinders under the flight compartment and also their clamps. Refer to TASK 35-11-01-000-801.

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- (10) Remove the oxygen supply lines between the four pressure switches, Part No. P24028 and the two tees, Part No. B0313447D5 that follow: GC488-0026-1, GC488-0026-2, GC488-0027-1, GC488-0027-2, GC488-0028-1, GC488-0028-2, GC488-0029-1 and GC488-0029-2. Keep the check valves, Part No. P21018 connected. Refer to the BD-700 IPC, Chapter 35, CREW OXYGEN, Figure 2, Sheet 4.
- (11) Remove the access panel 140BB to get access to the avionics compartment. Refer to TASK 52-45-11-000-801.
- (12) Remove the floor panel 221DLF in the flight compartment. Refer to TASK 53-11-01-000-801.
- (13) Remove the SPDA 1. Refer to TASK 24-62-01-000-801.
- (14) Remove the access panel 345DR to get access to the elevator aft control quadrant. Refer to TASK 55-30-13-000-801.
- (15) Open the door 311BB of the aft equipment compartment.
- (16) Remove the floor panels 251DLF and 251ELF in the baggage compartment. Refer to TASK 53-41-01-000-801.

**C. PART A - Modification – Replacement of the FDR and the DAU 1, 2, 3 and 4**

NOTE: On aircraft, Serial No. 9107, 9123 and 9131, part of the modification given in this PART A (FDR upgrade only) is done already by the disposition given for the Service Request for Product Support Action (SRPSA) 74201.

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 units that follow in the avionics and aft equipment compartments:

UNIT	TASK
DAU 1, DAU 2, DAU 3 and DAU 4	31-42-01-000-801
FDR (Applicable to aircraft, Serial No. 9119 to 9131)	31-31-01-000-801

- (3) Record the serial number of the units removed in the previous step and send them to the address shown in the paragraph that follows, in exchange for the new units listed in Paragraph 3.B.

Attention: Global Express

**Wichita DC: Challenger/Global**

Learjet Inc.  
7761 W. Kellogg, Dock 3  
Wichita, Kansas 67209  
U.S.A.

- (4) Install the upgraded DAU 1, DAU 2, DAU 3 and DAU 4, Part No. 10604B03M08 in the avionics compartment. Refer to TASK 31-42-01-400-801.

NOTE: For aircraft, Serial No. 9119 to 9139, if the modification given in PART B is done at the same time, do not install these units until the instruction is given in PART B.

- (5) For aircraft, Serial No. 9119 to 9131, install the upgraded FDR, Part No. 980-4700-041 in the aft equipment compartment. Refer to TASK 31-31-01-400-801.

**D. PART B - Modification – Installation of the FTUs and activation of the CFMS**

**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 (ESD) safety precautions. Refer to TASK 24-00-00-910-802.
- (2) On aircraft, Serial No. 9119 to 9139, remove the Junction Box (JB) 6. Refer to TASK 24-00-13-000-801.
- (3) On aircraft, Serial No. 9119 to 9139, remove the DAU 1, DAU 2, DAU 3 and DAU 4. Refer to TASK 31-42-01-000-801.

**NOTE:** On aircraft, Serial No 9140 to 9999, remove only the DAU 4.

- (4) Put a rig pin in the left and right forward quadrant assembly and in the aft quadrant of the elevator control system. Refer to TASK 27-31-00-820-805.
- (5) Remove the right elevator control rod, Part No. GC415-0030-29, between the right control column and the right forward quadrant assembly and record the rod location. Refer to the BD-700 IPC, Chapter 27-31-33, Figure 2.
- (6) Remove the left control rod, Part No. GC415-0030-29, between the left control column and the left forward quadrant assembly and record the rod location. Refer to the BD-700 IPC, Chapter 27-31-33, Figure 1 and to the instructions that follow:
  - (a) Make a retaining bar for the elevator tension regulator. Refer to Figure 2.
  - (b) Insert the two pins of the retaining bar in the two holes on the aft side of the left elevator tension regulator.

**NOTE:** This will prevent movement of the two tension regulator quadrants when the control cable will be released in the step that follows.

**CAUTION:** WHEN THE TURNBUCKLE AFT OF THE ELEVATOR TENSION REGULATOR IS OPENED, HOLD THE MATING CABLE THAT IS NOT ATTACHED TO THE TENSION REGULATOR AND SAFETY IT TO KEEP SOME TENSION. THIS WILL PREVENT TOO MUCH CABLE SLACK TO OCCUR UNDER THE PASSENGER COMPARTMENT FLOOR AND POSSIBLE ALIGNMENT PROBLEMS.

- (c) Remove the locking clip from the turnbuckle on the inboard control cable just aft of the left elevator tension regulator and open the turnbuckle TB3. Refer to the Figure 506 in TASK 27-31-00-820-805.

**NOTE:** Safety the mating elevator control cable that is not attached to the tension regulator.

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- (d) Remove the lock-wire from the jam nuts and adjustment nuts of the stick-pusher capstan cable and loosen the jam nuts to release the cable. Refer to Figure 501 of TASK 27-32-21-820-801.
  - (e) Remove the rig pin from the left forward quadrant.
  - (f) Turn the left forward quadrant assembly until the bolt of the control rod aft end becomes visible through the hole of the aircraft structure just above the rod.
- (7) Measure and record the length of each elevator control rod and keep the two rods to do the preliminary adjustment of the elevator sensors.
- (8) Adjust the length of the left and right elevator sensors, Part No. GH415-2401-1 to the same length as the corresponding control rods removed above.
- (9) Put a rig pin in the left and right rudder pedal pivot assemblies and in the forward quadrant (right side) of the rudder control system.
- (10) Remove the left and right (two on each side) pedal control rods, Part No. GC415-0030-27 from the left and right rudder pedal assemblies and record each rod location. Refer to the BD-700 IPC, Chapter 27-21-00, Figure 3.
- NOTE:** Measure and record the length of each pedal control rod and keep the four rods. They will be used to do the preliminary adjustment of the rudder pedal FTUs.
- (11) Adjust the length of the two left pilot and copilot rudder sensors, Part No. GH415-2402-1 and the two right pilot and copilot rudder sensors, Part No. GH415-2402-2 to the same length as the corresponding pedal control rods removed above.
- (12) Remove the left and right adapter discs at each end of the aileron torque tube. Refer the kit drawing KGC991-3101.

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- (13) Do the installation of the FTUs as given in the kit drawing KGC991-3101 and check the rig pin for free movement, then connect the eight FTU connectors, but do not torque the attachment nuts and do not install cotter pins and other safety devices at this time on the rudder and elevator sensors. Remove and discard the eight dust caps.

- NOTES:**
1. Make sure to get a minimum clearance of 0.75 inch (1.9 cm) between all rudder FTU harnesses and the brake control levers. Turn the large clamp to be installed on the rudder pedal bar to get this clearance.
  2. The BAPS or BAERD numbers (i.e. BAPS 155-000) referenced in the attached kit drawing KGC991-3101 are process documents used by manufacturing. The information given in these process documents are also reflected in the BD-700 AMM or the BD-700 Structural Repair Manual. The tables below give cross-references of BAPS numbers to TASK numbers or Chapter numbers.

<b>BD-700 AIRCRAFT MAINTENANCE MANUAL REFERENCE</b>		
<b>BAPS NO.</b>	<b>TASK NO.</b>	<b>TITLE</b>
150-002	20-21-00-910-801	Torquing of Threaded Fasteners
150-003	20-50-00-400-807 or 20-50-00-400-801	Installation of Safety Cable or Installation of Lockwire

<b>BD-700 STRUCTURAL REPAIR MANUAL REFERENCE</b>		
<b>BAERD NO.</b>	<b>CHAPTER NO.</b>	<b>TITLE</b>
GEN-004	51-51-04	Finish Codes
<b>BAPS NO.</b>	<b>CHAPTER NO.</b>	<b>TITLE</b>
150-000	51-41-04	Bolts, Screws and Related Items

- (14) Tighten the adjustment nuts to remove the slack from the stick-pusher capstan cable. Refer to Figure 501 of TASK 27-32-21-820-801.
- (15) Close the turnbuckle TB3 to attach the inboard control cable just aft of the left elevator tension regulator to its mating cable, remove the slack and apply an initial cable tension if necessary to do the next step. Refer to TASK 27-31-00-820-805.
- (16) Remove the retaining bar from the forward side of the left elevator tension regulator.

**NOTE:** Sufficient cable tension is required to remove the retaining bar.

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- (17) Remove the rig pin in the right forward quadrant assembly of the elevator control system. Refer to TASK 27-31-00-820-805.
- (18) Remove the rig pin from the left and right rudder pedal pivot assemblies and from the forward quadrant (right side) of the rudder control system.
- (19) Cycle the control wheels, the control columns and the rudder pedals and make sure that the movement is smooth, indicating no binding or fouling condition. Make sure that there is no chafing or strain of the eight FTU wire harnesses routed as given in the kit drawing KGC991-3101.

**NOTE:** Excessive strain on the wire harness will result in premature failure of the wire harness. Make sure that the aileron cable swivel rotates during aileron control wheel rotation, so that the cable does not wind up during the control throw. Make sure that this check is also done for pedal adjustment at maximum forward, maximum aft and middle positions.

- (20) Do the electrical bonding test of the eight FTUs from each FTU body to the aircraft structure (through the FTU connectors and through the connector brackets) with the FTU connectors connected. Refer to the kit drawing KGC991-3101 and to TASK 51-80-00-760-801. The maximum resistance value is 0.035 Ohm (35 milliohms).
- (21) For aircraft, Serial No. 9119 to 9139, do the wiring modification as given in the kit drawing KGC991-1183.

**NOTES:** 1. This modification was done by SRPSA on A/C 9119, 9120 and 9129 and it does not have to be done again.  
2. Use a contact, Part No. 001104-200-02 to connect FDR wire RBG6930N-20 to Ground Module (GM) 23, pin D.

- (22) For aircraft, Serial No. 9140 to 9999, connect the wire that was installed capped and stowed in production as follows (refer to kit drawing KGC991-1275):

<b>WIRE NO</b>	<b>FROM</b> DAU 4 CONNECTOR-PIN	<b>TO</b> GROUND STUD
FBH6929N-22	A31AP1-G10	550

**NOTE:** Use a lug, Part No. MS25036-103.

- (23) Do the continuity check of all the wiring that was added, re-routed or connected during this modification.
- (24) Obey the flight control safety precautions. Refer to TASK 27-00-00-910-801.
- (25) Obey the general rigging instructions. Refer to TASK 27-00-00-820-801.
- (26) Do the rigging of the elevator control cables on the left side only. Refer to TASK 27-31-00-820-805.
- (27) Do the rigging of the capstan. Refer to TASK 27-32-21-820-801.

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- (28) Do the rigging of the elevator sensor rod-ends. Refer to TASK 27-31-00-820-804.

NOTE: Torque the nuts 30 to 40 lbf-in (3.39 to 4.52 Nm) at the two attachment points and install cotter pins and other safety devices as given in the kit drawing KGC991-3101.

- (29) Obey the pre-rigging procedures for the rudder control system. Refer to TASK 27-21-00-860-801.

- (30) Do the rigging of the controls of the pilot rudder control system in the flight compartment as follows (Refer to Figure 1):

NOTE: The procedure that follows is for the rigging of the controls of the pilot side rudder pedal pushrods. The rigging of the controls of the copilot side rudder pedal pushrods is the same.

- (a) Install a rig pin (1) in the pilot rudder pedal pivot assembly (2).  
(b) Slide a straightedge through the crescent-shaped opening in the pedal console and put it against the back of the pilot left and right pedal bar assemblies.

NOTE: If necessary, remove the screws and pull the top of the side panels with brush seals down to the floor on each side of the pilot rudder pedal console.

- (c) Make sure that the gap between the straightedge and the most forward pedal is not more than 0.100 inch (2.5 mm).  
(d) On the pilot rudder pedal console, turn the crank to move the pedals to their full aft position.  
(e) On the pilot rudder pedal console, turn the crank to move the pedals to their middle position (nine turns from the full aft position).  
(f) Install the inclinometer on the pilot left pedal bar assembly (3).  
(g) Make sure the vertical angle of the pilot left pedal bar assembly (3) is 88 degrees, +0/-2 degrees.  
(h) Install the inclinometer on the pilot right pedal bar assembly (3).  
(i) Make sure the vertical angle of the pilot right pedal bar assembly is 88 degrees, +0/-2 degrees.  
(j) If the vertical angle for the pilot left and/or right pedal bar assembly (3) is not within the tolerances given in the above steps, do the adjustment of the pilot left and/or right pedal bar assemblies (3) as follows:  
(i) Remove the bolt (5), the washer (6), the nut (7) and the cotter pin (8) from the rudder sensor (4) and the pivot assembly (2).  
(ii) Disconnect the rudder sensor (4) from the pivot assembly (2).  
(iii) Do the adjustment of the rod-end of the rudder sensor until the pedal bar assembly (3) is at a vertical angle of 88 degrees, +0/-2 degrees.

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- (iv) Connect the rudder sensor to the pivot assembly with two washers (6), the bolt (5) and the nut (7).
- (v) Torque the nuts at the two attachment points of each rudder sensor as given in the table that follows and install cotter pins (8) and other safety devices (refer to the kit drawing KGC991-3101):

NUT PART NO.	TORQUE VALUE
MS14145-4	30 to 40 lbf-in (3.39 to 4.52 Nm)
NAS577B4A	70 to 90 lbf-in (7.91 to 10.17 Nm)

- (vi) On the pilot rudder pedal console, turn the crank to move the pedals to their full aft position.
- (vii) On the pilot rudder pedal console, turn the crank to move the pedals to their middle position (nine turns from the full aft position).
- (k) If no adjustment to the pilot left and/or right pedal bar assemblies is necessary, torque the nuts at the two attachment points of each rudder sensor as given in the table that follows and install cotter pins and other safety devices (refer to the kit drawing KGC991-3101):

NUT PART NO.	TORQUE VALUE
MS14145-4	30 to 40 lbf-in (3.39 to 4.52 Nm)
NAS577B4A	70 to 90 lbf-in (7.91 to 10.17 Nm)

- (l) Remove the rig pin (1) from the pilot rudder pedal pivot assembly (2).
- (31) Install a rig pin (1) in the copilot rudder pedal pivot assembly (2) and repeat the rigging procedure given in the previous step for the controls of the copilot rudder control system in the flight compartment.
- (32) On aircraft, Serial No. 9119 to 9139, install the DAU 1, DAU 2, DAU 3 and DAU 4. Refer to TASK 31-42-01-400-801.  
**NOTE:** On aircraft, Serial No 9140 to 9999, install only the DAU 4.
- (33) On aircraft, Serial No. 9119 to 9139, install the Junction Box (JB) 6. Refer to TASK 24-00-13-400-801.
- (34) Connect the SPDA 1 but keep it away from the right elevator forward quadrant (for access to remove/install a rig pin during testing). Refer to TASK 24-62-00-400-801.

**E. Testing (Applicable to PART A Only)**

- (1) Set the circuit breakers that follow to IN (refer to TASK 24-00-00-863-802):

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
IND/RECORD	DAU 1 CH A	BATT
IND/RECORD	DAU 1 CH B	DC 1
IND/RECORD	DAU 2 CH A	BATT
IND/RECORD	DAU 2 CH B	DC 2
IND/RECORD	DAU 3 CH A	BATT
IND/RECORD	DAU 3 CH B	DC 2
IND/RECORD	DAU 4 CH A	BATT
IND/RECORD	DAU 4 CH B	DC 1
IND/RECORD	FDR (See NOTE)	DC 2
IND/RECORD	FDR ACCELEROMETER (See NOTE)	DC 2

NOTE: Applicable to aircraft, Serial No. 9119 to 9131 only.

- (2) Connect and energize the external ac power. Refer to TASK 24-41-00-861-801.
- (3) Do the operational test of the data acquisition system. Refer to TASK 31-42-00-710-801.
- (4) On aircraft, Serial No. 9119 to 9131, do the operational test of the flight data recording system. Refer to TASK 31-31-00-710 -801.
- (5) Remove the external ac power. Refer to TASK 24-41-00-861-802.

**F. Testing (Applicable to PART B Only)**

- (1) Connect the electrical power to the aircraft. Refer to TASK 24-00-00-861-801.
- (2) Make sure you still have on the center pedestal and on the EICAS the same indications given in Paragraph 2.B., Aircraft Setup (Applicable to PART B only).
- (3) Do the operational test of the SPDA 1. On aircraft pre-SB 700-24-045, refer to TASK 24-62-01-710-801 but on aircraft post-SB 700-24-045, refer to the testing instructions given in SB 700-24-045.
- (4) Do the operational test of the data acquisition system. Refer to TASK 31-42-00-710-801.

NOTE: It is not necessary to do this test again if the Testing (Applicable to PART A only) is done at the same time as this Testing (Applicable to PART B only).

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- (5) Do the operational test of the elevator control system. Refer to TASK 27-31-00-710-801.
- (6) Do the operational test of the rudder control system. Refer to TASK 27-21-00-710-801.
- (7) Do the operational test of the aileron control system. Refer to TASK 27-11-00-710-801.
- (8) In the flight compartment, on the LANDING GEAR CONTROL PANEL, push and hold the PILOT EVENT marker pushbutton for 10 seconds.
- (9) Make sure that the advisory message FDR FAIL is not shown on the primary EICAS display.
- (10) On the pilot's or copilot's EMS CDU, set the circuit breakers that follow to OUT (refer to TASK 24-00-00-863-801):

<b>SYSTEM NAME</b>	<b>CIRCUIT BREAKER NAME</b>	<b>BUS NAME</b>
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (11) Make sure that the advisory message FDR FAIL is shown on the primary EICAS display.
- (12) On the pilot's or copilot's EMS CDU, set the circuit breakers that follow to IN (refer to TASK 24-00-00-863-802):

<b>SYSTEM NAME</b>	<b>CIRCUIT BREAKER NAME</b>	<b>BUS NAME</b>
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (13) In the flight compartment, on the LANDING GEAR CONTROL PANEL, push and hold the PILOT EVENT marker pushbutton for 10 seconds.
- (14) Make sure that the advisory message FDR FAIL goes out of view on the primary EICAS display.
- (15) Start the CAIMS Portable Maintenance Access Terminal (PMAT) and open the main menu page. Make sure there are no active faults for all DAUs associated with the force sensor interface. Refer to TASK 45-45-00-970-801 and to TASK 45-45-00-970-802.

**NOTE:** A keyboard must be connected to the PMAT to do this test.

- (16) On the PMAT START menu, make the AIRCRAFT DIAGNOSTICS selection, then the BUS READER selection to get the CAIMS BUS READER window.
- (17) On the CAIMS BUS READER window, make the ADD SIGNAL selection to get the ADD SIGNAL window.

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- (18) On the ADD SIGNAL window, push on the USER DEFINED tab and define the ASCB signal for each FTU, one at a time, in the order given in the table below:
- (a) In the SIGNAL TYPE field, make the ASCB selection.
  - (b) In the FORMAT field, make the selections given in the table below.
  - (c) In the SIGNAL NAME field, write the signal names given in the table below.
  - (d) In the DEFINITION section, in the ASCB ID (HEX) field, scroll to or write the first ID number given in the table below.
  - (e) In the DEFINITION section, in the DATA SET field, scroll to or write the first number given in the table below.
  - (f) In the DEFINITION section, in the WSB field, scroll to or write the first number as given in the table below.
  - (g) In the RESOLUTION section, enter the first WEIGHT (MSB) number given in the table below.
  - (h) In the RESOLUTION section, in the MSB and LSB fields, scroll to or write the first numbers given in the table below.
  - (i) Push the ADD button. The parameter will show on the CAIMS BUS READER window.
  - (j) On the CAIMS BUS READER window, make sure that you get a "1" in the VALUE fields for the bit format as shown in the table below:

**NOTE:** Make sure the data is shown in black.

SIGNAL TYPE/ NAME	ASCB ID	FORMAT	DATA SET	WSP	WEIGHT (MSB)	MSB/ LSB	VALUE
ASCB Control Column FTU Pilot	75 (DAU4A)	Two's Comple- ment	1	61	512	15/5	
ASCB Control Column FTU Pilot Valid	75 (DAU4A)	Bit	1	61	N/A	0/0	1
ASCB Control Column FTU Copilot	74 (DAU 3A)	Two's Comple- ment	0	61	512	15/5	
ASCB Control Column FTU Copilot Valid	74 (DAU 3A)	Bit	0	61	N/A	0/0	1

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SIGNAL TYPE/ NAME	ASCB ID	FORMAT	DATA SET	WSP	WEIGHT (MSB)	MSB/ LSB	VALUE
ASCB Control Wheel FTU Pilot	70 (DAU 1A)	Two's Comple- ment	0	28	2048	15/5	
ASCB Control Wheel FTU Pilot Valid	70 (DAU 1A)	Bit	0	28	N/A	0/0	1
ASCB Control Wheel FTU Copilot	71 (DAU 2A)	Two's Comple- ment	0	28	2048	15/5	
ASCB Control Wheel FTU Copilot Valid	71 (DAU 2A)	Bit	0	28	N/A	0/0	1
ASCB Rudder Pedal FTU Pilot Left	75 (DAU4A)	Two's Comple- ment	2	61	512	15/5	
ASCB Rudder Pedal FTU Pilot Left Valid	75 (DAU4A)	Bit	2	61	N/A	0/0	1
ASCB Rudder Pedal FTU Pilot Right	70 (DAU 1A)	Two's Comple- ment	1	28	512	15/5	
ASCB Rudder Pedal FTU Pilot Right Valid	70 (DAU 1A)	Bit	1	28	N/A	0/0	1
ASCB Rudder Pedal FTU Copilot Left	74 (DAU 3A)	Two's Comple- ment	1	61	512	15/5	
ASCB Rudder Pedal FTU Copilot Left Valid	74 (DAU 3A)	Bit	1	61	N/A	0/0	1
ASCB Rudder Pedal FTU Copilot Right	71 (DAU 2A)	Two's Comple- ment	1	28	512	15/5	
ASCB Rudder Pedal FTU Copilot Right Valid	71 (DAU 2A)	Bit	1	28	N/a	0/0	1

ELEVATOR FTU FUNCTIONAL CHECK – PILOT AND COPILOT

- (19) Pressurize the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-801 and to TASK 29-10-00-862-803.
- (20) Put a rig pin in the left forward elevator quadrant to stabilize the control columns in the center (neutral) position. Make sure that the rig pin moves easily.
- (21) Remove the rig pin.
- (22) On the PMAT, with the pilot control column in the neutral position, read the load output in the Two's-Complement format VALUE field for the pilot and copilot control column FTUs. Record these values and do the calculation that follows:  
Pilot Value \_\_\_\_\_ x 1/2.992 (gain) = \_\_\_\_\_  
Copilot Value \_\_\_\_\_ x 1/2.992 (gain) = \_\_\_\_\_  
Make sure the calculated output for the pilot control column is  $0 \pm 8.5$  lbs ( $0 \pm 3.9$  kg) and for the copilot control column is  $0 \pm 8.5$  lbs ( $0 \pm 3.9$  kg).  
Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (23) Install the Kit, Control Column Rigging Fixture, GSE 27X-11-02, and the force gauge on the pilot control wheel as shown in Figure 3.
- (24) With the force gauge installed as shown in Figure 3, parallel to the seat rails, input a nose-down command on the pilot control column and apply force slowly until a load of 40 pounds (18.1 kg) is shown on the force gauge. If the load is exceeded, bring the pilot control column back to the neutral position and start again. The input force must always be parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the control column.
- (25) On the PMAT, before the control column is released, read the load output in the Two's-Complement format VALUE field for the pilot and copilot control column FTUs. Record these values and do the calculation that follows:  
Pilot Value \_\_\_\_\_ x 1/3.130 (gain) = \_\_\_\_\_  
Copilot Value \_\_\_\_\_ x 1/3.130 (gain) = \_\_\_\_\_  
Before the control column is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (26) Make sure the calculated output for the pilot control column is  $-20 \pm 8.5$  lbs ( $-9.1 \pm 3.9$  kg) and for the copilot control column is  $-20 \pm 8.5$  lbs ( $-9.1 \pm 3.9$  kg).  
NOTE: The control column load in the nose-down position is negative.

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(27) With the force gauge installed as shown in Figure 3, parallel to the seat rails, input a nose-up command on the pilot control column and apply force slowly until a load of 40 pounds (18.1 kg) is shown on the force gauge. If the load is exceeded, bring the pilot control column back to the neutral position and start again. The input force must always be parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the control column to the neutral position.

(28) On the PMAT, before the control column is released, read the load output in the Two's-Complement format VALUE field for the pilot and copilot control column FTUs. Record these values and do the calculation that follows:

Pilot Value \_\_\_\_\_ x 1/3.130 (gain) = \_\_\_\_\_

Copilot Value \_\_\_\_\_ x 1/3.130 (gain) = \_\_\_\_\_

Before the control column is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

(29) Make sure the calculated output for the pilot control column is  $+20 \pm 8.5$  lbs ( $+9.1 \pm 3.9$  kg) and for the copilot control column is  $+20 \pm 8.5$  lbs ( $+9.1 \pm 3.9$  kg).

NOTE: The control column load in the nose-up position is positive.

(30) Remove the Kit, Control Column Rigging Fixture, GSE 27X-11-02, and the force gauge from the pilot control wheel.

(31) With the pilot control column in the neutral position, read again the load output in the Two's-Complement format VALUE field for the pilot and copilot control column FTUs. Record these values and do the calculation that follows:

Pilot Value \_\_\_\_\_ x 1/2.992 (gain) = \_\_\_\_\_

Copilot Value \_\_\_\_\_ x 1/2.992 (gain) = \_\_\_\_\_

Make sure the calculated output for the pilot and for the copilot control columns is  $0 \pm 8.5$  lbs ( $0 \pm 3.9$  kg), as before when the load output was calculated with the pilot control column in the neutral position.

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

AILERON FTU FUNCTIONAL CHECK - PILOT

- (32) Put a rig pin in the left forward quadrant for the aileron control system to stabilize the control wheels in the center (neutral) position. Make sure that the rig pin moves easily.
- (33) Remove the rig pin.
- (34) On the PMAT, with the pilot control wheel in the neutral position, read the load output in the Two's-Complement format VALUE field for the pilot control wheel FTU. Record this value and do the calculation that follows:  
Pilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_  
Make sure the calculated output is  $0 \pm 7$  lbs ( $0 \pm 3.2$  kg).  
Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (35) Install the Kit, Control Column Rigging Fixture, GSE 27X-11-02 on the pilot control wheel as shown in Figure 3.
- (36) With the force gauge installed at the reference hole on the right side of the GSE and parallel to the GSE (refer to Figure 3), input a right wing-down command on the pilot control wheel (clockwise rotation) and apply force slowly until a load of 15 pounds (6.8 kg) is shown on the force gauge. If the load is exceeded, bring the pilot control wheel back to the neutral position and start again. Keep this load until reading is taken at the PMAT and then release the control wheel.
- (37) On the PMAT, before the control wheel is released, read the load output in the Two's-Complement format VALUE field for the pilot control wheel FTU. Record this value and do the calculation that follows:  
Pilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_  
Before the control wheel is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (38) Make sure the calculated output is  $-15 \pm 7$  lbs ( $-6.8 \pm 3.2$  kg).  
NOTE: The pilot control wheel load in the right wing-down position is negative.
- (39) With the force gauge installed at the reference hole on the left side of the GSE and parallel to the GSE (refer to Figure 3), input a left wing-down command on the pilot control wheel (counter-clockwise rotation) and apply force slowly until a load of 15 pounds (6.8 kg) is shown on the force gauge. If the load is exceeded, bring the pilot control wheel back to the neutral position and start again. Keep this load until reading is taken at the PMAT and then release the control wheel.

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- (40) On the PMAT, before the control wheel is released, read the load output in the Two's-Complement format VALUE field for the pilot control wheel FTU. Record this value and do the calculation that follows:

Pilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Before the control wheel is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (41) Make sure the calculated output is  $+15 \pm 7$  lbs ( $+6.8 \pm 3.2$  kg).  
NOTE: The pilot control wheel load in the left wing-down position is positive.

- (42) Remove the Kit, Control Column Rigging Fixture, GSE 27X-11-02, and the force gauge from the pilot control wheel.

- (43) With the pilot control wheel in the neutral position, read again the load output in the Two's-Complement format VALUE field for the pilot control wheel FTU. Record the value and do the calculation that follows:

Pilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Make sure the calculated output is  $0 \pm 7$  lbs ( $0 \pm 3.2$  kg), as before when the load output was calculated with the pilot control wheel in the neutral position.

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

AILERON FTU FUNCTIONAL CHECK - COPILOT

- (44) Put a rig pin in the right forward quadrant for the aileron control system to stabilize the control wheels in the center (neutral) position. Make sure that the rig pin moves easily.

- (45) Remove the rig pin.

- (46) On the PMAT, read the load output in the Two's-Complement format VALUE field for the copilot control wheel FTU. Record this value and do the calculation that follows:

Copilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Make sure the calculated output is  $0 \pm 7$  lbs ( $0 \pm 3.2$  kg).

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (47) Install the Kit, Control Column Rigging Fixture, GSE 27X-11-02 on the copilot control wheel as shown in Figure 3.

- (48) With the force gauge installed at the reference hole on the right side of the GSE and parallel to the GSE (refer to Figure 3), input a right wing-down command on the copilot control wheel (clockwise rotation) and apply force slowly until a load of 15 pounds (6.8 kg) is shown on the force gauge. If the load is exceeded, bring the copilot control wheel back to the neutral position and start again. Keep this load until reading is taken at the PMAT and then release the control wheel.

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- (49) On the PMAT, before the control wheel is released, read the load output in the Two's-Complement format VALUE field for the copilot control wheel FTU. Record this value and do the calculation that follows:

Copilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Before the control wheel is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (50) Make sure the calculated output is  $+15 \pm 7$  lbs ( $+6.8 \pm 3.2$  kg).

NOTE: The copilot control wheel load in the right wing-down position is positive.

- (51) With the force gauge installed at the reference hole on the left side of the GSE and parallel to the GSE (refer to Figure 3), input a left wing-down command on the copilot control wheel (counter-clockwise rotation) and apply force slowly until a load of 15 pounds (6.8 kg) is shown on the force gauge. If the load is exceeded, bring the copilot control wheel back to the neutral position and start again. Keep this load until reading is taken at the PMAT and then release the control wheel.

- (52) On the PMAT, before the control wheel is released, read the load output in the Two's-Complement format VALUE field for the copilot control wheel FTU. Record this value and do the calculation that follows:

Copilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Before the control wheel is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (53) Make sure the calculated output is  $-15 \pm 7$  lbs ( $-6.8 \pm 3.2$  kg).

NOTE: The copilot control wheel load in the left wing-down position is negative.

- (54) Remove the Kit, Control Column Rigging Fixture, GSE 27X-11-02, and the force gauge from the copilot control wheel.

- (55) With the copilot control wheel in the neutral position, read again the load output in the Two's-Complement format VALUE field for the copilot control wheel FTU. Record the value and do the calculation that follows:

Copilot Value \_\_\_\_\_ x 1/1.98 (gain) x 1/7.76 (torque-to-force factor) = \_\_\_\_\_

Make sure the calculated output is  $0 \pm 7$  lbs ( $0 \pm 3.2$  kg), as before when the load output was calculated with the copilot control wheel in the neutral position.

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (56) Release the pressure from the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-802 and to TASK 29-10-00-862-804.

RUDDER PEDAL FTU FUNCTIONALITY – PILOT AND COPILOT

**NOTE:** The rudder load measurements must be made with the pedals in the middle-height adjusted position. This position corresponds to nine turns of the crank, rudder pedal console from the full aft adjusted position as given in the rigging instructions for the rudder control system in Paragraph 2.D.

- (57) If necessary for the installation of the force gauge as shown in Figure 4, remove the rudder pedal cover assemblies 221GZ/222GZ between the rudder pedals. Refer to the IPC, Chapter 27-21-00, Figure 2, Sheet 2.
- (58) Pressurize the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-801 and to TASK 29-10-00-862-803.
- (59) Put a rig pin in the pilot rudder pedal pivot assembly to stabilize the pilot rudder pedals in the neutral position. Make sure that the rig pin moves easily.
- (60) Remove the rig pin.
- (61) On the PMAT, read the load output in the Two's-Complement format VALUE field for the pilot left and right rudder pedal FTUs and for the copilot left and right rudder pedal FTUs. Record these values and do the calculation that follows for each of the four FTUs:

Pilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Pilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Copilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Copilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Make sure the calculated output for each FTU is  $0 \pm 8.3$  lbs ( $0 \pm 3.8$  kg).

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (62) With the force gauge installed at the pilot left rudder pedal, parallel to the seat rails as shown in Figure 4, push the pilot left rudder pedal to input a left rudder command and apply force slowly at the pedal until a load of 50 pounds (22.7 kg) is shown on the force gauge. If the load is exceeded, bring the pilot rudder pedals back to the neutral position and start again. The input force must always be applied at the pedal and parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the rudder pedal.
- (63) On the PMAT, before the rudder pedal is released, read the load output in the Two's-Complement format VALUE field for the pilot left rudder pedal FTU. Record this value and do the calculation that follows:  
Pilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_  
Before the rudder pedal is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

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- (64) Make sure the calculated output is  $-50 \pm 8.3$  lbs ( $-22.7 \pm 3.8$  kg).  
NOTE: The load at the four rudder pedals FTUs is negative.
- (65) With the force gauge installed at the pilot right rudder pedal, parallel to the seat rails as shown in Figure 4, push the pilot right rudder pedal to input a right rudder command and apply force slowly at the pedal until a load of 50 pounds (22.7 kg) is shown on the force gauge. If the load is exceeded, bring the pilot rudder pedals back to the neutral position and start again. The input force must always be applied at the pedal and parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the rudder pedal.
- (66) On the PMAT, before the rudder pedal is released, read the load output in the Two's-Complement format VALUE field for the pilot right rudder pedal FTU. Record this value and do the calculation that follows:  
Pilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_  
Before the rudder pedal is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (67) Make sure the calculated output is  $-50 \pm 8.3$  lbs ( $-22.7 \pm 3.8$  kg).  
NOTE: The load at the four rudder pedals FTUs is negative.
- (68) With the force gauge installed at the copilot left rudder pedal, parallel to the seat rails as shown in Figure 4, push the copilot left rudder pedal to input a left rudder command and apply force slowly at the pedal until a load of 50 pounds (22.7 kg) is shown on the force gauge. If the load is exceeded, bring the copilot rudder pedals back to the neutral position and start again. The input force must always be applied at the pedal and parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the rudder pedal.
- (69) On the PMAT, before the rudder pedal is released, read the load output in the Two's-Complement format VALUE field for the copilot left rudder pedal FTU. Record this value and do the calculation that follows:  
Copilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_  
Before the rudder pedal is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).
- (70) Make sure the calculated output is  $-50 \pm 8.3$  lbs ( $-22.7 \pm 3.8$  kg).  
NOTE: The load at the four rudder pedals FTUs is negative.
- (71) With the force gauge installed at the copilot right rudder pedal, parallel to the seat rails as shown in Figure 4, push the copilot right rudder pedal to input a right rudder command and apply force slowly at the pedal until a load of 50 pounds (22.7 kg) is shown on the force gauge. If the load is exceeded, bring the copilot rudder pedals back to the neutral position and start again. The input force must always be applied at the pedal and parallel to the seat rails. Keep this load until reading is taken at the PMAT and then release the rudder pedal.

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- (72) On the PMAT, before the rudder pedal is released, read the load output in the Two's-Complement format VALUE field for the copilot right rudder pedal FTU. Record this value and do the calculation that follows:

Copilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Before the rudder pedal is released, make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (73) Make sure the calculated output is  $-50 \pm 8.3$  lbs ( $-22.7 \pm 3.8$  kg).

NOTE: The load at the four rudder pedals FTUs is negative.

- (74) Remove the force gauge from the copilot right rudder pedal and make sure the rudder pedals are at the neutral position.

- (75) On the PMAT, read the load output in the Two's-Complement format VALUE field for the pilot left and right rudder pedal FTUs and for the copilot left and right rudder pedal FTUs. Record these values and do the calculation that follows for each of the four FTUs:

Pilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Pilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Copilot left FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Copilot right FTU Value \_\_\_\_\_ x 1/2.44 (gain) = \_\_\_\_\_

Make sure the calculated output is  $0 \pm 8.3$  lbs ( $0 \pm 3.8$  kg), as before when the load output was calculated with the four rudder pedals at the neutral position.

Make sure that you see a "1" in the bit format VALUE field(s) for the FTU(s).

- (76) Make the FILE – EXIT selection or push the EXIT button to close the bus reader.
- (77) Stop the PMAT. Refer to TASK 45-45-00-970-801.
- (78) Release the pressure from the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-802 and to TASK 29-10-00-862-804.
- (79) If removed for the installation of the force gauge, install the rudder pedal cover assemblies, 221GZ/222GZ, between the rudder pedals. Refer to the IPC, Chapter 27-21-00, Figure 2, Sheet 2.
- (80) On aircraft, Serial No. 9119, 9120, 9124, 9129 and 9137, do the FTU output check with the aircraft on the ground as follows:
- Pressurize the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-801 and to TASK 29-10-00-862-803.
  - Push the Pilot Event Marker (PEM) for five seconds.

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- (c) Carry out five slow and steady cycles of the elevator, rudder and aileron controls.

**NOTE:** Before the controls are moved in each direction, do not touch them during ten seconds when they are at their neutral position to make sure there is a “no load” reading at that position.

- (d) Push the Pilot Event Marker (PEM) again for five seconds.

- (e) Release the pressure from the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-802 and to TASK 29-10-00-862-804.

- (81) Do the operational test of the Junction Box (JB) 6. Refer to TASK 24-00-13-710-801, which includes the operational tests that follow.

<b>OPERATIONAL TEST</b>	<b>TASK</b>
Close Command of the Outflow Valves	21-31-00-710-805
Packet Inlet Flow Sensors	21-51-13-710-801
Manual Shutoff of the Air Conditioning Units	21-52-00-710-803
Auxiliary Pressurization Function	21-60-00-710-802
Yaw Damper System	22-13-00-710-801
Service Interphone Unit	23-40-01-710-801
REFUEL/DEFUEL Control Panel	28-23-01-710-801
Position Indication System	32-61-00-710-801
Radio Altimeter System	34-44-00-710-801
Initialization of the IRS 2	34-45-00-840-801
Shutdown of the IRS 2	34-45-00-840-802

- (82) Put the SPDA 1 in position and complete the installation (it was moved away for access to remove/install a rig pin during testing). Refer to TASK 24-62-00-400-801.
- (83) Remove the electrical power from the aircraft. Refer to TASK 24-00-00-861-802.
- (84) Install the oxygen supply lines that follow: GC488-0026-1, GC488-0026-2, GC488-0027-1, GC488-0027-2, GC488-0028-1, GC488-0028-2, GC488-0029-1 and GC488-0029-2 with the check valves, Part No. P21018 connected. Refer to the BD-700 IPC, Chapter 35, CREW OXYGEN, Figure 2, Sheet 4.
- (85) Install the four oxygen storage cylinders under the flight compartment with their clamps. Refer to TASK 35-11-01-400-801.

- (86) Connect and energize the external ac power. Refer to TASK 24-41-00-861-801.
- (87) Do the leak test of the oxygen storage cylinder and regulator. Refer to TASK 35-11-01-790-801.
- (88) Do the operational test of the oxygen storage cylinder and regulator. Refer to TASK 35-11-01-710-802.
- (89) Remove the external ac power. Refer to TASK 24-41-00-861-802.

**G. Close-out (Applicable to PART A)**

- (1) Remove all tools, equipment and unwanted materials from the aircraft.
- (2) Install the access panel 140BB removed for access to the avionics compartment. Refer to TASK 52-45-11-400-801.
- (3) Close the door 311BB of the aft equipment compartment.

**H. Close-out (Applicable to PART B)**

- (1) Remove all tools, equipment and unwanted materials from the aircraft.
- (2) Install the six Pitot-static visual drains located at FS235.00 left side and right side. Refer to TASK 34-11-03-400-801.
- (3) Install the access panels 131AL and 132AR removed for access to the forward equipment compartment. Refer to TASK 52-45-05-400-801.
- (4) Install the access panel 345DR removed for access to the elevator aft control quadrant. Refer to TASK 55-30-13-400-809.
- (5) Install the floor panels, baggage compartment 251DLF and 251ELF. Refer to TASK 53-41-01-400-801.
- (6) Close the door 311BB of the aft equipment compartment.
- (7) Install the access panel 140BB removed for access to the avionics compartment. Refer to TASK 52-45-11-400-801.
- (8) Install the floor panel 221DLF in the flight compartment. Refer to TASK 53-11-01-400-801.
- (9) Remove the warning placards from the control wheels, the AIL/RUD/STAB TRIMS control panel and the aileron control surfaces.
- (10) Remove the warning placard from the ELECTRICAL control panel.

**I. Flight Test – FTU Output check (Applicable to Aircraft, Serial No. 9119, 9120, 9124, 9129 and 9137)**

**NOTE:** If the flight test is not done within 24 hours after the completion of the testing applicable to PART B given in paragraph 2.F., do the FTU output check with the aircraft on the ground again, as given in Paragraph 2.F.

- (1) During the flight, exercise the three primary controls (elevators, rudder and ailerons) as practical to load the CFMS sensors.

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- (2) After landing, do as follows:
- (a) Open the door 311BB of the aft equipment compartment.
  - (b) Connect and energize the external ac power. Refer to TASK 24-41-00-861-801.
  - (c) On the center pedestal and on the Engine Indicating and Crew Alerting System (EICAS), make sure of the indications that follow:

REFERENCE	POSITION/INDICATION
Flap selector handle	Set to 0 degree
AIL trim on the AIL/RUD/STAB TRIMS control panel	Set to the neutral position
REVERSION CONTROLLER Panel	EICAS Switch to NORM
EICAS Controller Panel	SYSTEMS SELECT Switch to NORM and FLT CTRL Switch Pushed
EICAS primary page	The TRIMS / NL-RUDDER-NR and LWD – AIL- RWD trim indicators are at the center position
	The STAB indicator shows the position pointer at 2.0 degrees $\pm 0.1$ degree
EICAS FLIGHT CONTROLS page	AIL, ELEV and RUDDER indicators show position pointers in the middle position
	FLAPS indicator shows 0 degree

- (d) In the flight compartment, on the LANDING GEAR CONTROL PANEL, push and hold the PILOT EVENT marker pushbutton for 10 seconds.
- (e) Make sure that the advisory message FDR FAIL is not shown on the primary EICAS display.
- (f) On the pilot's or copilot's EMS CDU, set the circuit breakers that follow to OUT (refer to TASK 24-00-00-863-801):

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (g) Make sure that the advisory message FDR FAIL is shown on the primary EICAS display.

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**CAUTION:** MAKE SURE NO POWER IS APPLIED TO THE FDR BEFORE THE HONEYWELL HANDHELD DOWNLOAD UNIT (HHDLU) IS CONNECTED TO THE FDR. POWER IS APPLIED TO THE HHDLU IMMEDIATELY UPON APPLICATION OF POWER TO THE FDR.

- (h) Connect the Honeywell Handheld Down-Load Unit (HHDLU), Part No. 964-0446-001, upgraded with software Part No. 998-1743-508, to the FDR as given in the Allied Signal Inc. User Manual Drawing No. 998-1743-600.

**NOTE:** If it is necessary to have the HHDLU upgraded with software Part No. 998-1743-508, use the Honeywell Service Bulletin 012-0681-104 “Ground Equipment – Hand-Held Download Unit Software Update”.

- (i) On the pilot’s or copilot’s EMS CDU, set the circuit breakers that follow to IN (refer to TASK 24-00-00-863-802):

<b>SYSTEM NAME</b>	<b>CIRCUIT BREAKER NAME</b>	<b>BUS NAME</b>
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (j) In the flight compartment, on the LANDING GEAR CONTROL PANEL, push and hold the PILOT EVENT marker pushbutton for 10 seconds.
- (k) Make sure that the advisory message FDR FAIL goes out of view on the primary EICAS display.
- (l) Continue the installation and power-up of the HHDLU as given in the Allied Signal Inc. User Manual Drawing No. 998-1743-600.
- (m) Wait about 2 or 3 minutes for the DAU and FDR systems to run their Power-on Build-In Test (PBIT).
- (n) Pressurize the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-801 and to TASK 29-10-00-862-803.
- (o) With the flight controls at neutral, push the Pilot Event Marker (PEM) for two seconds

**NOTE:** Do not touch the controls to make sure there is a “no load” reading at that position.

- (p) After 20 seconds, with the flight controls at neutral, push again the Pilot Event Marker (PEM) for two seconds.
- (q) Download the FDR data.
- (r) Release the pressure from the hydraulic systems No. 1, No. 2 and No. 3. Refer to TASK 29-10-00-862-802 and to TASK 29-10-00-862-804.
- (s) Remove the external ac power. Refer to TASK 24-41-00-861-802.

- (t) On the pilot's or copilot's EMS CDU, set the circuit breakers that follow to OUT (refer to TASK 24-00-00-863-801):

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (u) Disconnect and remove from the aircraft the Honeywell Handheld Down-Load Unit (HHDLU).
- (v) On the pilot's or copilot's EMS CDU, set the circuit breakers that follow to IN (refer to TASK 24-00-00-863-802):

SYSTEM NAME	CIRCUIT BREAKER NAME	BUS NAME
IND/RECORD	FDR	DC 2
IND/RECORD	FDR ACCELEROMETER	DC 2

- (w) Remove all tools, equipment and unwanted materials from the aircraft.
- (x) Close the door 311BB of the aft equipment compartment.
- (3) Send the results of this test and the results of the test with the aircraft on the ground to Megan King, P. P. & C., at the e-mail address that follows with the information necessary:

[mking@dehavilland.ca](mailto:mking@dehavilland.ca) or <mailto:megan.king@aero.bombardier.com>

Information Required: Aircraft Serial No.

Service Bulletin No.

The FDR data will be given to the BD-700 aircraft engineering integrators for evaluation.

## J. Recording

You can do each PART of this Service Bulletin independently. When any PART of this Service Bulletin is completed, make an entry in the aircraft log and send the attached Incorporation Notice to Bombardier Business Aircraft Customer Services (BBACS).

### 3. MATERIAL INFORMATION

#### A. Kit

Kit 700K31-020 is necessary to do PART B of this Service Bulletin and contains the parts that follow:

NEW PART NO.	QTY	KEY WORD	USED PART NO.	INSTRUCTIONS - DISPOSITION
AN743-12	2	Angle	-	-
AS3510-02F	12	Ferrule	-	-
AS3510-0218K	12	Cable, Safety	-	-
B0204034AL-6W	3	Standoff	-	-
MS20470AD4-4A	5	Rivet	-	-
MS21042-3	7	Nut	-	-
MS24665-134	9	Cotter Pin	-	-
NAS1149D0332K	9	Washer	-	-
NAS1801-3-6	5	Screw	-	-
NAS1801-3-7	5	Screw	-	-
TA02209DC04HD	6	Clamp	-	-
TA2210DC24HA or B0305090A10S24	4	Clamp	-	-

- NOTES:**
1. In case of discrepancy between this list and the "Service Bulletin Kit Parts List" contained in the respective kit, then the latter list prevails.
  2. The actual quantity for some of the hardware contained in the kit can be greater than the amount shown in the table as these items are supplied in pre-packaged quantities.

#### B. Parts

The parts that follow are necessary to do PART A of this Service Bulletin and can be purchased from Bombardier, Spare Parts Center, Montréal:

ITEM	PART NUMBER	QUANTITY
Data Acquisition Unit	10604B03M08	4
Flight Data Recorder (See NOTE)	980-4700-041	1

**NOTE:** Applicable to aircraft, Serial No. 9119 to 9131 only.

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The parts that follow are necessary to do PART B of this Service Bulletin and can be purchased from Bombardier, Spare Parts Center, Montréal:

ITEM	PART NUMBER	QUANTITY
Rudder Sensor (Left Side)	GH415-2402-1	2
Rudder Sensor (Right Side)	GH415-2402-2	2
Elevator Sensor	GH415-2401-1	2
Aileron Sensor	GH415-2403-1	2
Kit, Aileron Sensor Fastening	9007524-1	2

**NOTE:** The part numbers for the items listed above are subject to change without revision to this Service Bulletin. In case of discrepancy between this list and any other list, the IPC prevails and shall be used to determine the latest part number.

**C. Material**

The material that follows, or equivalent, is necessary to do this Service Bulletin. It can be purchased from a local supplier or from Business Aviation Services:

DESCRIPTION	PART No./NAME	SPECIFICATION	QUANTITY	SUPPLIER
Sealant, Aerodynamic Contour CT: 30 hours	Pro-Seal 870, Class B	MIL-PRF- 81733, Type II	As Necessary	Code: A

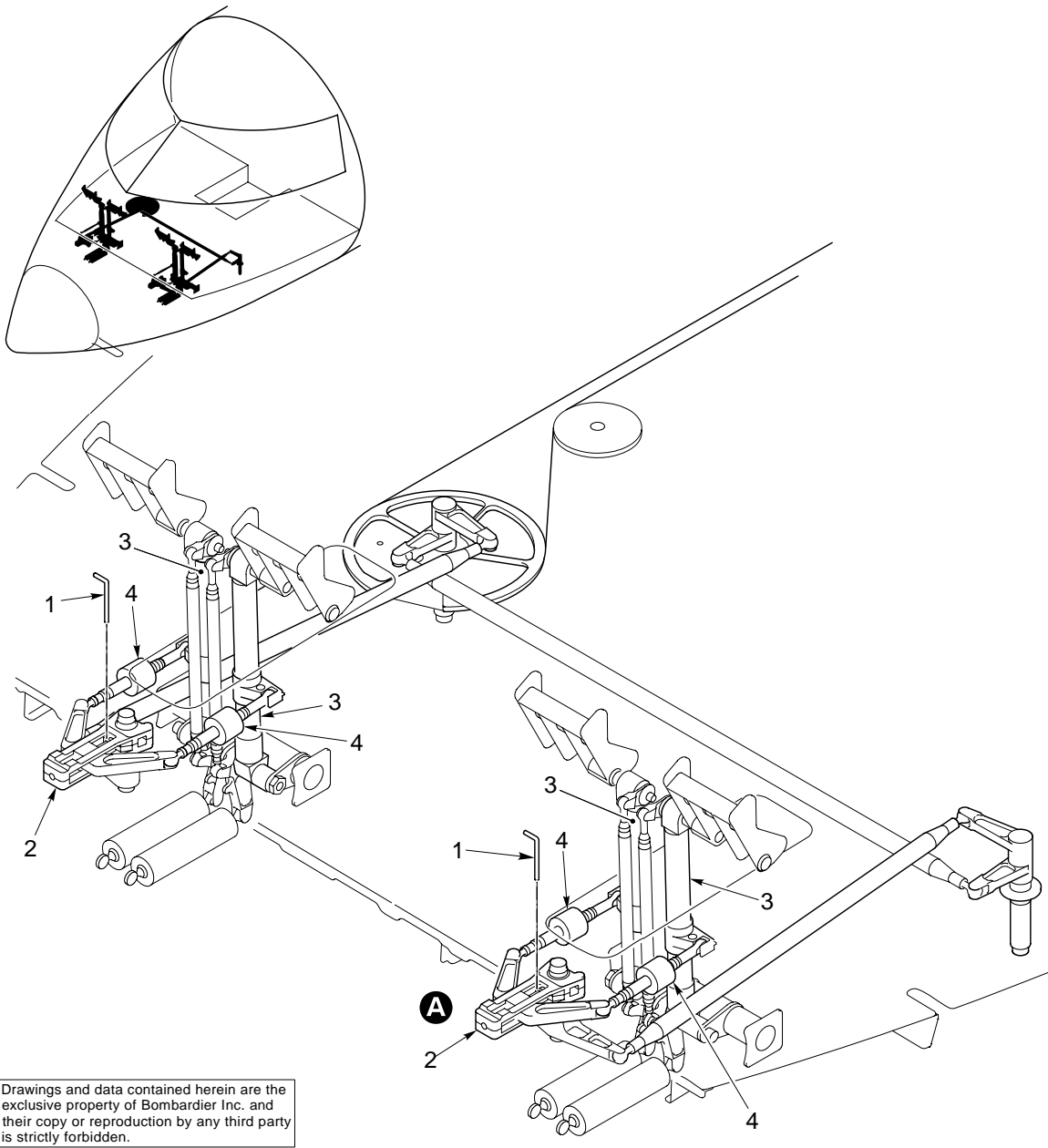
**NOTE:** Refer to the next table for each supplier's address listed by codes.

SUPPLIERS ADDRESSES BY CODES
<p><b>Code: A</b></p> <p>PRC-Desoto International 5430, San Fernando Road Glendale, CA, 91203 USA Tel.: (972) 988-0376</p>

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DESIGNATION	IDENT	DESIGNATION	IDENT
Rig Pin	1	Bolt	5
Pivot Assembly, Rudder Pedal	2	Washer	6
Bar Assembly, Rudder Pedal	3	Nut	7
Rudder Sensor	4	Cotter Pin	8



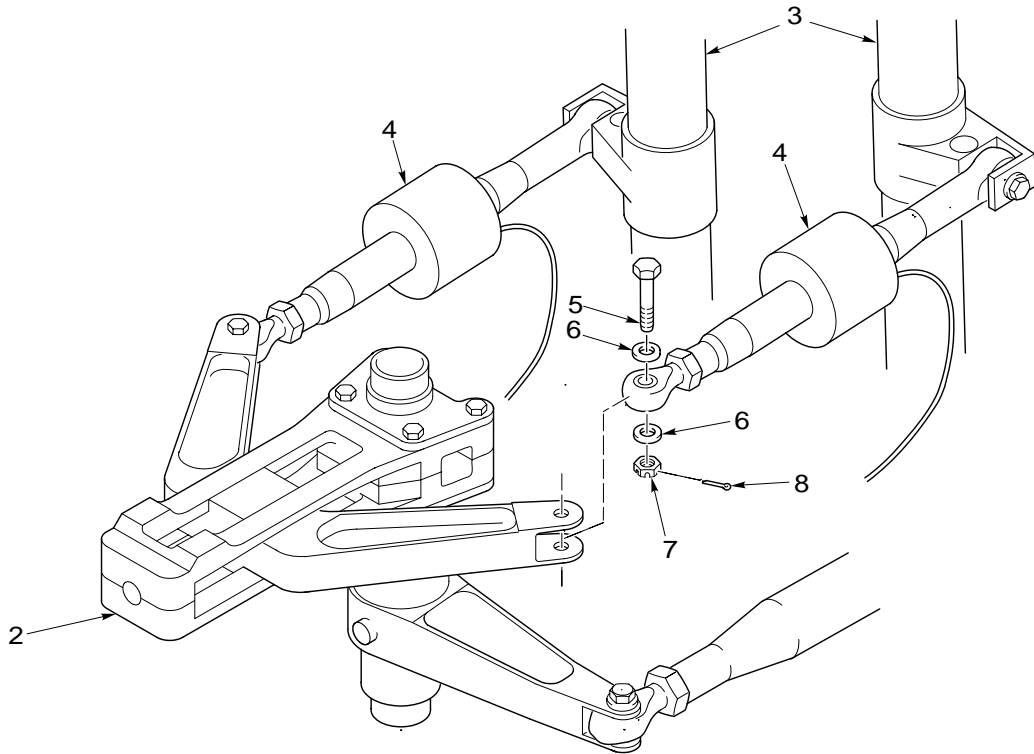
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Rigging – Rudder Control System in the Flight Compartment  
 Figure 1 (Sheet 1 of 2)

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DESIGNATION	IDENT	DESIGNATION	IDENT
Rig Pin	1	Bolt	5
Pivot Assembly, Rudder Pedal	2	Washer	6
Bar Assembly, Rudder Pedal	3	Nut	7
Rudder Sensor	4	Cotter Pin	8



**A**

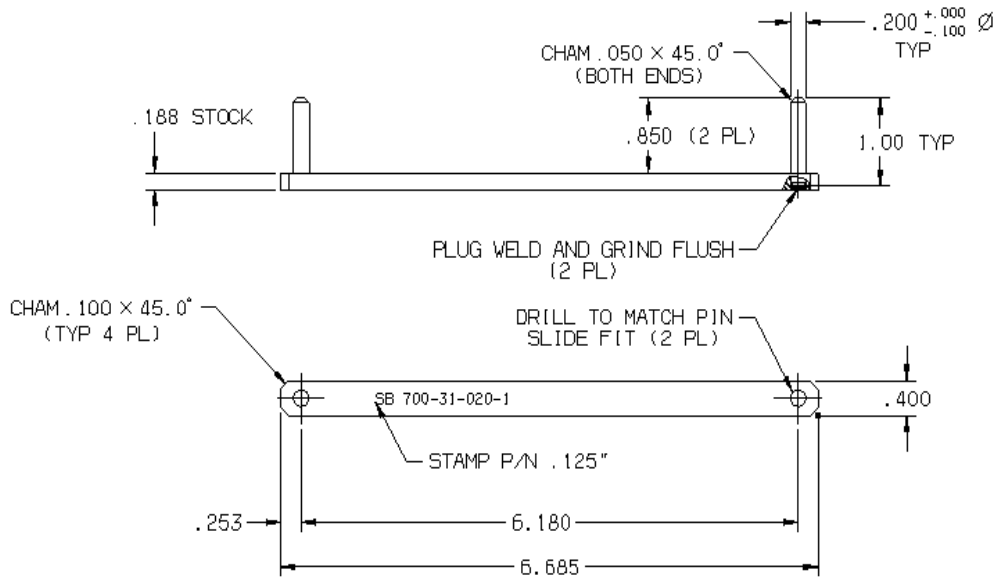
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SB700-31-20FIG1S2

Rigging – Rudder Control System in the Flight Compartment  
 Figure 1 (Sheet 2 of 2)

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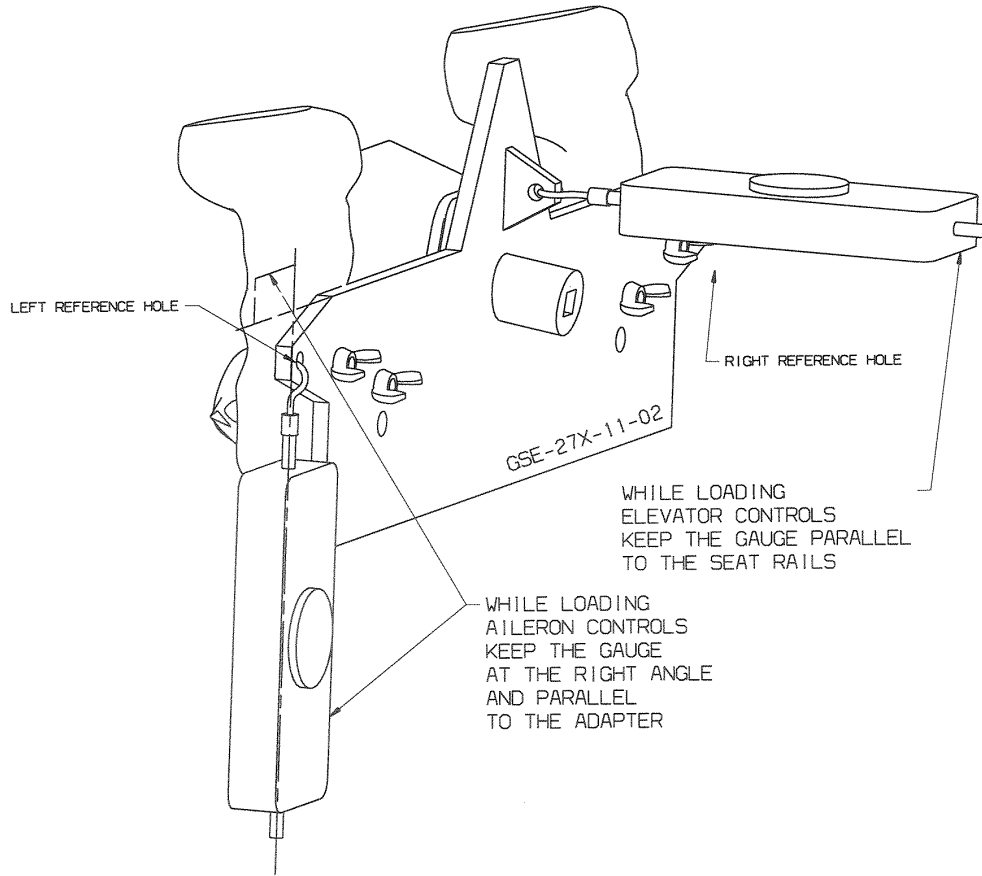
MODEL BD-700-1A10



MATERIAL: BAR: COMMERCIALY AVAILABLE MILD STEEL  
 ROD: COMMERCIALY AVAILABLE MILD STEEL  
 FINISH: ONE COAT PRIMER AND ONE COAT RED PAINT (DO NOT PAINT PINS)

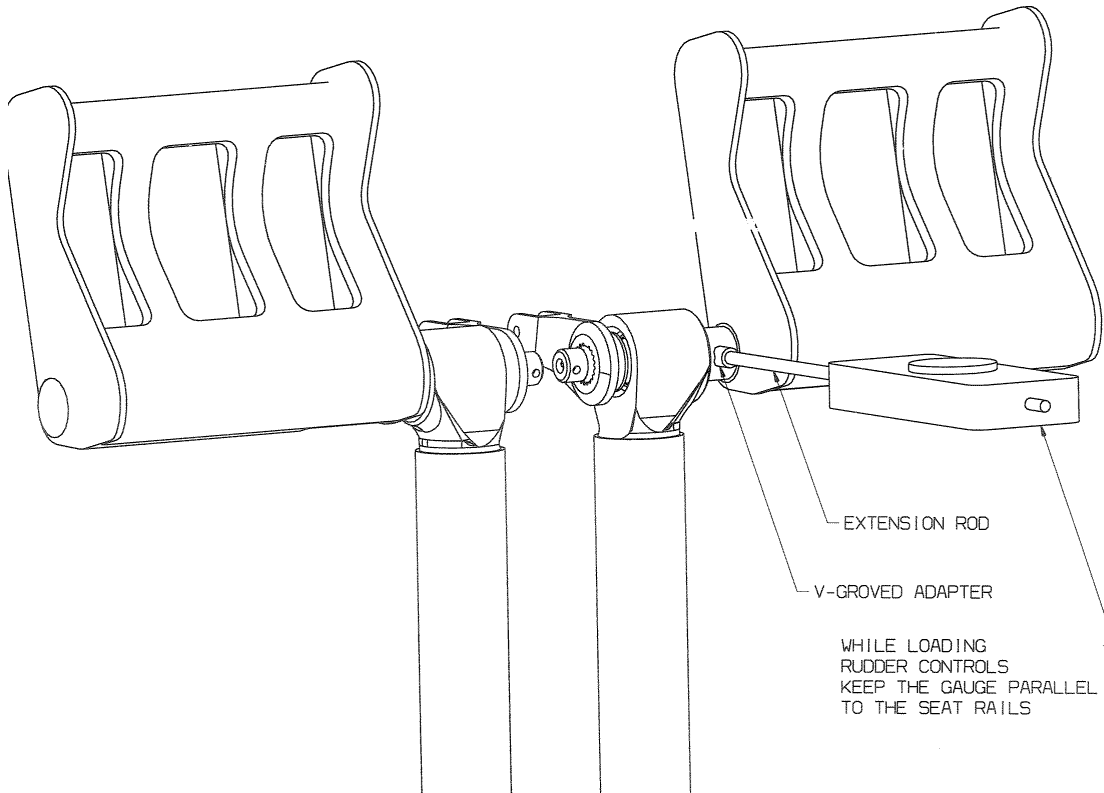
Retaining Bar, Elevator Tension Regulator  
 Figure 2

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GSE 27X-11-02 and Force Gauge Installation – Control Wheels/Columns  
Figure 3

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Force Gauge Installation – Rudder Pedals  
Figure 4

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Notes:

TO ENABLE THE CFMS SYSTEM, CARRY OUT THE FOLLOWING PROCEDURES:

1. GET ACCESS TO DAU1, DAU2, DAU3, DAU4 AND JB6.
2. CONNECT THE FOLLOWING WIRES, AS PER SH. 3:

<u>IDENTIFICATION</u>	<u>END 1</u>
FAK6374W-22	A30AP1-F14
FAK6374B-22	A30AP1-G14
FAK6383W-22	A30AP1-G8
FAK6383B-22	A30AP1-H8
FAJ6387W-22	A17AP1-D11
FAJ6387B-22	A17AP1-E11
FAJ6391W-22	A17AP1-F14
FAJ6391B-22	A17AP1-G14
FBF6348-20	JB6BP1-4
FBK6358W-22	A18AP1-D11
FBK6358B-22	A18AP1-E11
FBK6362W-22	A18AP1-F14
FBK6362B-22	A18AP1-G14
FBJ6366W-22	A31AP1-F14
FBJ6366B-22	A31AP1-G14
FBK6370W-22	A31AP1-G8
FBK6370B-22	A31AP1-H8
FBH6929N-22	GS550
FBH6422N-22	A31BP1-B7

3. IT IS PERMISSIBLE TO INSTALL 5 LUGS TO GROUNDING STUD GS550.

DRAWN	J. ROY	KIT - CFMS ACTIVATION & PIN OUT CHANGE			
DATE	18 MAR 04				
 <small>Bombardier Aerospace</small>	CAGE CODE	86308	SIZE	A	KGC991-1183
	<small>Bombardier Inc. Canada P.O. BOX 6087, Station A Montreal, Quebec, Canada H3C 3G9</small>		REVISION	NC	INC
			SHEET	PL	1 2 3
			SCALE	N/A	
					SHEET 1 OF 3

**KGC991-1183**  
 Kit – CFMS Activation – Pin Out Change  
 (Sheet 1 of 3, Rev. NC)

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Notes:

4. TERMINATE THE FOLLOWING SHIELDS AS PER SH.3 AND BD-700 WMI CH. 20-15-00


IDENTIFICATION                      END 1

FBKJ425	A18AP1-SH
FBKJ427	A18AP1-SH
FBJJ254	A31AP1-SH
FBKJ429	A31AP1-SH
FAKJ230	A30AP1-SH
FAKJ232	A30AP1-SH
FAJJ535	A17AP1-SH
FAJJ537	A17AP1-SH

5. GET ACCESS TO THE FDR.

6. DISCONNECT, CAP AND STOW WIRE RBG0331N-20 FROM GM23-A, AS PER SH. 3 AND BD-700 WMI CH. 20-15-00.

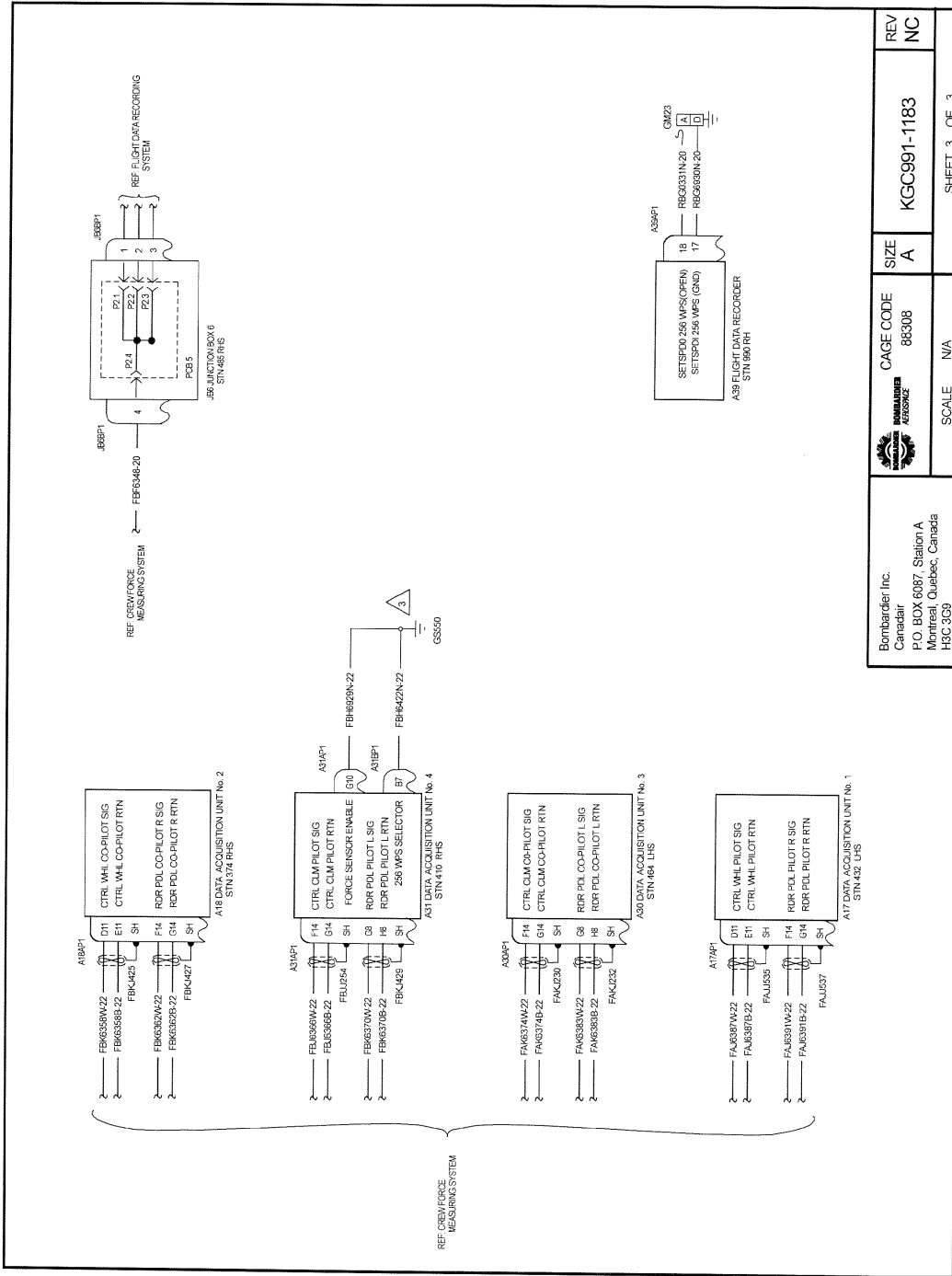
7. CONNECT WIRE RBG6930N-20 TO GM23-D, AS PER SH. 3.

Bombardier Inc. Canadair P.O. BOX 6087, Station A Montreal, Quebec, Canada H3C 3G9		CAGE CODE	86308	SCALE	N/A
		SIZE	A	SHEET 2 OF 3	
		KGC991-1183	REV	NC	

**KGC991-1183**

Kit – CFMS Activation – Pin Out Change  
(Sheet 2 of 3, Rev. NC)

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MODEL BD-700-1A10



	CAGE CODE	88308		REV	NC
	SIZE	A		SCALE	N/A
Bombardeur Inc. Canadair P.O. BOX 6087, Station A Montreal, Quebec, Canada H3C 3G9			SHEET 3 OF 3		

**KGC991-1183**  
Kit – CFMS Activation – Pin Out Change  
(Sheet 3 of 3, Rev. NC)

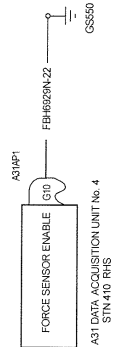
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**700-31-020**  
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Notes:

TO ENABLE THE CFMS SYSTEM, CARRY OUT THE FOLLOWING PROCEDURES:

1. GET ACCESS TO DAU4.
2. CONNECT THE FOLLOWING WIRE:  
IDENTIFICATION      END 1  
 FBH6929N-22              GS550
3. IT IS PERMISSIBLE TO INSTALL 5 LUGS TO GROUNDING STUD GS550.



DRAWN	J. ROY	KIT - CFMS ACTIVATION			
DATE	18 MAR 04	SIZE	A	REVISION	NC
		CAGE CODE	KGC991-1275		
				REVISION	NC
Bombardier Inc. Canadair				SHEET	PL 1
P.O. BOX 6087, Station A Montreal, Quebec, Canada H3C 3G8				SCALE	N/A
					SHEET 1 OF 1

**KGC991-1275**  
 Kit – CFMS Activation  
 (Sheet 1 of 1, Rev. NC)



Bombardier, Inc.  
400 Cote Vertu Road, West  
Dorval, Quebec, Canada H4S 1Y9

**BOMBARDIER  
AEROSPACE**

DRAWN BY: A. DESROCHES/118	SHEET 2	MS CODE C	PL_KGC991-3101	REV -B
CAGE CODE 3AB48		MODEL VERSION: 03 MODEL TYPE: ASSY		

NOTES

1. IDENTIFY PER BAPS 144-005.
2. FINISH SPEC PER BAERD BA700-001.
3. FINISH CODE PER BAERD-GEN-004.
4. INSTALL BOLTS AND SCREWS PER BAPS 150-000.
5. TORQUE BOLTS PER BAPS 150-2, CLASS 11.
- △ INSTALL SAFETY DEVICES PER BAPS 150-003 USING METHOD 1 OR 2,  
MS2095C32 LOCKWIRE MAY BE USED AS AN ALTERNATIVE TO AS3510-0218K  
CABLES & AS3510-02F FERRULES.
- △ KEEP ATTACHING HARDWARE.
8. SYSTEM TEST PER FTER C700-274001.
9. LAST SECTION OR VIEW USED: DETAIL J.
- △ REMOVE DUST CAP D38999/33M09R AND REFER TO SB 700-31-020 FOR DISPOSITION.
- △ DISTRIBUTE HARNESS LENGTH AS TO HAVE NO STRAIN IN HARNESS WHEN RUDDER PEDALS  
ARE ADJUSTED IN FULL FWD, FULL AFT POSITIONS AND DEFLECTED IN FULL RIGHT &  
FULL LEFT POSITIONS.
- △ INSTALL COTTER PIN PER BAPS 150-003.
- 13 INSTALL WIRING PER BAPS 145-003.
- △ ADJUST CLAMP TO ENSURE MAXIMUM HARNESS CLEARANCE WITH SENSOR CASING AND SURROUNDING STRUCTURE.  
ALSO ENSURE THAT HARNESS ROTATES FREELY ON THE SWIVEL DEVICE.
- △ TIGHTEN BOLTS IN FOLLOWING STAR SHAPED ORDER: 1-3-5-2-4.
- △ MAXIMUM RUNNING TORQUE TO CLAMPING DEVICE = 8 IN-LB.
- △ WHEN TORQUING JAMNUTS FOR LINEAR SENSOR, USE WRENCHING FLAT ADJACENT TO THE  
JAMNUT. TORQUE APPLIED ACROSS THE LENGTH OF THE SENSOR MAY DAMAGE THE UNITS.

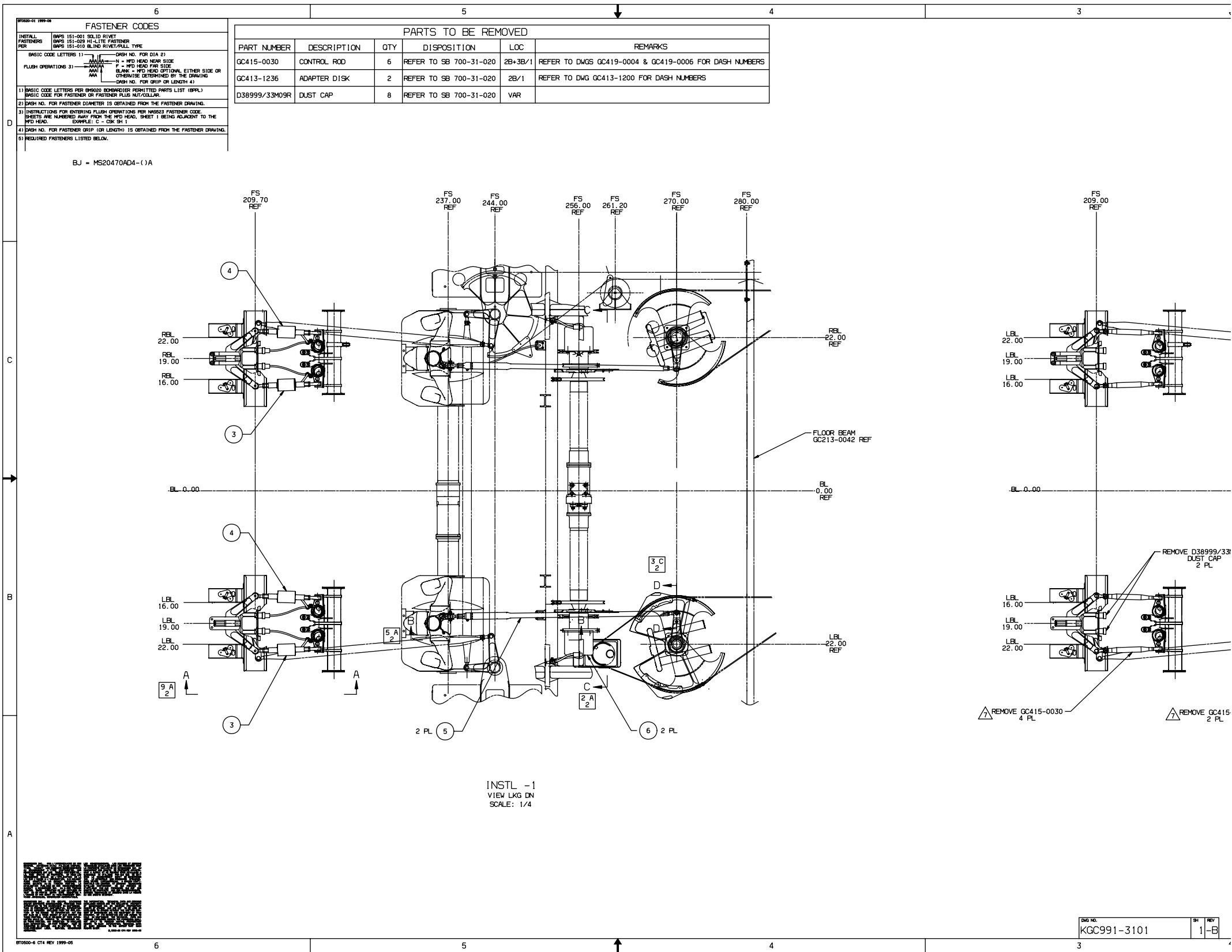
8F0501-2 C14 REV 1999-01

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SB700-31-020-3101-B-S2-PL

**PL KGC991-3101**  
Kit – Sensor Installation - CFMS  
(Sheet 2 of 2, Rev. B)





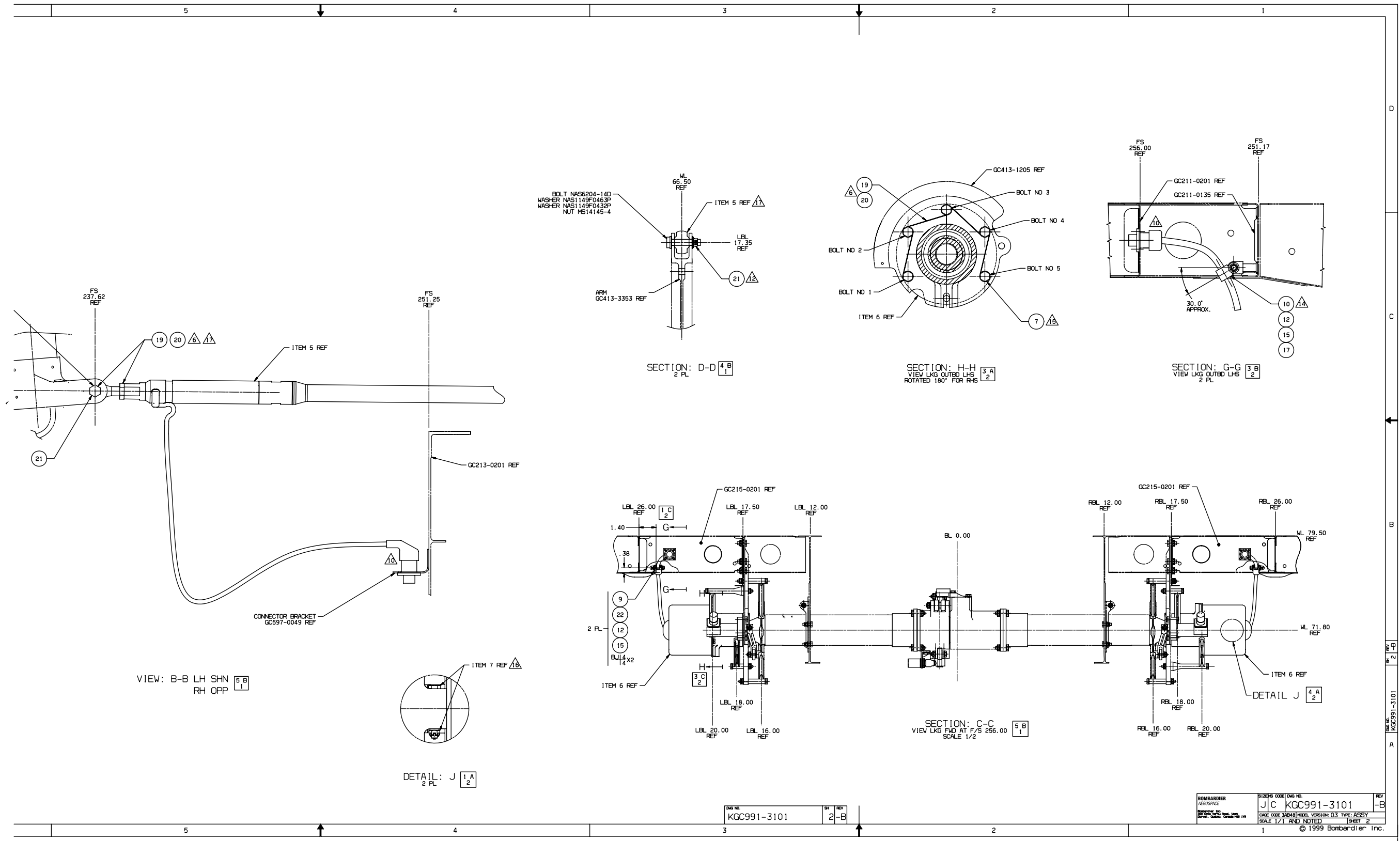
**KGC991-3101**  
 Kit - Sensor Installation - CFMS  
 (Sheet 1 of 2, Rev. B - continued)

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DWG NO.	REV
KGC991-3101	1-B

SB700-31-020-3101-B-S1-2



**KGC991-3101**  
Kit – Sensor Installation - CFMS  
(Sheet 2 of 2, Rev. B)

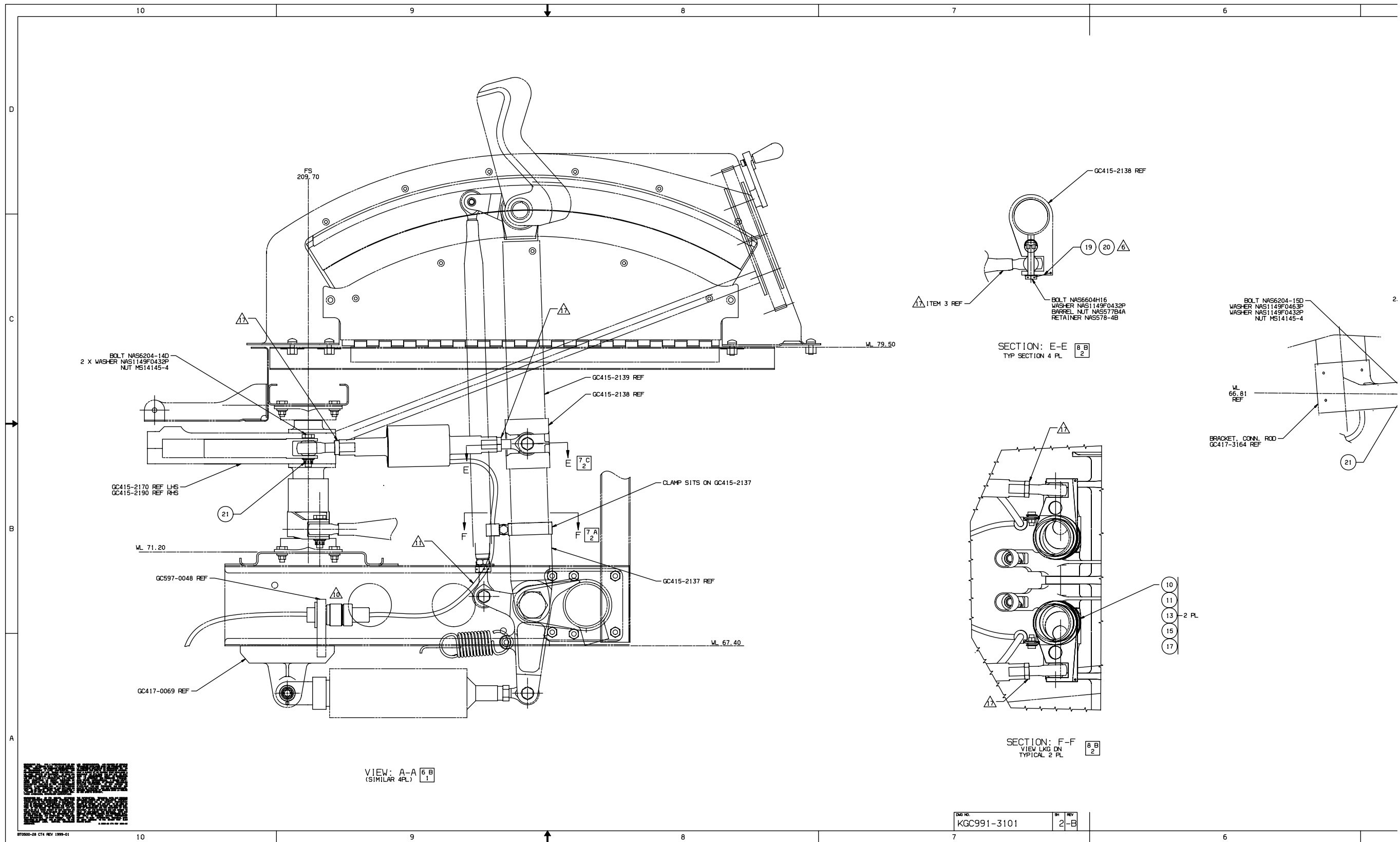
Basic Issue: Feb 28/2005  
Revision 01: Apr 23/2007

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DWG NO.	REV
KGC991-3101	2-B

BOMBARDIER AEROSPACE	SIZE CODE	DWG NO.	REV
	JC	KGC991-3101	-B
CAGE CODE 34848	MODEL VERSION 03	TYPE ASSY	
SCALE 1/1 AND NOTED		SHEET 2	
© 1999 Bombardier Inc.			

SB700-31-020-3101-B-S2-1



VIEW: A-A (SIMILAR 4PL)

DATE: KGC991-3101 BY: REV: 2-B

**KGC991-3101**  
 Kit – Sensor Installation - CFMS  
 (Sheet 2 of 2, Rev. B - continued)

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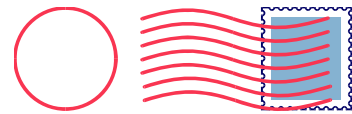
**SERVICE BULLETIN EVALUATION FORM**  
 (YOUR IDEAS WILL HELP US PROVIDE BETTER BULLETINS)

<b>SERVICE BULLETIN</b> <u>700-31-020</u>	<b>ISSUE:</b> <u>Rev. 01</u>	<b>DATED:</b> <u>Apr 23/2007</u>
<b>TITLE:</b> Modification - Flight Data Recording (FDR) System – Installation of the Force Transducer Units (FTU) and Activation of the Crew Force Measuring System (CFMS) 2002		

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
<ul style="list-style-type: none"> <li>• <b>Instructions to do the Service Bulletin were accurate.</b> 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>Illustration(s), figure(s), and/or kit drawing(s) were helpful to carry out instructions.</b> 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>If a kit was required, did the kit contents received agree with the contents listed in the bulletin?</b> 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>The loose parts listed under Paragraph 3 were easily procured.</b> 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>Work was accomplished in the prescribed time.</b> 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>Overall, I was satisfied with this Service Bulletin.</b> Comments:</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>For administrative use only</i>	<b>PLEASE SUPPLY US WITH THE FOLLOWING DATA AND FAX TO: (514) 855-2535</b>	
0631TPAT69R1	OPERATOR:	
	AIRCRAFT SERIAL NO.:	
	TELEPHONE:	
	FACSIMILE:	
	NAME: (Please print)	

**THANK YOU FOR ANSWERING THIS EVALUATION FORM!  
 UPON COMPLETION OF THIS EVALUATION FORM, PLEASE FOLD, AND RETURN**



**Bombardier Business Aircraft Customer Services (BBACS)**

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 – “700-31-020”

Upon completion of the Service Bulletin, please fill in and mail or fax this sheet to: (514) 855-8798, or e-mail to Fracas at fracas.montreal@aero.bombardier.com

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

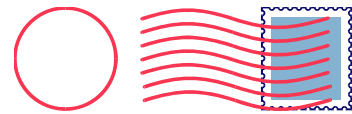
Service Bulletin Number	Rev.	* Parts Completed	Further Action Required	
			YES	NO
700-31-020	01	PART A	<input type="checkbox"/>	<input type="checkbox"/>
“	“	PART B	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	<input type="checkbox"/>	<input type="checkbox"/>

**Actual hours to accomplish Service Bulletin:**  
 Access: \_\_\_\_\_ Modification: \_\_\_\_\_ Tests: \_\_\_\_\_ Restore: \_\_\_\_\_

\* **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 CAMP 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 Aircraft Customer Services (BBACS)**

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

Attention: Maintenance Engineering  
Department 051

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