

Publications and Training Solutions

Course Syllabus: 523-0821908

COURSE TITLE: Pro Line Fusion King Air C90GT/B200Gt/B200CGT/B300
Level I Operations & Flight Line Maintenance

PREREQUISITES: Students should have basic knowledge of aircraft avionics systems and a working command of the English language (interpreters are available for special cases).

PURPOSE: This course provides line maintenance personnel with training to operate and perform flightline maintenance for the King Air Pro Line Fusion System.

This course is designed to teach troubleshooting for replacement of line replacement units (LRUs) and does not include internal maintenance of any component.

The Pro Line Fusion System consists of the LRUs identified in the section titled EQUIPMENT TYPE by nomenclature and part number, including associated peripheral equipment identified as deliverable hardware.

OBJECTIVES: Upon completing this course, the student will be able to:

1. Provide an overall understanding of King Air Pro Line Fusion Avionics Principles and Operation.
2. Identify System Components and the Functional/Operational Characteristics of each LRU.
3. Identify Typical Aircraft System Interface/System Architecture.
4. Perform Fault Isolation to a faulty LRU using Built-In Maintenance Diagnostics.

COURSE LENGTH: 5 Days

TRAINING DEVICES:

1. Special Test Equipment
 - a. Pro Line Fusion Test Rig, Cedar Rapids (if available)

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TRAINING MATERIALS:

1. PowerPoint Presentation with LCD/Box Light projector
2. Student Guide – Flash drive (pdf) – Training Presentation
Information Sheets
3. Beechcraft King Air Pro Line Fusion Avionics Maintenance Manual 523-0821905
4. Beechcraft King Air Pro Line Fusion Fault Isolation Manual 523-0821906
5. Pro Line Fusion for King Air with IFIS Wiring Manual 523-0821907
6. Pro Line Fusion for King Air Quick Reference Guide 523-0822518
7. Color Bus Diagram

REFERENCES:

1. Beechcraft King Air Pro Line Fusion Avionics Maintenance Manual 523-0821905
2. Beechcraft King Air Pro Line Fusion Fault Isolation Manual 523-0821906
3. Pro Line Fusion for King Air with IFIS Wiring Manual 523-0821907
4. Pro Line Fusion for King Air Operator's Guide 523-0824675
5. Pro Line Fusion for King Air Wiring Diagram Manual 523-0824684

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COURSE SYLLABUS

0. Welcome & Introductions

- A. Course Overview
 - i. Welcome
 - ii. Student Registration
 - iii. Student Policies and Procedures

1. Introduction to Materials and Handouts

- A. Video – Introduction to Pro Line Fusion
- B. Video – System Components
- C. Load Electronic Media Containing the Course Material into computer
- D. Demonstrate the Functions/Operations of PDF Files

2. Chapter 22 – Flight Guidance System

- A. Overview
 - i. Video – Auto Pilot – Flight Guidance Panel
- B. Flight Guidance Computers (FGC)
 - i. Description
 - ii. Theory of Operation
 - iii. Location
- C. Flight Guidance Panel (FGP)
 - i. Description
 - ii. FGP Switch Operations
 - iii. Theory of Operation
- D. Primary Servos (SVO)
 - i. Description
 - ii. Theory of Operation
- E. Autopilot and Yaw Damper Theory of Operation
 - i. Description of Fail Passive
 - ii. Description of Yaw Damper System

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- F. Autopilot Diagnostics
 - i. Report Mode
 - ii. Input Mode
 - iii. Output Mode
 - iv. Description and Operation of FIM

3. Chapter 23 - Communications

- A. Overview
 - i. Video – Radio Tuning
- B. VHF
 - i. Description
 - ii. Theory of Operation
 - iii. Location
 - iv. System Block Diagram
 - v. Bus Diagram
 - vi. Wiring Diagram
- C. HF
 - i. Description
 - ii. Theory of Operation
 - iii. Location
 - iv. System Block Diagram
 - v. Bus Diagram
 - vi. Wiring Diagram
- D. Data Link
 - i. Description
 - ii. Theory of Operation
 - iii. Location
 - iv. ACARS

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1. CPDLC

- v. System Block Diagram
- vi. Bus Diagram
- vii. Wiring Diagram

4. Chapter 31 – Indication and Recording

A. Overview

- i. Video – Touch Screen Interface

B. Cursor Control Panel (CCP)

- i. Video – Cursor Control Panel
- ii. Description
- iii. Theory of Operation
- iv. Location
- v. Remove and Install
- vi. Student Exercise

C. Multifunction Keyboard Panel (MKP)

- i. Video – Multifunction Keyboard Panel
- ii. Description
- iii. Theory of Operation
- iv. Location
- v. Remove and Install
- vi. Student Exercise

D. Barometric Single Knob Panel (BSKP)

- i. Video – BARO Set – Radar Tilt Knobs
- ii. Description
- iii. Theory of Operation
- iv. Location
- v. Remove and Install

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- vi. Troubleshoot
- E. Aircraft Personality Module (APM)
 - i. Description
 - ii. Theory of Operation
 - iii. Location
 - iv. Remove and Install
 - v. Troubleshoot
- F. Electronic Flight Instrument System (EFIS)
 - i. Overview
 - ii. System Bus Diagram
 - iii. System Block Diagram
 - iv. Description
 - v. Theory of Operation
 - vi. PFD Formats
 - 1. Example – Full Window/Half Window, Format Menus
 - vii. Cautions and Safety Touch Screen
 - viii. Cursor Control
 - ix. Remove and Install
 - x. Troubleshoot
 - xi. Student Exercises
- G. Integrated Avionics Processing System (IAPS)
 - i. Overview
 - ii. Description
 - iii. Safety Practices
 - iv. Theory of Operation
 - v. System Block Diagram
 - vi. Remove and Install

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- vii. Troubleshoot
- H. Integrated Card Cage (ICC)
 - i. Description
 - ii. Theory of Operation
 - iii. Location
 - iv. Remove and Install
 - v. Troubleshoot
- I. Power Supply (PWR)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install
 - vi. Troubleshoot
- J. Internal Environmental Controller (IEC)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install
 - vi. Troubleshoot
- K. Input/Output Concentrator (IOC)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install

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- L. Configuration Strapping Unit (CSU)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install
- M. Data Concentrator Unit (DCU)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install
- N. Engine Concentrator Unit (ECU)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install
- O. Remote Data Concentrator (RDU)
 - i. Description
 - ii. Theory of Operation
 - iii. Block Diagram
 - iv. Location
 - v. Remove and Install

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5. Chapter 34 - Navigation

- A. Overview
- B. Air Data System [34-10]
 - i. Air Data Computer
 - ii. Description
 - iii. Theory of Operation
 - iv. Block Diagram
 - v. Location
 - vi. Remove and Install
- C. Attitude Heading Reference System [34-20]
 - i. Attitude Heading Computer (AHC)
 - ii. Flux Detector Unit (FDU)
 - iii. External Compensation Unit (ECU)
 - iv. Description
 - v. Theory of Operation
 - vi. Block Diagram
 - vii. Location
 - viii. Remove and Install
- D. Enhanced Vision System (EVS) [34-30] **Optional**
 - i. Infrared Camera
 - ii. Adaptive Flight Display (AFD)
 - iii. Cockpit Controls
 - iv. Surface Awareness - **Optional**
 - v. Student Exercise
 - vi. Description
 - vii. Theory of Operation
 - viii. Block Diagram

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- ix. Location
 - x. Remove and Install
- E. Synthetic Vision System (SVS) [34-32] **Optional**
- i. Software Vision Key
 - ii. Software Tables
 - iii. Description
 - iv. Theory of Operation
 - v. Block Diagram
 - vi. Location
 - vii. Remove and Install
 - viii. Student Exercise
- F. Weather Radar System [34-40]
- i. Tilt Single Knob Panel (TSKP)
 - 1. Video – BARO Set and Radar Tilt Knobs
 - ii. Receiver/Transmitter Antenna (RTA)
 - iii. Description
 - iv. Theory of Operation
 - v. Block Diagram
 - vi. Location
 - vii. Remove and Install
 - viii. Student Exercise
- G. Radio Altimeter System [34-42]
- i. Radio Altimeter Transceiver
 - ii. Radio Altimeter Antenna
 - iii. Description
 - iv. Theory of Operation
 - v. Block Diagram

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- vi. Location
- vii. Remove and Install
- H. Traffic Alert and Collision Avoidance System II (TCAS II) [34-43]
 - i. TCAS Receiver/Transmitter
 - ii. TCAS Directional Antenna
 - iii. Description
 - iv. Theory of Operation
 - v. Block Diagram
 - vi. Location
 - vii. Remove and Install
- I. Global Navigation Satellite System (GNSS) [34-52]
 - i. GPS Receiver
 - ii. GPS Antenna
 - iii. Description
 - iv. Theory of Operation
 - v. Block Diagram
 - vi. Location
 - vii. Remove and Install

6. Chapter 45 – Central Maintenance System (CMS)

- A. Overview
 - i. Video – Onboard Maintenance System (OMS)
- B. Onboard Maintenance System Application
- C. Onboard Maintenance System Table
- D. Theory of Operation
- E. Onboard Diagnostics
- F. Configuration
- G. Reporting

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- H. Database Management
 - I. Data Load
 - i. Video – Data Loading
 - J. Troubleshoot
- 7. Chapter 46 – System Integration and Display**
- A. Overview
 - B. File Server Application
 - C. Data Link Weather Key
 - D. Electronic Charts Key
 - E. Enhanced Maps Overlay Key
 - F. Outboard IFIS Key
 - G. XM Weather Receiver
 - H. Information Management System (IMS)
- 8. Chapter 77- Engine Indicating and Crew Alert System (EICAS)**
- A. Overview
 - B. EICAS Application
 - C. Cockpit Controls
- 9. Summary – Review**
- A. Video – Flight Planning

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EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
Flight Guidance Computer B200	FGC-3000	822-1108-131/132/147
Flight Guidance Panel	FGP-3000	822-1107-103
Aileron Servo	SVO-3000	822-1168-001, -002
Rudder Servo	SVO-3000 SMT-85B	822-1168-002 622-5027-101
Elevator Servo	SVO-3000	822-1168-001, -002
Servo Mount (Aileron)	SMT-65	622-5735-001, -002
Servo Mount (Elevator)	SMT-65	622-5735-001, -002
Servo Mount (Rudder)	SMT-65 SMT-85B	622-5735-001, -002 622-5029-102
Elevator Trim Servo	SVO-3000	822-1168-003
Elevator Trim Servo Mount	SMT-65 SMT-65D	622-5735-002 622-6411-002
HF Transceiver	HF-9031A	822-0101-002
HF Antenna Coupler	HF-9041	622-8114-002
HF Feedline Adapter	FL-9003	685-0350-001
VHF Communication Transceiver 8.33kHz	VHF-4000	822-1468-110
VHF Communication Transceiver 8.33kHz, Data Link	VHF-4000	822-1468-310
External Compensation Unit	ECU-3000	822-1200-997
Communications Management Unit	CMU-4000	822-1739-003
Integrated Card Cage	ICC-3000	822-1129-001
IAPS Environmental Controller	IEC-3001	822-1167-001
Power Supply Module	PWR-3000	822-1137-001
Input/Output Concentrator	IOC-3100	822-1361-620

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Option Control Module	OCM-3100	822-1484-200
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EQUIPMENT	NOMENCLATURE	PART NUMBER
Configuration Strapping Unit	CSU-3100	822-1363-002
Data Concentrator Unit	DCU-3001	822-1483-102
Remote Data Concentrator	RDC-4002	822-1533-301
Maintenance Diagnostic Computer	MDC-3110	822-1987-XXX
Adaptive Flight Display	AFD-3700	822-3065-001
Cursor Control Panel	CCP-3500	822-2754-010
Multifunction Keypad Panel	MKP-3500	822-2568-010
Aircraft Personality Module	APM-5000	822-2195-001
Baro Single Knob Panel	SKP-3500	822-3163-010
Software: Adaptive Flight Display Runtime	AFDR-3700	810-0346-001
Software: Emulated Control Display Unit	ECDA-6000	810-0233-100
Software: Flight Display System Application	FDSA-6500	810-0234-1H0001
Software: Protocol Manager Application	PMA-6000	810-0192-100
Software: Radio Tuning System Application	RTSA-6000	810-0048-701
Software: Airframe Parameter Configuration Table	APCT-3700	810-0422-001
Software: Integrated Modular Avionics Table	IMAT-3700	810-0352-001
Air Data Computer	ADC-3010	822-2083-002/822-1109-026/822-1109-027
Aircraft Configuration Table	ACT-3010	810-0044-009
Attitude Heading Computer	AHC-3000	822-1110-002
Flux Detector Unit	FDU-3000	822-1193-001

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External Compensation Unit (FSU)	ECU-3000	822-1200-002
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EQUIPMENT	NOMENCLATURE	PART NUMBER
Software: Advanced Terrain Functions	ATF-3500	810-0348-001
Software: Advanced Terrain Functions Table	ATFT-3500	810-0385-1H0001
Tilt Single Knob Panel	SKP-3500	822-3163-020
Weather Radar Receiver Transmitter Antenna	RTA-800/852	622-8439-004/822-1050-004
Radio Altimeter	ALT-4000	822-0615-206
TCAS Receiver/Transmitter	TTR-4100	822-3075-001
TCAS Directional Antenna	TRE-920	622-8973-001
VOR/ILS/MB/ADF Receiver	NAV-4000	822-1465-001
VOR/ILS/MB Receiver	NAV-4500	822-1579-001
Single ADF Antenna	ANT-462A	622-7383-001
DME Transceiver	DME-4000	822-1466-001
Diversity Transponder	TDR-94D	622-9210-310
Diversity Transponder, ADS-B Out	TDR-94D	622-9210-501
Software: Flight Management System Application	FMSA-6010	810-0163-1H0001
Software: FMS Search and Rescue Key	SARK-3500	810-0387-001
Software: Video Key	VID-3500	810-0392-001
Software: Onboard Maintenance System Application	OMSA-6000	810-0106-250
Software: Onboard Maintenance System Table	OMST-6000	810-0099-1H0001
Software: Onboard Data Loader Application	ODLA-3500	810-0345-1H0001
Software: File Server Application	FSA-6000	810-0072-302

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Software: Data Link Weather Key	DLWX-3500	810-0353-001
EQUIPMENT	NOMENCLATURE	PART NUMBER
Software: Electronic Charts Key	ECH-3500	810-0361-001
Software: Enhanced Map Overlays Key	OVL-3500	810-0360-001
Software: Outboard IFIS Key	FSAX-3500	810-0354-001
Software: Chart Extension Key	CHTX-3500	810-0476-001
XM Weather Key	XMWK-3500	810-0355-001
Software: Information Management System Operating System	IMSOS-3500E	810-0415-001
Information Management System	IMS-3500	822-2999-101
Software: EICAS Application	EICAS-6000	810-0245-1H0001