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Avcon Industries, Inc.

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INSTRUCTIONS FOR INITIAL AND CONTINUED AIRWORTHINESS FOR LEARJET 30 SERIES AIRCRAFT WITH THE FC-200 OR THE FC-530 AUTOPILOT QUALIFIED FOR OPERATIONS IN REDUCED VERTICAL SEPARATION MINIMUM (RVSM) AIRSPACE

Model No.: _____

Aircraft S/N: _____

The information in the Instructions for Continued Airworthiness is FAA approved material and complies with 14 CFR 25.1529, Instructions for Continued Airworthiness. It must be used in conjunction with Avcon Document AI 202057-2 Maintenance Manual Supplement and supersedes or adds to that provided in the basic Maintenance Manual for the Learjet 30 Series Aircraft, only where covered in the items contained herein. For limitations and procedures not contained in this Supplement, consult the Component Maintenance Manual, or other approved airplane data.

Approved by:

Scott West
Rev: B September 28, 2006

Avcon Industries, Inc.
P.O. Box 748
Newton, KS 67114
(316) 284-2842

Document Control Page

Document: Instructions for Initial and Continued Airworthiness for Learjet 30 Series Aircraft with the FC-200 or the FC-530 Autopilot Qualified for Operations in Reduced Vertical Separation Minimum (RVSM) Airspace

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Prepared and Reviewed By:
Brett J. Hudson
Project Lead Engineer
Butler National Corporation

Reviewed and Approved By:
C. Todd Hembree
Chief Engineer, Structures
Butler National Corporation

Reviewed and Approved By:
Scott West
Vice-President, Engineering
Butler National Corporation

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Abbreviation	Description
ADC	Air Data Computer
ADDU	Air Data Display Unit
AFM	Aircraft Flight Manual
14 CFR	Title 14 of the Code of Federal Regulations
CM	Configuration Module
DME	Distance Measuring Equipment
FAA	Federal Aviation Administration
FL	Flight Level
ft	feet
FSDO	Flight Standards District Office
hr	Hours
in. Hg	Inches of Mercury
kt	knots
LH	Left Hand Side
mb	millibars
min	Minutes
M_{MO}	Maximum Operating Mach Number
PMA	Parts Manufacturer Authorization
P/N	Part Number
RH	Right Hand Side
RVSM	Reduced Vertical Separation Minimum
SRM	Structural Repair Manual
TSO	Technical Standard Orders

1 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 30 Series Maintenance Manual.

1.1 Frame 5 Bulkhead Feed-thru Inspections (per Section 3.12)

Modification per Avcon Dwg. No. 24251126 Rev. E 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)

FAA Approved: Margaret Kline Date: 6/28/06

Margaret Kline
Aircraft Certification Office
Federal Aviation Administration
Wichita, KS

2 Aircraft Configurations / System Description

2.1 Introduction

The Learjet 30 Series aircraft have been shown to qualify for normal flight operations per Title 14 of the Code of Federal Regulations (14CFR), Part 25 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 30 Series aircraft with the FC-200 or the FC-530 autopilot 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 3.4 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.

2.2 Aircraft Configuration

The Learjet 30 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 an independent static source. The installation and operation of these systems have been shown to meet RVSM requirements.

The Learjet 30 Series aircraft are equipped with two Garrett TFE731 turbofan engines and certified to 45,000 feet and M_{MO} = 0.81 (based on the new Pitot-Static Probe Installation). Any future engine changes/modification 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 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.

8. 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).
9. Having no ADF blade antennas installed is also acceptable.
10. Two Teledyne Angle of Attack Cones 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 5 inches aft of the radome at fuselage clock positions 3:30 and 8:30.
12. 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.

2.3 Avionics System Description

Static pressure information is provided to the Kollsman Air Data Computer (ADC) for display on the Thommen Revue Air Data Display (Altimeter) through cross-coupled, probe-mounted static sources located on the left and right sides of the fuselage. The ADC uses an Aircraft Type Specification Module (ATSM) to provide static source error correction and corrected altitude for display on the Altimeters. The autopilot and altitude controller/alerter receive altitude deviation data from the pilot or the copilot's ADC. Both the pilot and copilot's ADC can provide altitude data to either transponder for altitude reporting. The aircraft system components approved for RVSM operations on the Learjet 30 Series aircraft with the FC-200 autopilot are presented in Table 2.1. Learjet 30 Series aircraft with the FC-530 autopilot are presented in Table 2.2.

The components listed in Table 2.1 and Table 2.2 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 2.1 (FC-200 autopilot) or Table 2.2 (FC-530 autopilot). This document is invalid unless these components have been installed per Avcon Drawings 24251100 and 24251101 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.

TABLE 2.1 Required Components for RVSM Operation on a Learjet 30 Series Aircraft with FC-200 Autopilot

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 Computer(1)	Kollsman / ADC	24251148-102(5)	2
SSEC Configuration Module(1)	Kollsman / ATSM	24251149-104(5)	2
Altitude Display with integral automatic altitude control and alert system(1)	Thommen / AD30	AD30.42.53F.05.1.AC	2
Standby Altimeter(1)(3)	Aerosonic	16650-1150	1
Autopilot(2)	Goodrich / JET FC-200	~	1
Autopilot Computer(2)	Goodrich / JET Controller	501-1108-06	1
Transponder(2)(4)	Various	Various	2
Isolation Valves(1)	Dukes	24251139-101(5)	4

Notes:

1. Equipment installed in accordance with Avcon STC ST01195WI updated to incorporate the installation of new ADC's and Air Data Displays.
2. Existing equipment.
3. Any altimeter that meets or exceeds the requirements of Technical Standard Order (TSO) C10b may be installed.
4. Any transponder that meets or exceeds the requirements of one of the following Technical Standard Orders may be installed: TSO-74c or TSO-C112.
5. The component is marked with an Avcon Part number.

TABLE 2.2 Required Components for RVSM Operation on a Learjet 30 Series Aircraft with FC-530 Autopilot

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 Computer(1)	Kollsman / ADC	24471	2
SSEC Configuration Module(1)	Kollsman / ATSM	20718-0014	2
Altitude Display(1)	Thommen / AD30	AD30.42.53F.05.1.AH	2
Automatic Altitude Control and Alert System(2)	IDC	540-23989-500(5)	1
Standby Altimeter(1)(3)	Aerosonic	16650-1150	1
Autopilot(2)	Goodrich / JET FC-530	~	1
Air Data Unit(2)	Kollsman Autoflight Air Data Sensor	621-39380-103	1
Autopilot Computer(2)	Goodrich / JET Controller	501-1356-()	1
Transponder(2)(4)	Various	Various	2
Isolation Valves(1)	Learjet or Kaiser Aerospace	6600473-1 or AF56C-384	4

Notes:

1. Equipment installed in accordance with Avcon STC ST01195WI updated to incorporate the installation of new ADC's and Air Data Displays.
2. Existing equipment.
3. Any altimeter that meets or exceeds the requirements of Technical Standard Order (TSO) C10b may be installed.
4. Any transponder that meets or exceeds the requirements of one of the following Technical Standard Orders may be installed: TSO-74c or TSO-C112.
5. Existing IDC part modified to alert at ±200 feet per Avcon Drawing 24251167.

3 Maintenance Instructions

The following inspections, tests, and/or procedures must be included in the basic maintenance plan for the Learjet 30 Series aircraft with the FC-200 or the FC-530 autopilot 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.

3.1 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:

1) Cleanliness, external signs of damage, leaks, overheating, discharge, or fluid contamination.
2) Obstruction of drainage or vent holes.
3) Correct seating and sealing of fairings and serviceability of fasteners.
4) Security of attachment, fasteners, and connections.
5) Distortion, dents, scores, chafing, pulled or missing fasteners, rivets, bolts, or screws.
6) Signs of cracks or wear.
7) Separation of bond.
8) Failure of welds or spot welds.
9) Deterioration of protective treatment and corrosion.

2. 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:

(a) Lack of adhesion of the paint or sealant.
1) This condition could indicate the presence of surface corrosion under the paint film or sealant

(b) Bubbles of the paint film or sealant.
1) 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.

(c) Signs of corrosion on the edge of any member where it joins the skin.
1) 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.

3.2 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 2.3, Table 2.1 (FC-200 autopilot) or Table 2.2 (FC-530 autopilot) and that all required/appropriate Maintenance Manual Supplement (Avcon Doc. No. AI 202057-2) Installation Functional Checks have been successfully performed.

2. Perform an air data system check in accordance with Section 3.7 using calibrated ground test equipment, and verify the air data system errors are within RVSM tolerances specified in Table 3.1. The RVSM tolerances specified in Table 3.1 will verify proper implementation of the static source error correction in the Aircraft Type Specification Modules (ATSM #1 and ATSM #2).

3. Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section 3.8 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 3.9 and Figure 3.1:

   (a) Ensure that the RVSM Critical Region is identified with corner markings and placard as defined in Section 3.9 and Figures 3.1 and 3.2. 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.

   (b) Verify that any raised placards are located outside of the RVSM Critical Area defined in Figure 3.1.

5. Perform the Frame 5 Bulkhead Modification Inspection as defined in Section 3.12 and Figure 3.3 using the specified procedures and record the results in the aircraft maintenance records.

6. Perform an Isolation Valve Check per Section 13 of the Maintenance Manual Supplement (Avcon Doc. No. AI 202057-2).

7. Verify that the autopilot maintenance and rigging checks defined in Section 3.10 have been successfully completed.

8. Perform the in-flight autopilot altitude hold check described in Section 3.11. 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.

3.3 Owner/Operator Requirements Prior to RVSM Operational Approval

In addition to completing the inspections/tests listed in Section 3.2, 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 30 Series aircraft with the FC-200 or the FC-530 autopilot 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.

3.4 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.

3.4.1 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 2.3, Table 2.1 (FC-200 autopilot) or Table 2.2 (FC-530 autopilot).

2. Perform an air data system check in accordance with Section 3.7 using calibrated ground test equipment, and verify the air data system errors are within RVSM tolerances specified in Table 3.1. The RVSM tolerances specified in Table 3.1 will verify proper implementation of the static source error correction in the Aircraft Type Specification Modules (ATSM #1 and ATSM #2).

3. Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section 3.8 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 3.9 and Figure 3.1:

   (a) Ensure that the RVSM Critical Region corner markings and placard as defined in Section 3.9, Figures 3.1 and 3.2 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 3.1.

5. Perform the Frame 5 Bulkhead Modification Inspection as defined in Section 3.12 and Figure 3.3 using the specified procedures and record the results in the aircraft maintenance records.

6. Perform an Isolation Valve Check per Section 13 of the Maintenance Manual Supplement (Avcon Doc. No. AI 202057-2).

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

In addition to the Tasks required every 12 months / 300 hours in service (See Section 3.4.1), 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 3.11. 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 16 of the Maintenance Manual Supplement (Avcon Doc. No. AI 202057-2).

3.4.3 Twenty-Four (24) Month Equipment Inspection Requirements

The Thommen AD30 Altimeter must be recalibrated at 24-month intervals to be used for RVSM operation.

The maintenance of the AD30 Altimeter should be performed by the manufacturer representative or certified representative and can be performed on the ramp. ADAC32 Maintenance Manual describes software installation, the required maintenance files, and the performance range of the instrument.

Equipment Required:

1) RS232 Serial Data Cable
2) Computer with Microsoft Windows latest version
3) ADAC32 CDROM with maintenance software (version 1.02)

Before initialization and calibration of AD30 instruments, ADAC32 maintenance software must be installed. Follow the procedures in the ADAC32 Maintenance Manual for recalibration of the AD30 Altimeter.

Maintenance Mode via RS232	Allows to initialize, calibrate, configure and test the instrument via the RS232 interface and a maintenance software.
Manual Maintenance Mode	Allows to check and adjust the instrument when it's installed in the cockpit: To check all calculated air data values of the instrument at the display To adjust Null of indicated Impact Pressure Qci due to sensor drift To adjust indicated Altitude ALTi due to sensor drift To adjust pointer Null position To adjust TAT probe wire resistance To check BIT failures The Manual Maintenance Mode is be only accessible by service staff and may not be used for regular operation. SSEC is inactive in this mode!

NOTE: For clear understanding and use of the maintenance modes refer to the ADAC32 Maintenance Software Manual.

3.5 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 3.7 using calibrated ground test equipment, and verify the air data system errors are within specified RVSM tolerances specified in Table 3.1. The RVSM tolerances specified in Table 3.1 will verify proper implementation of the static source error correction in the Aircraft Type Specification Modules (ATSM #1 and ATSM #2).

   (b) Perform a Pitot-Static Probe Inspection and Installation Angle Measurement as defined in Section 3.8 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:

   (b) Ensure that the RVSM Critical Region corner markings and placard as defined in Section 3.9, Figures 3.1 and 3.2 are visible and legible.

   (c) 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.

   (d) Verify that any raised placards are located outside of the RVSM Critical Area as defined in Figure 3.1.

3.6 Damage within the RVSM Critical Region

If damage is sustained within the RVSM Critical Region defined in Figure 3.1, 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 3.5(1) of this document.

2. If the RVSM Critical Region is repainted, perform the tasks outlined in Section 3.5(2) of this document.

3.7 Air Data System Maintenance Procedures

The ADCs, Altimeters 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 3.1, 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 3.1.

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 (AI202057-2, Sections 8 and 9) with the following changes:

   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.

   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 3.1.
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 3.1.
8. File a copy of the test results with the aircraft's maintenance records.

If either the pilot or copilot's ADC and Altimeter do not meet the tolerances specified in Table 3.1, see Troubleshooting Information in Section 3.13.

Follow the procedures in the ADAC32 Maintenance Manual for procedures for recalibration of the AD30 Altimeter.

Table 3.1 ADC and Altimeter Functional Test Specification

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			-16	0	42
2	0.150	100	0			-16	0	42
3	0.300	200	0			-16	0	42
4	0.450	300	0			-20	-4	38
5	0.400	221	10,000			9,984	10,000	10,042
6	0.500	277	10,000			9,968	9,984	10,026
7	0.600	333	10,000			9,955	9,971	10,013
8	0.700	390	10,000			9,955	9,971	10,013
9	0.400	181	20,000			19,984	20,000	20,042
10	0.500	228	20,000			19,969	19,985	20,027
11	0.600	275	20,000			19,957	19,973	20,015
12	0.700	323	20,000			19,957	19,973	20,015
13	0.750	348	20,000			19,974	19,990	20,032
14	0.810	378	20,000			20,016	20,032	20,074
15	0.400	149	29,000			28,982	29,000	29,042
16	0.500	188	29,000			28,969	28,987	29,029
17	0.600	228	29,000			28,957	28,975	29,017
18	0.700	268	29,000			28,957	28,975	29,017
19	0.750	289	29,000			28,973	28,991	29,033
20	0.810	315	29,000			29,011	29,029	29,071
21	0.400	130	35,000			34,980	35,000	35,041
22	0.500	164	35,000			34,967	34,987	35,028
23	0.600	199	35,000			34,956	34,976	35,017
24	0.700	235	35,000			34,956	34,976	35,017
25	0.750	253	35,000			34,971	34,991	35,032
26	0.810	276	35,000			35,008	35,028	35,069
27	0.400	113	41,000			40,976	41,000	41,040
28	0.500	142	41,000			40,963	40,987	41,027
29	0.600	173	41,000			40,953	40,977	41,017
30	0.700	204	41,000			40,952	40,976	41,016
31	0.750	220	41,000			40,967	40,991	41,031
32	0.810	240	41,000			41,004	41,028	41,068
33	0.400	103	45,000			44,942	45,000	45,073
34	0.500	129	45,000			44,929	44,987	45,060
35	0.600	157	45,000			44,919	44,977	45,050
36	0.700	186	45,000			44,918	44,976	45,049
37	0.750	200	45,000			44,933	44,991	45,064
38	0.810	218	45,000			44,969	45,028	45,101

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

3.8 Pitot-Static Probe Inspection and Installation Angle Measurements

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

Section 10 of the Avcon Maintenance Manual Supplement (AI 202057-2) provides the necessary instructions for maintenance and inspection of the Rosemount Pitot-Static Probes.

Section 10 of AI202057-2 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).

3.9 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 3.1 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 3.2, with the following wording must be installed on the aircraft as shown in Figure 3.1:

> Modifications to the Exterior of the
> Aircraft May Affect RVSM Certification.
> Refer to Avcon Industries Doc. No.
> AI 202045-2 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 3.6 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 (AI 202057-2). If damage is outside the limits, replace the probe in accordance with the practices and procedures outlined in AI202057-2. After the

repair is completed, perform the tasks and inspections outlined in Section 3.6 prior to flight operations.

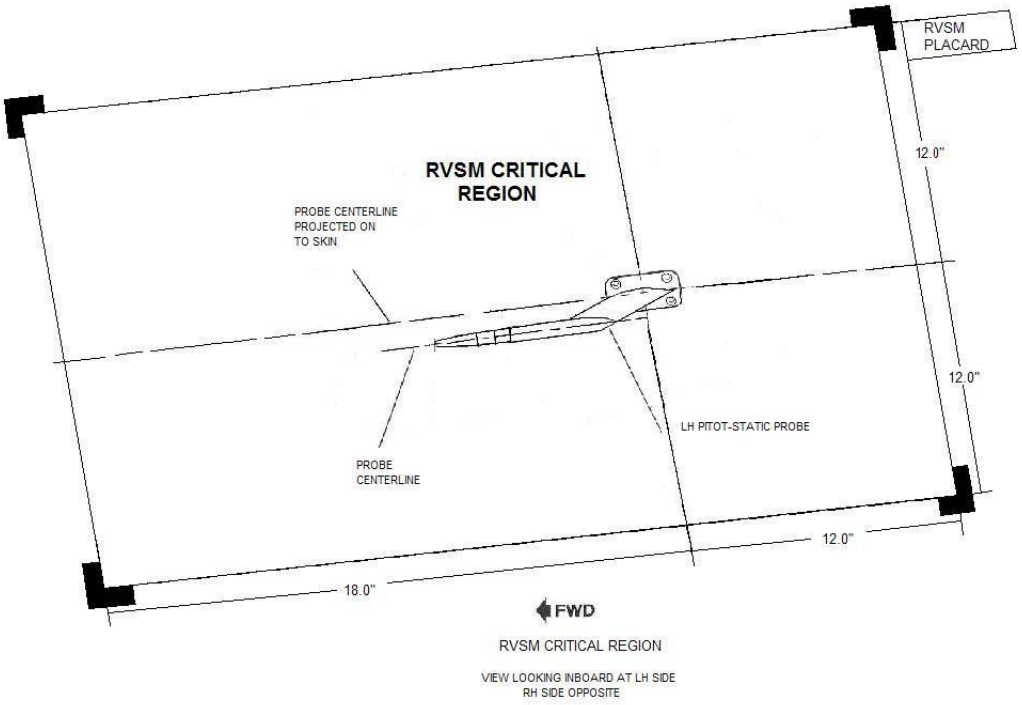

Figure 3.1 RVSM Critical Region Definition, Left Side Shown

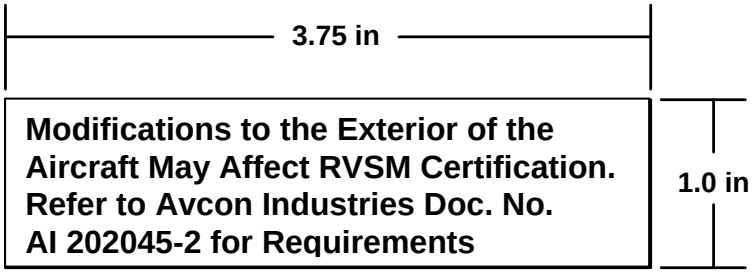

Figure 3.2 RVSM Critical Region Placard

3.10 Autopilot Maintenance and Rigging Checks

The Avcon Maintenance Manual Supplement (AI 202057-2) provides detailed instructions that need to be performed for the maintenance/testing of the autopilot. See Sections 9 and 15 of AI 202057-2 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.

AI 202057-2 provides instructions for maintenance of the flight controls/ autopilot rigging. See Section 15 of AI 202057-2 for detailed instructions. The aircraft must be rigged in accordance with the specifications of the applicable Learjet Maintenance Manual.

3.11 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 3.13.

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 3.2) 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 ±65 ft of the acquired altitude.

Table 3.2 RVSM Autopilot Performance Check Table, Aircraft Cruise Conditions

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							

3.12 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:

(a) 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 3.3).

Procedures

Perform general visual inspection using the Visual Inspection Criteria defined in Section 3.1 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.

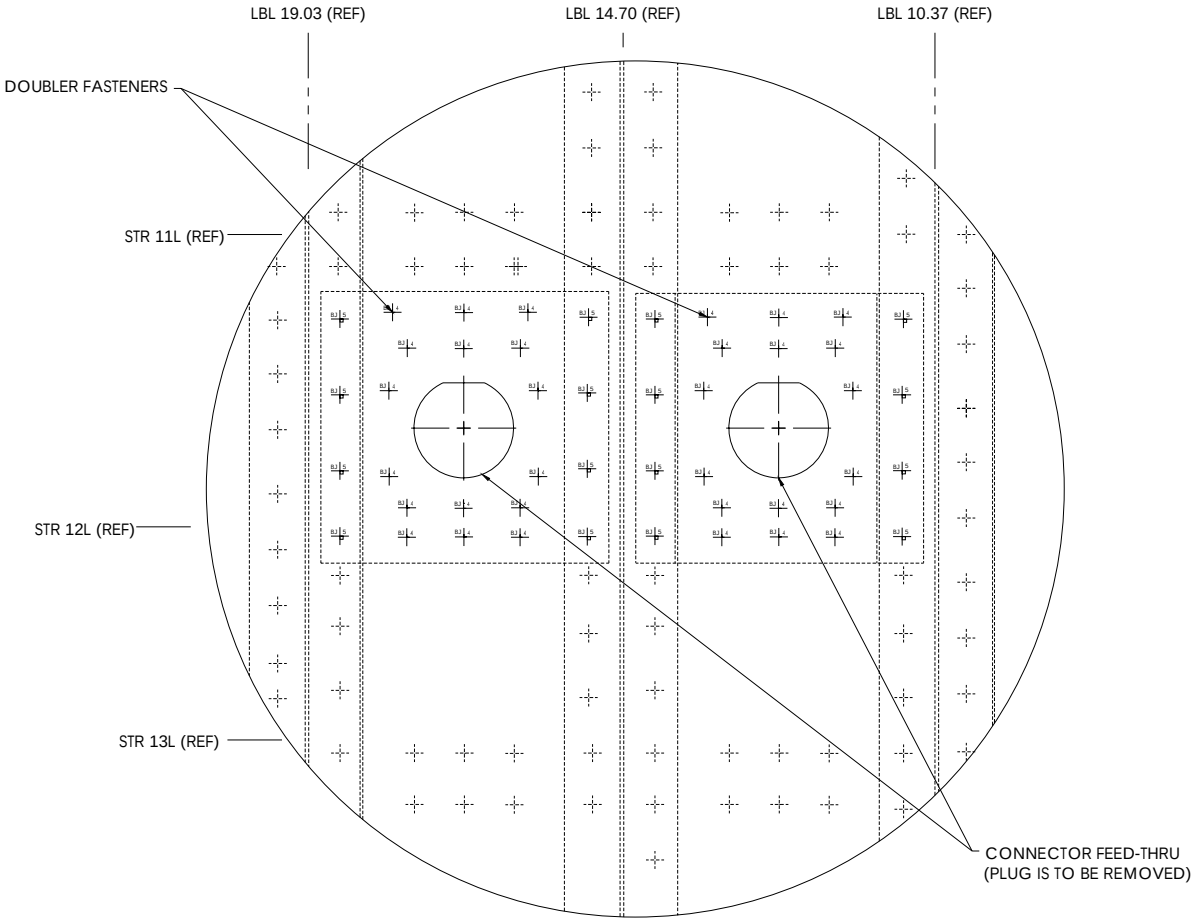

Figure 3.3 Frame 5 Inspection Areas

3.13 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.

3.13.1 Air Data System

If the air data system is found to exceed the requirements of Table 3.1, 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 3.7 of this document, and repeat the RVSM air data ground test in accordance with the procedures provided in Section 3.7 of this document. If the requirements of Table 3.1 are again exceeded, service the ADC's and/or check the calibration of the altimeters per the manufacturer's service requirements. The serviced units must be re-tested upon re-installation in the airplane per the requirements of Section 3.7 of this document.

3.13.2 RVSM Critical Region Inspection

If a visual inspection of the RVSM Critical Region defined in Section 3.9 and Figure 3.1 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.

3.13.3 Pitot-Static Probe Inspection

If the pitot-static probe condition fails any of the inspections defined in Section 3.8 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 3.8 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.

3.13.4 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 3.11 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 3.10 of this document. Repeat the test in accordance with Section 3.11 of this document, as required, ensuring the altitude hold accuracy is maintained.

3.14 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 3.7 of this document shall be performed upon removal and/or installation of an ADC. A static leak check, per the Avcon Maintenance Manual Supplement (AI 202057-2), 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.

4 Summary of Operational Requirements and Conditions

The Learjet 30 Series 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.

4.1 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.

4.2 ADC1 or ADC2 Failure

In case of ADC1 or ADC2 failure or a failure of either Altimeter, 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.

4.3 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 4.1 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.

Table 4.1 Altimeter Display Tracking Form

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						

4.4 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 30 Series 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.

Learjet Model 30 Series Aircraft
Autopilot Inspection Form

Aircraft Model _____
Aircraft Serial Number _____

The installed FC-200/FC-530 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. ST01195WI.

FC-200 / FC-530 Autopilot (circle one)	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. ST01195WI.

Approved by: _____ Date: _____
Inspection Department
Avcon Industries, Inc.