INSTRUCTIONS FOR INITIAL AND CONTINUED AIRWORTHINESS

for

AIRCRAFT WITH THE FC-110 AUTOPILOT AND INNOVATIVE SOLUTIONS AND SUPPORT (IS&S) AIR DATA SYSTEM QUALIFIED FOR OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE

of

LEARJET 23 AIRCRAFT

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IR	06/29/06	Initial Release	CTH
A	08/22/06	Reference for isolation valve inspection added to AWL section	CTH

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I Airworthiness Limitations

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under sections 43.16 and 91.403 of the Federal Aviation Regulations, unless an alternative program has been FAA approved.

These inspections are in addition to all other inspections specified in the Airworthiness Limitations Section of the basic Learjet 20 Series Maintenance Manual.

A. Frame 5 Bulkhead Feed-thru Inspections (per Section III.L)

Modification per Avcon Dwg. No. 00302013 Rev. IR or later FAA approved revision.

Feed-thru Inspection Schedule

Initial Inspection: Inspect the area around the feed-thru cutouts and doubler attachment rivets no later than 12 months subsequent to the feed-thru installation.

Subsequent Inspection: Annually (not to exceed 12 months past the prior inspection)

B. Isolation Valve Inspection

Modification per Avcon Dwg. No. 24251140 Rev. C or later FAA approved revision.

Isolation Valve Inspection Schedule

Initial Inspection: Perform the isolation valve inspection per Section XIII of the Maintenance Manual Supplement (Avcon Doc. No. 00307016) before first flight after the isolation valve installation.

Subsequent Inspection: Perform the isolation valve inspection per Section XIII of the Maintenance Manual Supplement (Avcon Doc. No. 00307016) no later than every 12 months or 300 hours subsequent, which ever occurs first.

FAA Approved: Margaret Kline Date: 9/1/06

Margaret Kline
Aircraft Certification Office
Federal Aviation Administration
Wichita, KS

II Aircraft Configurations / System Description

A. Introduction

The Learjet 23 aircraft have been shown to qualify for normal flight operations per Title 14 of the Code of Federal Regulations (14CFR), Part 23 and for operation in RVSM airspace as group aircraft in accordance with Part 91, Appendix G, “Operation in Reduced Vertical Separation Minimum (RVSM) Airspace”, and FAA Document No: 91-RVSM, Change 2, dated 10 Feb. 2004, “Guidance for Approval of Aircraft for Reduced Vertical Separation Minimum (RVSM) Flight”. This qualification is based on analysis of the configuration and performance of the air data, automatic altitude control, altitude alerting, and altitude reporting systems. These systems must be maintained in accordance with the inspections and tests specified in this document and other current maintenance practices to guarantee initial and continued compliance to both normal flight and RVSM specifications. Revisions/changes to the Instructions for Continued Airworthiness will be distributed in accordance with Avcon Industries’ “PMA Quality Control Manual”, Rev E, dated 27 December, 2001 or latest approved revision.

When the owner/operator of a Learjet 23 aircraft with the FC-110 autopilot and IS&S air data system implements this STC they must add the initial and continued airworthiness inspections and test instructions contained in this document to the existing maintenance and flight operations programs for their airplane. The operator, when applying for approval to operate in RVSM airspace, should coordinate with the appropriate FAA Flight Standards District Office (FSDO) to determine what documentation must be provided to prove compliance with the requirements for initial airworthiness. When compliance with the initial airworthiness tasks has been demonstrated, RVSM operational approval may be granted by the FSDO. After initial airworthiness has been granted, the airplane must be maintained in accordance with the continued airworthiness requirements presented in Section III.D of this document. Any deviation from these procedures must be coordinated through Avcon Industries, Inc. and the responsible airworthiness authority prior to operation in RVSM airspace.

The information presented in this document supplements or supersedes the existing maintenance requirements only in those areas specified. Refer to the manufacturer’s requirements and procedures for maintenance procedures pertaining to the airplane’s systems and specific avionics equipment not covered in these instructions.

B. Aircraft Configuration

The Learjet 23 Series aircraft are equipped with two independent air data systems comprised of cross-coupled, probe-mounted static sources, air data computers, Altimeters and an altitude pre-selector/alerter. The aircraft is also equipped with a single autopilot and two altitude-reporting transponders. A standby altimeter, also installed, is connected to the copilot static source. The installation and operation of these systems have been shown to meet RVSM requirements.

The Learjet 23 aircraft are equipped with two CJ-610-6 engines (certified to operate up to FL450) and MMO = 0.81 (based on the new Pitot-Static Probe Installation). Any future engine changes/modification, including hush kits, may affect RVSM performance, and hence, these instructions. Contact Avcon Industries, Inc. if such engine changes/modifications are, or shall be, performed.

RVSM compliance was demonstrated with the following equipment installed on the Learjet 20 Series test aircraft:

1. An L-band antenna (typically 3.5 inches tall or less) located approximately 2.5 inches aft of the radome on the aircraft centerline on the bottom of the aircraft.

2. A Radar Altimeter blade antenna (typically 2.0 inches tall or less) located approximately 5 inches aft of the radome on the aircraft centerline on the bottom of the aircraft.

3. A DME antenna (typically 2.5 inches tall or less) located approximately 8 inches aft of the radome on the aircraft centerline on the bottom of the aircraft.

4. A Marker Beacon blade antenna (11.5 inches long an 2.25 inches tall located approximately 60 inches aft of the radome on the aircraft centerline on the bottom of the aircraft.

5. A DME antenna (typically 2.5 inches tall or less) located approximately 60 inches aft of the radome on the aircraft centerline on the bottom of the aircraft.

6. An oxygen access door approximately 8.0 inches long and 5.0 inches tall located approximately 28 inches aft of the radome on aircraft's right hand side (fuselage clock position 9:00, facing aft).

7. Two tandem ADF blade antennas (typically 7.0 inches tall or less) located approximately 35 inches aft of the radome at fuselage clock positions 5:00 and 7:00. A single ADF blade antenna (typically 7.0 inches tall or less) located approximately 35 inches aft of the radome at fuselage clock position 5:00 (looking aft).

8. Having no ADF blade antennas installed is also acceptable.

9. Two Teledyne Angle of Attack Cones located approximately 5 inches aft of the radome at fuselage clock positions 3:30 and 8:30.

10. Two Angle of Attack Vanes located approximately 5 inches aft of the radome at fuselage clock positions 3:30 and 8:30.

11. Two Angle of Attack Vanes located approximately 51 inches aft of the radome at fuselage clock positions 3:30 and 8:30.

NOTE: Contact Avcon Industries Inc. prior to the removal of existing antennas or the installation of any additional antennas or other objects that protrude into the airstream forward of the pitot-static probes or within the RVSM Critical Region as installation of additional antennas or the removal of the previously noted antennas may invalidate the RVSM certification for this aircraft.

C. Avionics System Description

Static pressure information is provided to the Innovative Solutions & Support (IS&S) Air Data Display Unit (ADDU) through cross-coupled, probe-mounted static sources located on the left and right sides of the fuselage. The ADDU's, through a static source error correction incorporated in the Configuration Modules (CM), provide corrected altitude information to the altimeters for display. The autopilot and altitude alerter receives altitude deviation data from the pilot or the copilot's ADDU. Both the pilot's and copilot's ADDU's can provide altitude data to either transponders for altitude reporting. The aircraft system components approved for RVSM operations on the Learjet 23 aircraft, are presented in Table 1.

The components listed in Table 1 must be maintained in accordance with approved maintenance practices, and the Initial and Continued Airworthiness instructions presented in this document.

This document does not constitute approval for installation of the components listed in Table 1. This document is invalid unless these components have been installed per Avcon Drawings 00302000 and 00303000 and approved by the appropriate Certifying Authority. Any deviation from this equipment list (except as noted) invalidates the RVSM approval for this aircraft. Replacement of the listed equipment must be accomplished with units of identical part number. If alternate avionics equipment is to be or intended to be installed, a re-evaluation of the configuration for equivalent RVSM performance must be performed and approved.

Component	Make/Model	Part Number	Quantity
Pitot-Static Probe – Lt Side(1)	Goodrich	0856NA-1	1
Pitot-Static Probe – Rt Side(1)	Goodrich	0856NA-2	1
Air Data Display Unit	IS&S / ADDU	9D-80130-15	2
Altitude Alerter	Integral to ADDU	N/A	N/A
SSEC Configuration Module(1)	IS&S / CM	9D-03508-116	2
Analog Interface Unit	IS&S / AIU	9B-81040-38	1
Autopilot(2)	L-3/Jet FC-110	FC-110	1
Autopilot Amplifier	L-3/Amplifier(3)	4-2020-02	1
Autopilot Controller	L-3/Controller(3)	4-5020-02	1
Standby Altimeter(1)(4)	Aerosonic	16650-1150	1
Transponder(2)(5)	Various	Various	2
Isolation Valves(1)	Dukes	1484-00-3	4
Mach/Airspeed Indicator (Qty. 2)	Various	00206101-XX(6)	2
Outside Air Temperature Probe	Honeywell/159-08256-0001	050-03610-0002	4

Table 1, Required Components for RVSM Operations

Notes:

1. When the IS&S Configuration Module (P/N 9B-03508-116) is correctly installed, the Air Data Display Units (ADDU) will display “L245-" at start-up. If either ADDU does not display “L245-" at start-up, RVSM operations are prohibited..
2. Existing equipment.
3. Because of a variety of different part numbers associated with the Jet FC-110 autopilot components, Appendix A must be filled out and signed for each aircraft.
4. Any altimeter that meets or exceeds the requirements of Technical Standard Order (TSO) C10b may be installed.
5. Any transponder that meets or exceeds the requirements of one of the following Technical Standard Orders may be installed: TSO-74c or TSO-C112.
6. The Mach/Airspeed Indicators are modified per Avcon Drawing 00309101. The model number and corresponding part numbers of both the Mach/Airspeed Indicators are defined in Avcon Drawing 00309101.

III Maintenance Instructions

The following inspections, tests, and/or procedures must be included in the basic maintenance plan for the Learjet 23 aircraft with the FC-110 autopilot and IS&S air data system to ensure initial and continued airworthiness for operations in RVSM airspace. Both altimetry systems (Pilot/Copilot) must be maintained in accordance with these instructions. The information presented in this section supplements or supersedes the basic airplane manuals only in those areas specified.

NOTE: For all cases in which the instructions in this document and the Aircraft Maintenance Manual are in conflict, the most restrictive instructions take precedence.

Normal air data system maintenance specified in the maintenance manual must still be followed as required. For maintenance procedures pertaining to the airplane's systems and specific avionics equipment not covered in these instructions, see the manufacturer's requirements and procedures. The maintenance tasks and required intervals are summarized in the following sections.

A. Definitions/Abbreviations/Acronyms/Symbolization

Definitions:

Visual Inspection Criteria

Any time an area is visible during an inspection of maintenance action, the following "Visual Inspection Criteria" shall be accomplished without requiring disassembly or removal of adjacent equipment unless otherwise specified. It will normally apply to those areas, surfaces, or items that become visible by the removal or opening of access doors, panels, fairings, or cowlings. It shall include a visual examination of the area, component, detail, assembly, or installation and its surrounding environment, as well as any associated equipment within the immediate vicinity, using any inspection aids considered necessary. Visual inspection criteria will normally consist of, but not be limited to, the following criteria:

1. GENERAL VISUAL INSPECTION

A visual inspection that will detect obvious unsatisfactory conditions/discrepancies. This type of inspection may require cleaning, removal of fillets, fairings, access panels/doors, etc. Work stands, ladders, etc. may be required to gain proximity.

a. Metal parts (all metal parts, bodies, or casings of units in systems and in electrical, instrument, and radio installations, ducting, tubing, rods, and levers). Inspect for the following:

(i) Cleanliness, external signs of damage, leaks, overheating, discharge, or fluid contamination.
(ii) Obstruction of drainage or vent holes.
(iii) Correct seating and sealing of fairings and serviceability of fasteners.
(iv) Security of attachment, fasteners, and connections.
(v) Distortion, dents, scores, chafing, pulled or missing fasteners, rivets, bolts, or screws.
(vi) Signs of cracks or wear.
(vii) Separation of bond.
(viii) Failure of welds or spot welds.
(ix) Deterioration of protective treatment and corrosion.

b. STRUCTURAL COMPONENTS – When inspecting lap and butt joints, stringers, frames, bulkheads, ribs, longerons and skins, particular attention should be paid to the following possible indications of corrosion:

(i) Lack of adhesion of the paint or sealant.

This condition could indicate the presence of surface corrosion under the paint film or sealant

(ii) Bubbles of the paint film or sealant.

This condition could indicate local pockets of corrosion. If bubbles are found, inspect area to determine whether the bubble is a build-up of paint or sealant and not a build up of corrosion.

(iii) Signs of corrosion on the edge of any member where it joins the skin.

If corrosion is found, remove paint from area. If corrosion has penetrated between the faying surfaces of the joint, visually inspect area. Remove bolts and rivets as needed to check the extent of and to assist in repair of corrosion.

NOTE: Any area showing signs of possible cracking or corrosion is to be stripped of paint and inspected further using dye penetrant.

If a visual inspection is not possible due to the nature of the structure or an excessive amount of dismantling would be necessary, inspection by x-ray or other methods of nondestructive testing in accordance with approved techniques shall be used as the inspection medium.

B. Requirements for Initial Airworthiness Approval

The following inspections/tests are required for initial airworthiness approval:

1. Verify the correct avionics components are installed in accordance with Section II.C, Table 1 and that all required/appropriate Maintenance Manual Supplement (Avcon Doc. No. 00307016) Installation Functional Checks have been successfully performed.

2. Perform an air data system check in accordance with Section III.G using calibrated ground test equipment, and verify the air data system errors are within RVSM tolerances specified in Table 2. The RVSM tolerances specified in Table 2 will verify proper implementation of the static source error correction in the Configuration Modules (CM1 and CM2)..

3. Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section III.H and record the results in the aircraft maintenance records. This inspection requires that the aircraft be jacked and leveled and that the rear access door be opened to verify that the aircraft is level.

4. Perform the following inspections for the RVSM Critical Region as defined in Section III.I and Figure 1:

   a. Ensure that the RVSM Critical Region is identified with corner markings and placard as defined in Section III.I and Figures 1 and 2.

   b. Perform a visual inspection of the aircraft skin in the RVSM Critical Region. If any visible damage exists within this area, consult the Learjet 20/30 Series Aircraft Structural Repair Manual (SRM-4) for acceptable tolerances and corrective action to repair the damage. All structural repairs must be done internally.

   c. Verify that any raised placards are located outside of the RVSM Critical Area defined in Figure 1.

5. Perform the Frame 5 Bulkhead Modification Inspection as defined in Section III.L and Figure 3 using the specified procedures and record the results in the aircraft maintenance records.

6. Verify that the autopilot maintenance and rigging checks defined in Section III.J have been successfully completed.

7. Perform the in-flight autopilot altitude hold check described in Section III.K. Verify that the airplane can maintain the specified tolerance. Document the autopilot configuration by completing the form contained in Appendix A and file a copy of the signed form in the aircraft maintenance records.

Tests/Inspections (2) and (3) above must be performed with the aircraft at ambient temperature (10-35°C). The aircraft does not need to be jacked or leveled to perform these inspections/tests except as noted in task (3) above. No access or inspection panels are required to be opened in order to perform these inspections and tests except as noted in task (3) above.

C. Owner/Operator Requirements Prior to RVSM Operational Approval

In addition to completing the inspections/tests listed in Section III.B, the following items must be accomplished by the owner/operator in order to achieve RVSM operational approval:

1. Verify that all flight crews are familiar with operational conditions and procedures presented in the Airplane Flight Manual Supplement (AFMS) and all other contingencies necessary for the safe operation of the Learjet 23 aircraft with the FC-110 autopilot and IS&S air data system in RVSM airspace. Flight crews should be knowledgeable of the contingency and other procedures unique to the specific areas of operation. These contingencies and procedures may be different from region to region (i.e. Domestic United States, North Atlantic, Europe, and the Pacific).

2. Verify that all maintenance personnel are trained and approved to perform the maintenance and inspections specified in this document in order to maintain and return the aircraft to service for RVSM operations.

D. Requirements for Continued Airworthiness

In order to maintain the RVSM compliance of the aircraft, the following inspections/tests must be completed in accordance with the schedule shown.

1. Twelve (12) Month / 300 Hour Inspection Requirements

After initial airworthiness approval has been granted, the following tasks must be performed every 300 hours or 12 months in service, whichever occurs first:

1. Verify the correct avionics components are installed in accordance with Section II.C, Table 1.

2. Perform an air data system check in accordance with Section III.G using calibrated ground test equipment, and verify the air data system errors are within RVSM tolerances specified in Table 2. The RVSM tolerances specified in Table 2 will verify proper implementation of the static source error correction in the Configuration Modules (CM1 and CM2).

3. Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section III.H and record the results in the aircraft maintenance records. This inspection requires that the aircraft be jacked and leveled and that the rear access door be opened to verify that the aircraft is level.

NOTE: Rosemount Pitot/Static Probes shall be replaced every 10,000 flight hours.

4. Perform the following inspections for the RVSM Critical Region as defined in Section III.I and Figure 1:

   a. Ensure that the RVSM Critical Region corner markings and placard as defined in Section III.I, Figures 1 and 2 are in good condition.

   b. Perform a visual inspection of the aircraft skin in the RVSM Critical Region. If any visible damage exists in the area specified, consult the Learjet 20/30 Series Aircraft Structural Repair Manual (SRM-4) for acceptable tolerances and corrective action to repair the damage. All structural repairs must be done internally.

   c. Verify that any raised placards are located outside of the RVSM Critical Area as defined in Figure 1.

2. Twenty-Four (24) Month / 600 Hour Inspection Requirements

In addition to the Tasks required every 12 months / 300 hours in service (See Section III.D.1), the following additional tasks must be completed every 600 hours or 24 months in service, whichever occurs first:

1. Perform the in-flight autopilot altitude hold check described in Section III.K. Verify the airplane can maintain the specified tolerance. Document the autopilot configuration by completing the form contained in Appendix A and file a copy of the signed form in the aircraft maintenance records.

2. Perform a Mach/Overspeed Warning System Check per Section XVI of the Maintenance Manual Supplement (Avcon Doc. No. 00307016).

E. Pitot-Static Probe Removal, Replacement / Rework and Repainting of RVSM Critical Region

If the pitot-static probes are removed, replaced and/or reworked or if the RVSM Critical Region is repainted, the following tasks must be completed:

1. If the pitot-static probes are removed, replaced and/or reworked perform the following:

   a. Perform an air data system check in accordance with Section III.G using calibrated ground test equipment, and verify the air data system errors are within specified RVSM tolerances specified in Table 2. The RVSM tolerances specified in Table 2 will verify proper implementation of the static source error correction in the Configuration Modules (CM1 and CM2).

   b. Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section III.H and record the results in the aircraft maintenance records. This inspection requires that the aircraft be jacked and leveled and that the rear access door be opened to verify that the aircraft is level.

2. If the RVSM Critical Region is repainted, perform the following inspections

   a. Ensure that the RVSM Critical Region corner markings and placard as defined in Section III.I, Figures 1 and 2 are visible and legible.

   b. Perform a visual inspection of the aircraft skin in the RVSM Critical Region. If any visible damage exists in the area specified, consult the Learjet 20/30 Series Aircraft Structural Repair Manual (SRM-4) for acceptable tolerances and corrective action to repair the damage. All structural repairs must be done internally.

   c. Verify that any raised placards are located outside of the RVSM Critical Area as defined in Figure 1.

F. Damage within the RVSM Critical Region

If damage is sustained within the RVSM Critical Region defined in Figure 1, repair in accordance with the procedures and practices outlined in the Learjet 20/30 Series Aircraft Maintenance Manual and/or Structural Repair Manual (SRM-4). All structural repairs must be done internally. After the repair is completed, the following tasks must be completed:

1. If the pitot-static probes are removed, replaced and/or reworked perform the tasks outlined in Section III.E(1) of this document.

2. If the RVSM Critical Region is repainted, perform the tasks outlined in Section III.E(2) of this document.

G. Air Data System Maintenance Procedures

The ADDU's and associated air data system equipment must be maintained in accordance with the manufacturer's Maintenance Manual, Airplane Maintenance Manual and appropriate regulations. However, these components must also meet the accuracy tolerances shown in Table 2, when installed in the aircraft as a part of the total altimetry system.

Test Procedure

Equipment Required:

Calibrated Digital Air Data Test Equipment with a combined accuracy/repeatability specification of less than ± 20 ft for the test altitude range shown in Table 2.

This test must be performed on the aircraft using a calibrated digital air data test equipment, and is to be performed for both pilot and copilot air data systems. Tests must be performed at ambient temperature (10° - 35° C).

1. Verify Static Port Switch is in its normal (Centered on Both) position.

2. Perform a pitot-static system leak check as described in the Avcon Maintenance Manual Supplement (00307016, Sections VIII and IX) with the following changes:

   a. For static system leak test, set the air data test unit at 30,000 ft and an indicated airspeed of 200 knots. Static leak rate is not to exceed 300 ft/min.

   b. For the pitot system leak test, set the air data test unit to an indicated airspeed of 300 knots and vent the static pressure to ambient conditions. Pitot leak rate is not to exceed 5 knots in 5 minutes.

3. After the leak checks have been successfully completed, verify that the altitude baro indicator is set to 29.92 in. Hg (1013.25 mb).

4. Apply the reference altitude and Mach (or airspeed) for the test conditions listed in Table 2.

5. Record the altitude displayed by the pilot's and copilot's altimeters.

6. Verify that the indicated altitudes are within allowable tolerances.

7. Repeat steps 4 through 6 for all test conditions listed in Table 2.

8. File a copy of the test results with the aircraft's maintenance records.

If either the pilot or copilot's ADDU do not meet the tolerances specified in Table 2, see Troubleshooting Information in Section III.M.

Leak Rate:								
Condition Number	Test Set Mach Number	Test Set Airspeed (kt)	Test Set Altitude (ft)	Pilot Altitude (ft)	Copilot Altitude (ft)	Minimum Allowable Altitude (ft)	Nominal Altitude (ft)	Maximum Allowable Altitude (ft)
1	0.000	0	0			-38	0	29
2	0.150	100	0			-38	0	29
3	0.300	200	0			-38	0	29
4	0.450	300	0			-38	0	29
5	0.400	149	29,000			28962	29000	29,029
6	0.500	188	29,000			28931	28969	28,998
7	0.600	228	29,000			28903	28941	28,970
8	0.700	268	29,000			28876	28914	28,943
9	0.750	289	29,000			28883	28921	28,950
10	0.810	315	29,000			28942	28980	29,009
11	0.400	130	35,000			34962	35000	35,029
12	0.500	164	35,000			34933	34971	35,000
13	0.600	199	35,000			34906	34944	34,973
14	0.700	235	35,000			34880	34918	34,947
15	0.750	253	35,000			34887	34925	34,954
16	0.810	276	35,000			34943	34981	35,010
17	0.400	116	40,000			39962	40000	40,029
18	0.500	146	40,000			39933	39971	40,000
19	0.600	177	40,000			39906	39944	39,973
20	0.700	209	40,000			39881	39919	39,948
21	0.750	225	40,000			39888	39926	39,955
22	0.810	245	40,000			39943	39981	40,010
23	0.400	91	50,000			49962	50000	50,029
24	0.500	115	50,000			49933	49971	50,000
25	0.600	140	50,000			49906	49944	49,973
26	0.700	165	50,000			49881	49919	49,948
27	0.750	178	50,000			49888	49926	49,955
28	0.810	194	50,000			49943	49981	50,010

Air Data Test Set Information	
Manufacturer:	Model:
Serial Number:	Date of Calibration:
Accuracy Specification:	

Table 2, ADDU Functional Check Specification

H. Pitot-Static Probe Inspection and Installation Angle Measurements

NOTE: Rosemount Pitot/Static Probes shall be replaced every 10,000 flight hours.

Section X of the Avcon Maintenance Manual Supplement (00307016) provides the necessary instructions for maintenance and inspection of the Rosemount Pitot-Static Probes.

Section X of 00307016 provides the following:

1. The required tooling for installation and alignment of the probes;

2. Detailed instructions to inspect and align the probes;

3. Inspection intervals; and

4. Allowable limits for deformities and/or damage to the probes.

The Rosemount Pitot-Static Probe is aligned five (5) degrees ± 0.25 degrees nose down in reference to aircraft level. Verify that the difference in probe alignment between the left-hand and right-hand probes is 0.25 degrees or less. The Avcon Probe Alignment Tool incorporates a wedge so that when used the probe tool references level when the probe is properly aligned (5 degrees ± 0.25 degrees nose down). This inspection requires that the aircraft be jacked and leveled and must be performed at ambient temperature (10° - 35°C).

I. Visual Inspection of the Region Surrounding the Pitot-Static Probes (RVSM Critical Region)

Inspection Procedure

Equipment Required: None.

The corners of the RVSM Critical Region must be marked to make the region easily identifiable. The size, shape and color of the markings are to be determined by the organization installing the markings, with the only requirement being that they are recognizable and understandable to an individual performing the inspections.

Figure 1 defines the RVSM Critical Region. The RVSM Critical Region extends 18 inches forward, and 12 inches above, below, and behind each pitot-static probe. A placard, as shown in Figure 2, with the following wording must be installed on the aircraft as shown in Figure 1:

Modifications to the Exterior of the
Aircraft May Affect RVSM Certification.
Refer to Avcon Industries Doc. No.
00307015 for Requirements..

Prior to all flights, the flight crew must visually inspect the RVSM Critical Region for obvious damage or deformation, such as paint chips, creases, dents or bulges in the skin or non-flush or missing fasteners due to foreign object damage, service vehicles, etc. The pitot-static probes must be inspected for corrosion or deformation and the flight crew must ensure that no foreign matter is found within the port orifices.

If damage or surface irregularities are found within the RVSM Critical Region, verify that the damage is less than the tolerances specified in the Structural Repair Manual prior to RVSM operations. If damage is outside the Structural Repair Manual limits, repair the damage in accordance with the practices and procedures outlined in the Learjet 20/30 Series Aircraft Maintenance Manual and/or Structural Repair Manual. After the repair is completed, perform the tasks and inspections outlined in Section III.F prior to RVSM operations.

If damage or surface irregularities are found on the pitot-static probe, verify that the damage is less than the tolerances specified in the Avcon Maintenance Manual Supplement (00307016). If damage is outside the limits, replace the probe in accordance with the practices and procedures outlined in 00307016. After the repair is completed, perform the tasks and inspections outlined in Section III.F prior to flight operations.

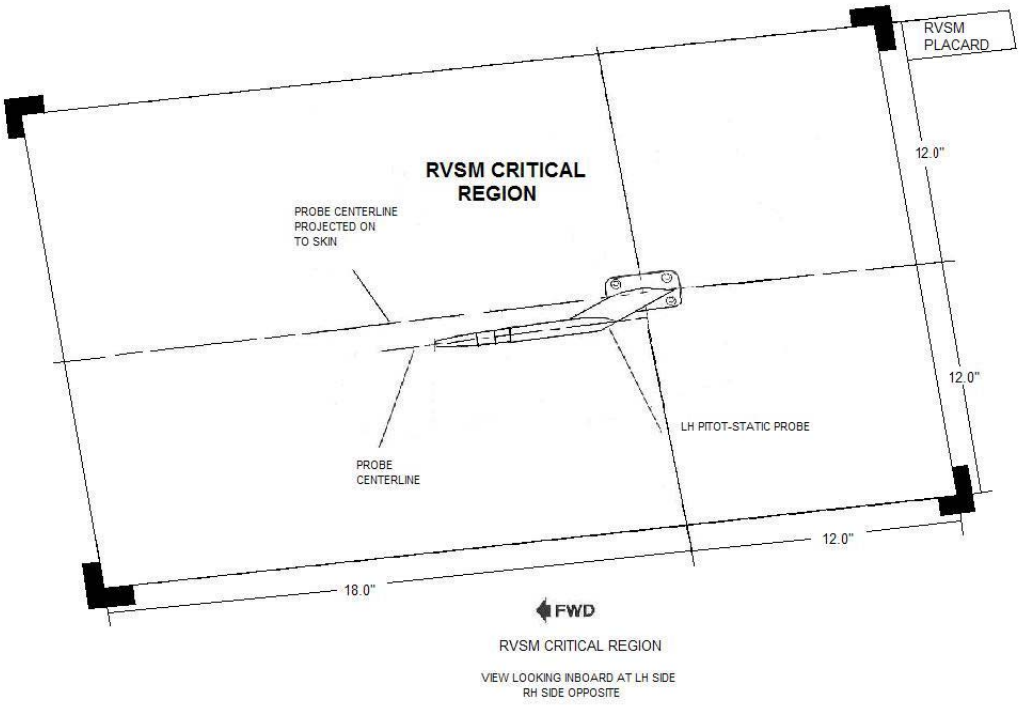

Figure 1, RVSM Critical Region Definition, Left Side Shown

Modifications to the Exterior of the Aircraft May Affect RVSM Certification. Refer to Avcon Industries, Inc. Doc. No. 00307015 for Requirements

Figure 2, RVSM Critical Region Placard

J. Autopilot Maintenance and Rigging Checks

The Avcon Maintenance Manual Supplement (00307016) provides detailed instructions that need to be performed for the maintenance/testing of the autopilot. See Sections IX and XV of 00307016 for autopilot checks related to RVSM. There are no special mechanical requirements for autopilot maintenance. To the extent that any abnormality may exist, have the flight computer tested by an authorized repair facility. The autopilot computer is specific to the aircraft. Do not use an autopilot computer that has not been configured for the applicable aircraft. Document the autopilot configuration by completing the form contained in Appendix A and file a copy of the signed form in the aircraft maintenance records.

Avcon Document 00307016 provides instructions for maintenance of the flight controls/ autopilot rigging. See Section XV of 00307016 for detailed instructions. The aircraft must be rigged in accordance with the specifications of the applicable Learjet Maintenance Manual.

K. Autopilot (Altitude Hold) Performance Test

RVSM operation requires that the autopilot system accurately maintain the assigned altitude during non-turbulent, non-gusty cruise flight. Perform the following in-flight altitude hold performance test every twenty-four (24) months. If the aircraft fails to hold altitude to the tolerances specified, see Troubleshooting Information Section III.M.

Test Procedure

Equipment Required: None.

During normal RVSM cruise flight (at an altitude between FL290 and FL410, Baro settings of 29.92 in Hg or 1013 mb and non-turbulent, non-gusty conditions) and with the autopilot/altitude hold engaged, record the data from the primary displays (using Table 3) every 5 minutes for a flight segment of at least 30 minutes in length. The maximum altitude deviation shown on the display should not exceed $\pm$65 ft of the acquired altitude.

Airplane / Destination:				Date:			
Pilot:				Copilot:			
Time (hr:min)	Pilot's Altimeter	Copilot's Altimeter	Standby Altimeter	Pilot's Mach	Copilot's Mach	Pilot's Airspeed	Copilot's Airspeed
0:00							
0:05							
0:10							
0.15							
0:20							
0:25							
0:30							
0:35							
0:40							
0:45							
0:50							
0:55							
1:00							

Table 3, RVSM Autopilot Performance Check Table, Aircraft Cruise Conditions

L. Frame 5 Bulkhead Feedthru Inspection

In order to complete the inspection requirements of the Supplemental Structural Inspection Program (SSIP), the following non-destructive testing procedures shall be used:

General Visual – The purpose of the general visual inspection is to check for cracks and corrosion in the pressure bulkhead web around the feed-thru holes and first row of attachments as shown in the figure on the following page (Figure 3).

Procedures

Perform general visual inspection using the Visual Inspection Criteria defined in Section III.A of this document.

The inspection of the Frame 5 pressure bulkhead must be carried out in conjunction with the standard requirements of Learjet.

1. The bulkhead web and doubler areas must be free from sealer and paint and the bulkhead connectors and fitting must be removed to allow full inspection of the web and doublers. Primer is acceptable. This inspection does not require the removal of any permanent fasteners (rivets).

2. Carry out general visual inspection of all riveted structure added by this modification. Inspection is to determine the general condition of the structure in terms of cracking, corrosion, general deterioration, and the condition of the fasteners. The surface is to be free from cracks, distortion, dents, scores, and chafing.

3. Visually inspect bulkhead web at all perimeter fastener penetrations (rivets) that attach the doublers to the bulkhead.

4. Visually inspect area surrounding the feed-thru cutouts.

   If cracks or corrosion are found, immediately notify Avcon Industries, Inc. The cracks or corrosion must be evaluated prior to returning the airplane to service. Any repairs required must be accomplished in accordance with FAA approved design data.

5. Re-finish and re-protect any structure exposed for this inspection.

6. Re-install bulkhead connector and tighten jam nut to between 25 and 30 inch-pounds.

7. Refit and function test all equipment removed for access.

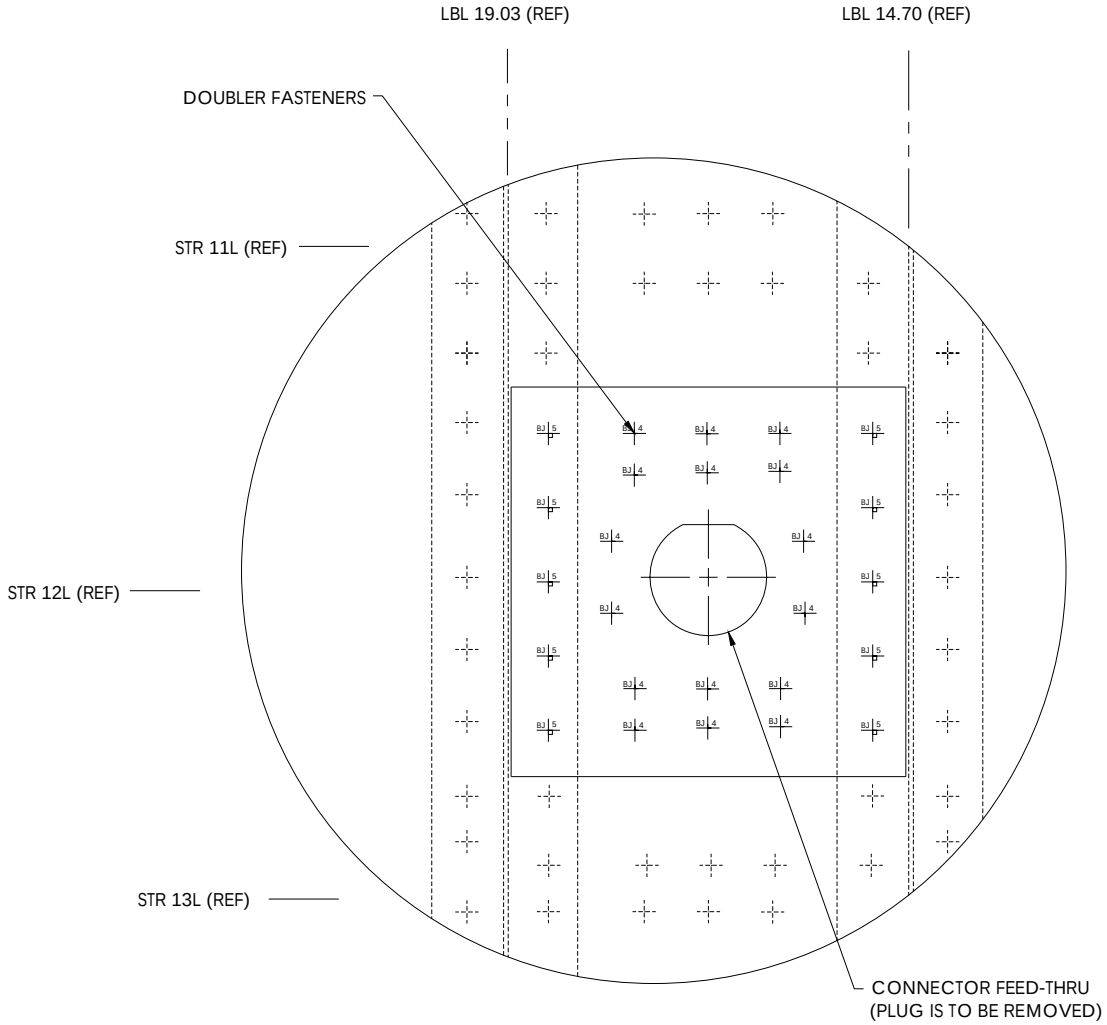

Figure 3, Frame 5 Inspection Areas

M. Troubleshooting Information

The following information provides troubleshooting information and instructions for corrective action upon failure of the RVSM Air Data System, its associated components and/or the inspections/tests presented in this document.

1. Air Data System

If the air data system is found to exceed the requirements of Table 2, service the pitot-static system in accordance with the maintenance manual. Check and drain the pitot-static lines, perform a leak check (using the leak rate tolerance specified in Section III.G of this document, and repeat the RVSM air data ground test in accordance with the procedures provided in Section III.G of this document. If the requirements of Table 2 are again exceeded, service the ADDU's per the manufacturer's service requirements. The serviced units must be re-tested upon re-installation in the airplane per the requirements of Section III.G of this document.

2. RVSM Critical Region Inspection

If a visual inspection of the RVSM Critical Region defined in Section III.I and Figure 1 of this document indicates that damage, deformation, repairs, etc. exists that may impact air data system accuracy, then RVSM operations are not permitted and the operator should perform inspection/repairs per the maintenance and/or structural repair manuals.

3. Pitot-Static Probe Inspection

If the pitot-static probe condition fails any of the inspections defined in Section III.H of this document, service or replace the pitot-static probe as specified. If the pitot-static probe installation angles are measured as defined in Section III.H and found to be out of tolerance, readjust the probes alignment and repeat the measurement process. If the probes are still outside the allowable installation angle tolerances, the performance of the probes must be re-evaluated on a system level, to determine basic airworthiness compliance. Contact Avcon Industries for assistance.

4. Autopilot (Altitude Hold) Check

If the aircraft cannot maintain altitude to within ±65 ft from the acquired cruise altitude with the autopilot altitude hold engaged, repeat the autopilot check per Section III.K of this document ensuring the Mach number remains constant and the air remains stable during the entire check. If the aircraft still fails this check, perform autopilot component and/or servicing checks as specified in Section III.J of this document. Repeat the test in accordance with Section III.K of this document, as required, ensuring the altitude hold accuracy is maintained

N. Installation/Removal of RVSM-Relevant Components

Installation and/or removal of all avionics equipment should be performed in accordance with current maintenance practices. An air data systems check as defined in Section III.G of this document shall be performed upon removal and/or installation of an ADDU. A static leak check, per the Avcon Maintenance Manual Supplement (00307016), must be accomplished any time an ADC or the Standby Altimeter is removed and replaced, as well as any time a static or pitot line connection is loosened.

IV Summary of Operational Requirements and Conditions

The Learjet 23 aircraft must incorporate the required operational conditions and special flight crew training to ensure compliance with RVSM altimetry system accuracy and integrity requirements during RVSM operations.

A. Pre-Flight Inspection of the RVSM Critical Region

A pre-flight inspection of the RVSM Critical Region is required prior to flight operations. This preflight inspection is contained in the Airplane Flight Manual Supplement.

B. ADDU1, ADDU2 or AIU Failure

In case of ADDU1, ADDU2, or AIU failure, a series of steps must be taken by the pilot to ensure the airplane can appropriately maintain altitude for the remainder of the flight. These steps are summarized in the AFM supplement.

C. Detection of Dual Altitude Display Fault

To ensure a dual display fault in the air data system remains detectable, the pilot shall note the difference between the primary altimeters, and the difference between each primary altimeter and the standby altimeter, prior to entry into RVSM airspace. The pilot should also note the airspeed/Mach number.

During RVSM operations, at intervals of one hour, a cross-check between the primary altimeters and the standby altimeter must be performed. The two primary altimeters must agree within ±200 ft. Failure to meet the ±200 ft tolerance requires the initiation of the appropriate RVSM contingency procedures. Table 4 may be used to record these altitude comparison data. The difference between the altitude displayed on each of the primary altimeters and the standby altimeter should remain constant at a constant Mach number.

Date:				Flight Crew:		
Departure:				Destination:		
Time (Hours)	Time (GMT)	Pilot Mach	Pilot Alt	Copilot Mach	Copilot Alt	Standby Alt
Initial RVSM Altitude						
1						
2						
3						
4						

Table 4, Altimeter Display Tracking Form

D. Flight Crew Training

Verify that all flight crews are familiar with operational conditions and procedures presented in the Airplane Flight Manual Supplement (AFMS) and all other contingencies necessary for the safe operation of the Learjet 23 aircraft within RVSM airspace. Flight crews should be knowledgeable on the contingency and other procedures unique to the specific areas of operation. These contingencies and procedures may be different from region to region (i.e. Domestic United States, North Atlantic, Europe, and the Pacific). The operations manual should be revised to include these RVSM specific limitations and/or procedures, if necessary.

V APPENDIX A

Learjet Model 23 Series Aircraft

Autopilot Inspection Form

Aircraft Serial Number _____

The installed FC-110 autopilot components listed below have been verified to comply with RVSM aircraft requirements. These components have been tested to show compliance with the applicable requirements of Avcon Industries STC No. TBD.

FC-110 Autopilot	P/N	S/N
Computer		

Any changes to the aircraft modification status affecting the autopilot or changes to the autopilot configuration will require additional testing by Avcon Industries to show compliance with STC No. TBD.

Approved by: _____ Date: _____

Inspection Department

Avcon Industries, Inc.