

<b>TECHNISONIC INDUSTRIES LIMITED</b>	
<b>P25 MULTI-BAND TDFM TRANSCEIVER AIRBORNE SYSTEM</b>	
<b>INSTRUCTIONS for CONTINUED AIRWORTHINESS</b>	
<b>ICA13015-1</b>	
<p>Mfg: Airbus Helicopters</p> <p>Type: AS-350</p>	<p>Prepared by: Avionics Design Services</p> <p>Checked by:           Inder Panesar          Design Manager</p> <p>Released by:           Christopher Heidel          Senior Certification Specialist</p>

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**CHAPTER 1.0 - INTRODUCTION**

**A. General**

The Technisonic Industries Limited Multi-band P25 Airborne transceiver system installation is defined by Avionics Design Services Master Drawing List MDL13015. The following equipment is installed as applicable:

CHAPTER	MAKE	MODEL / UNIT	P/N	LOCATION
23-10-00	Technisonic	TDFM-9000 Multi-band Digital FM Transceiver or TDFM-9100 Multi-band Digital FM Transceiver or TDFM-9200 Multi-band Digital FM Transceiver or TDFM-9300 Multi-band Digital FM Transceiver	TDFM-9000 or TDFM-9100 or TDFM-9200 or TDFM-9300	Instrument Panel or Pedestal
	Technisonic	RC-9000 or RC-9100 Remote Control Unit If installed	RC-9000 or RC-9100	Mission Crew Station  As per Structural Diagram 5004272 and EO13015-3 See Appendix A

CHAPTER	MAKE	MODEL / UNIT	P/N	LOCATION
23-10-00 (continued)	Comant Industries	Dual Band / Dual Port Antenna	CI- 295-250	As per Structural Diagram 5004272 See Appendix A
		Dual Band / Dual Port Antenna	CI-295-200	
		Radiophone Antenna	CI-285	
		806-870 MHz Antenna	CI-306	
		Radiophone Antenna	CI-275	
		FM 136 to 174 MHz Ext Band Antenna	CI-292-4	
FM 136 to 174 MHz Ext Band Antenna	CI-292-3			
		VHF AM 118 to 138 MHz Antenna	CI-292-1	
	Rami Antennas	VHF/UHF/700/800 Antenna	AV-925	
		UHF 225 to 400 MHz Antenna	AT-256/ARC	
		VHF/UHF Antenna	AT-1108/ARC	
	Cooper Antennas	Multi-Band FM COMM Antenna	21-50-45	
		Foxtronics	Antenna / Tuner, 30 to 50 MHz	
Sensor Systems	Alternate Antenna, 30 to 50 MHz	S65-8282-34		
	UHF AM 225 to 400 MHz Antenna	S65-8282-51		
	UHF Antenna 225 to 400 MHz	S65-1227( )		
	Comant Industries	Tri-Band/ Single Port Antenna	CI-295-300	As per Structural Diagram, MD21068. See Appendix A.

The inspection and maintenance practices described herein relate to the Multi-band P25 Airborne transceiver system installation as described above. Component part numbers and wiring diagrams are included in Appendix A.

**B. Reference Data**

- a) Access equipment in accordance with Eurocopter Description and Operation Manual, AS 350, Chapter 06.
- b) Perform all maintenance procedures in accordance with the AS350 Standard Practices Manual, Chapter 20.
- c) Refer to Appendix A for documents required to supplement the information in this manual concerning the maintenance of the above components.

C. ICA Distribution

This document, and any revisions thereto, shall be distributed to authorized users of the applicable STC data. They will be distributed by courier, in electronic format or paper format.

D. Acronyms

ATA	Airline Transport Association
AM	Amplitude Modulation
FAA	Federal Aviation Administration
FM	Frequency Modulation
MHz	Mega Hertz
RF	Radio Frequency
RX	Receive
STC	Supplemental Type Certificate
TX	Transmit
UHF	Ultra High Frequency
VHF	Very High Frequency
VHFLO	Very High Frequency Low

E. Supplement Identities: Chapter, Page, Paragraph Numbers

The supplement format follows the general requirements of iSpec ATA-2200 with respect to Chapter and Title. However, since the extent of the supplemental information is relatively small in scope, the page numbering for each chapter is consecutive. Reference can be made to the following Chapter/Subject Listing:

<u>Subject</u>	<u>Page Number</u>
Title page	0
Table of Contents, Index, Page Listing	i, ii, iii, etc.
Content page(s)	1, 2, 3, etc.

Paragraph or component titles are listed via A. B. C. D. etc.

Sub-paragraphs are listed according to:

<u>Subject</u>	<u>Sub-Para. Number</u>
Description / Operation	1.0
Troubleshooting	101
(Reserved)	201
Servicing	301
Removal / Installation	401
Adjustment / Test	501
Inspection / Check	601
Cleaning / Painting	701
Approved Repairs	801

## CHAPTER 4.0 - AIRWORTHINESS LIMITATIONS

### A. General

No airworthiness limitations associated with this type design change.

### | B. Canadian Approval

| *The Airworthiness Limitations section is approved by the Minister of Transport, and*  
| *specifies maintenance required by any applicable airworthiness or operating rule, unless*  
| *an alternative program has been approved by the Minister.*

### | C. FAA Approval

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



**CHAPTER 5.0 - TIME LIMITS/MAINTENANCE CHECKS**  
**5-20-00: SCHEDULED CHECKS**

**A. General**

Perform the following General Visual Inspections. The inspections are to be performed referencing the applicable wiring diagrams included in Appendix A. Follow standard maintenance practices of the EC AS 350 Master Servicing Recommendations, Chapter 5.20.01.

Description	Inspection	Inspection Details
Antenna Installation;	Type "T" - 500 hours  OR  Type "A" - 24 months  Whichever occurs first.	Perform general visual inspection of external skin around periphery of connector cutouts and all rivet locations. Check for damage such as fastener deterioration, skin cracks, corrosion, paint exfoliation and other signs of structural deterioration of the skin structure. Any flaw indication is cause for rejection.
TDFM-9000, TDFM-9100, TDFM-9200, or TDFM-9300 Transceiver;  Wiring;		Visually examine all external surfaces for possible damage. Check external connectors for dust, corrosion, or damage. Check external parts for loose or damaged hardware.  Make visual check of wiring and connectors for damage.
RC-9000, or RC-9100 Remote Control Unit;  Wiring;		Visually examine all external surfaces for possible damage. Check external connectors for dust, corrosion, or damage. Check external parts for loose or damaged hardware.  Make visual check of wiring and connectors for damage.

**B. Component Overhaul Schedule**

No component overhaul required for this type design change.

**CHAPTER 5.0 - TIME LIMITS/MAINTENANCE CHECKS**  
**5-50-00: UNSCHEDULED CHECKS**

**A. General**

**Hard Landing**

Perform inspection, in accordance with Eurocopter AS350 Maintenance Manual, Chapter 5-53-00 - Inspection Following An Incident, Card 05.53.00.605.

**Aircraft Struck by Lightning**

Perform inspection, in accordance with Eurocopter AS350 Maintenance Manual, Chapter 5-53-00 - Inspection Following An Incident, Card 05.53.00.609.

## CHAPTER 23.0 - COMMUNICATIONS

### 23-10-00: TDFM TRANSCEIVER

#### 1.0 Description / Operation

The TDFM-9000, TDFM-9100, TDFM-9200, or TDFM-9300 transceiver is installed in the instrument panel or pedestal. The RC-9000 remote control unit is installed as an option on secondary structure at a mission crew location.

TDFM-9000 Series is a multi-band airborne analog and digital P25 9600 trunking system FM system. Frequencies in the VHF, UHF-LO, UHF-HI and 700-800 MHz bands are supported.

TDFM-9300, or TDFM-9200 have one, or up to two analog modules installed respectively. Each analog module is in the space of two of the digital modules.

The TDFM-9000, TDFM-9200, and TDFM-9300 transceivers have a colour TFT display with data entry and function control accomplished using the 24-button keypad.

The TDFM-9100 transceiver has green LED night vision display with data entry and function control accomplished using the 18 button keypad.

The RC-9000, or RC-9100 provides transceiver functions to mission crew. The display / control panel is the same as the corresponding TDFM-9000 series transceiver(s).

#### 101. Troubleshooting

##### NOTE:

Prepare aircraft in accordance with the procedures of the AS 350 Standard Practices Manual, Chapter 20.

Condition	Action
No power.	Ensure connectors are properly affixed. Check applicable fuse(s).
Not operating correctly.	Inspect wiring and ring out harness in accordance with Avionics Design Services WD13004 and correct irregularities as required.
Not operating correctly after above action completed.	Remove in accordance with Section 401. A of this chapter and return to Technisonic Industries Ltd. for evaluation and repair.

#### 201. Reserved

Not Applicable

**301. Servicing**

There are no servicing procedures associated with the components of this chapter.

**401. Removal / Installation**

The components of this chapter are protected by the following fuses:

LABEL	AMPS	LOCATION	BUS
<b>Effectivity: Rotorcraft with Fuse Panel</b>			
FM RADIO	10 A	CENTER CONSOLE, FUSE PANEL	28VDC PP6 BUS
FM CONTROL (IF INSTALLED)	2.5 A	CENTER CONSOLE, FUSE PANEL	28VDC PP6 BUS
FLX ANTENNA TUNER (IF INSTALLED)	1.5 A	CENTER CONSOLE, FUSE PANEL	28VDC PP6 BUS
<b>Effectivity: Rotorcraft with Geneva Console (per STC SH93-83 or other Foreign Equivalent)</b>			
FM RADIO	10A	CENTER CONSOLE, LEFT TOP	28VDC PP6 BUS or AVIONICS / RADIO BUS (If installed)
FM CONTROL (IF INSTALLED)	2.5A	CENTER CONSOLE, LEFT TOP	28VDC PP6 BUS or AVIONICS / RADIO BUS (If installed)
FLX ANT TUNER (IF INSTALLED)	1.5A	CENTER CONSOLE, LEFT TOP	28VDC PP6 BUS or AVIONICS / RADIO BUS (If installed)

**A. TDFM-9000, TDFM-9100, TDFM-9200, or TDFM-9300 Transceiver**

Removal

- a) Remove the above indicated fuses.
- b) Release six (four on TDFM-9100) Dzus fasteners from front of transceiver.
- c) Slide transceiver forward of the panel cutout.
- d) Disconnect electrical connector and antenna connector(s) from the rear of the transceiver.
- e) Remove transceiver from the panel cutout.

Installation

- a) Reconnect electrical connector and antenna connector(s) to the rear of the transceiver.
- b) Slide transceiver into the panel cutout.
- c) Secure six (four on TDFM-9100) Dzus fasteners on the front of transceiver.
- d) Install the above indicated fuses.
- e) Perform the Function Test in accordance with Sections 501.A, of this chapter.

## **B. RC-9000, or RC-9100 Remote Control Unit**

### Removal

- a) Remove the above indicated fuses.
- b) Release six (four on RC-9100) Dzus fasteners from front of remote control unit.
- c) Slide remote control unit forward of the panel cutout.
- d) Disconnect electrical connector from the rear of the remote control unit.
- e) Remove remote control unit from the panel cutout.

### Installation

- a) Reconnect electrical connector to the rear of the remote control unit.
- b) Slide remote control unit into the panel cutout.
- c) Secure six (four on RC-9100) Dzus fasteners on the front of remote control unit.
- d) Install the above indicated fuses.
- e) Perform the Function Test in accordance with Sections 501.A, of this chapter.

## **C. Antenna(s)**

### Removal

- a) Remove the above indicated fuses.
- a) Gain access to antenna(s).
- b) Disconnect coaxial cable(s) from the antenna(s).
- c) Remove the sealant from periphery of antenna base(s).
- d) Remove screws and washers securing the antenna(s) to the mounting surface(s).
- e) Remove the antenna(s) from the aircraft.

### Installation

- a) Re-connect coaxial cable(s) to antenna coax connectors(s).
- b) Secure fastening screws used to attach antenna(s) to fuselage.
- c) Seal around periphery of antenna(s) with PRC-DeSoto PR-1422B2, or equivalent.
- d) Perform electrical bonding procedure in accordance with Standard Practices Manual, Section 20.02.07.101. Ensure an electrical bonding reading of .003 ohms between each antenna base plate and ground.
- f) Install the above indicated fuses.
- e) Perform the Function Test in accordance with Sections 501.A, of this chapter.

501. Adjustment / Test

**A. Function Test**

**NOTE:**

Perform the following function test using the front panel of the TDFM-9000, TDFM-9100, TDFM-9200, or TDFM-9300 Transceiver.

- a) Power up the Aircraft's avionics systems. Turn on the transceiver and remote controller (as applicable).
- b) Adjust the volume levels as required.
- c) Press the guard knob to defeat squelch to open receiver.
- d) Ensure receiver is operational, the RX status indicator light is on and channels are open.
- e) Tune an operating frequency and carry out a transmit / receive. Ensure the TX status indicator lights when receiver is transmitting and RX status indicator lights when receiver is receiving.
- f) Check the operation of all front panel controls.

**B. Weight and Balance**

| Refer to Structural Diagrams 5004272 and MD21068, included in Appendix A, for  
| equipment weights. Exact frame stations are to be taken from the exact rotorcraft  
| installation.

601. Inspection / Check

Inspections for this chapters components are to be performed in accordance with Chapter 5-20-00, paragraph A, of these Instructions for Continued Airworthiness.

701. Cleaning / Painting

There are no additional cleaning or painting procedures to be added to the Aircraft Maintenance Manual for the components of this chapter.

801. Approved Repairs

**A. TDFM-9000, TDFM-9100, TDFM-9200, and TDFM-9300 Transceivers**

There are no approved field repairs for the transceiver. Failed units caused by defective parts or workmanship, should be returned to:

Technisonic Industries Limited  
240 Traders Blvd. E  
Mississauga, ON  
L4Z 1W7  
[905] 890-2113

**B. RC-9000, and RC-9100 Remote Control Units**

There are no approved field repairs for the remote control unit. Failed units caused by defective parts or workmanship, should be returned to:

Technisonic Industries Limited  
240 Traders Blvd. E  
Mississauga, ON  
L4Z 1W7  
[905] 890-2113

**C. Antennas**

The antennas associated with this system are non-repairable. If they are determined to be faulty they must be removed and replaced.

901. Storage

There are no storage procedures associated with the components of this chapter.

<b>APPENDIX A</b>		
<b>ITEM</b>	<b>TITLE</b>	<b>REV*</b>
1	WIRING DIAGRAM WD13004 'TIL FM TRANSCEIVER, EC AS-350'	G
2	STRUCTURAL DIAGRAM 5004272 TECHNISONIC ANTENNA INSTALLATION - AS350	D
3	ENGINEERING ORDER EO13015-3 TECHNISONIC RC-9100 REMOTE CONTROL PANEL OPTION (AS-350)	2
4	STRUCTURAL DIAGRAM, MD21068, TRI-BAND ANTENNA INSTL OPTION - AS350	N/C

\* Or later approved revision.