



INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

For Beechcraft King Air F90 Aircraft With Pratt and Whitney Canada PT6-135A Engines Installed Per FAA-STC SA10567SC

REV. IR

NOTICE

This document must be referenced on Block 8 of FAA form 337 and added to the aircraft permanent record as required by 14 CFR Part 91, §91.417(a)(2)(vi) when the reference FAA-STC modification is accomplished on eligible aircraft. This document complies with the requirements of 14 CFR Part 23, §23.1529, in accordance with 14 CFR Part 23, Appendix G.

Aircraft Serial No. _____

Aircraft Registration No. _____



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LOG OF REVISIONS

Rev No.	Revision Date	Engineer	Description of Revision
IR	08-15-06	C. Eckhart	Initial Release



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1. INTRODUCTION:

This document provides the Instructions for the Continued Airworthiness (ICA) for Blackhawk Modifications, Inc. FAA-STC SA10567SC to install two Pratt & Whitney Canada PT6A-135A engines on Beechcraft King Air F90 aircraft (S/N LA-2 thru LA-204, except for LA-202).

This document supplements or supersedes any Beechcraft King Air F90 Maintenance Manual, only in those areas listed herein for the appropriate aircraft model and serial number.

2. AIRWORTHINESS LIMITATIONS:

NOTICE:

This section is FAA approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. To remain in compliance with the STC, the aircraft shall be maintained in accordance with these limitations.

POWERPLANT LIMITATIONS

ENGINE MANUFACTURE: Pratt and Whitney Canada
ENGINE MODEL NUMBER: PT6A-135A

3. DESCRIPTION:

A. ENGINES/PROPELLERS:

This STC approves the replacement of both the Pratt and Whitney Canada PT6A-135 turbo-propeller engines originally installed in the aircraft with two Pratt & Whitney Canada PT6A-135A turbo-propeller engines on Beechcraft King Air F90 aircraft Serial Numbers LA-2 thru LA-204, except for LA-202.

The originally type certified propellers are being used for this installation.

B. FUEL STARTER CONTROL UNIT (NO LONGER INSTALLED):

The fuel starter control unit, below and right of the fuel control unit and which regulates the fuel to each of the primary and secondary fuel nozzle manifold, is no longer installed or required on the PT6A-135A engine. This fuel starter control unit was replaced by Pratt and Whitney Canada with the fuel divider and dump valve (LA-2 thru LA-56) or fuel divider and purge valve (LA-57 and after)



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This installation is identical to the installation for LA-204 and after which are originally equipped with PT6A-135A engines and these type of valve.

C. FUEL DIVIDER AND DUMP VALVE / ENGINE FUEL DRAIN COLLECTOR (LA-2 THRU LA-56):

A fuel divider and dump valve which replaces the fuel starter control unit is mounted on the fuel inlet manifold adapter located at the six o'clock position on the gas generator case. This flow divider schedules the metered fuel from the fuel control unit between the primary and secondary fuel manifolds as a function of primary fuel manifold pressure. During engine start-up, FCU metered fuel is delivered through this valve initially to the primary nozzles, with the secondary nozzles cutting in above a higher pressure value. FCU metered fuel is delivered to all primary and secondary nozzles when operating at idle and above.

When the idle condition lever is CUTOFF, the fuel cut-off valve in the FCU closes during engine shutdown and thus reduces the fuel inlet pressure to the fuel divider and dump valve. The operating spring in the fuel divider and dump valve overcomes the fuel inlet pressure and thus moving a piston to block the fuel inlet port. This movement of the piston connects both the primary and secondary fuel manifolds to the dump port on this valve and thus allowing residual fuel from the each manifold to drain to the fuel collector tank.

A stainless steel tube is installed between the fuel dump port of this valve and the engine's forward fire seal and a hose is installed between this fire seal the collector tank input port on the engine's aft fire seal.

The fuel collector tank and its operations are unchanged and as described in the basic F90 Maintenance Manual.

See Section 6.B for part numbers.

D. FUEL DIVIDER AND PURGE VALVE /ENGINE FUEL PURGE (LA-57 AND AFTER):

A fuel divider and purge valve which replaces the fuel starter control unit is mounted on the fuel inlet manifold adapter located at the six o'clock position on the gas generator case. This flow divider schedules the metered fuel from the fuel control unit between the primary and secondary fuel manifolds as a function of primary fuel manifold pressure. During engine start-up, FCU metered fuel is delivered through this valve initially to the primary nozzles, with the secondary nozzles cutting in above a higher pressure valve. FCU metered fuel is delivered to all primary and secondary nozzles when operating at idle and above.



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When the idle condition lever is CUTOFF, the fuel cut-off valve in the FCU closes during engine shutdown and thus reduces the fuel inlet pressure to the fuel divider and purge valve which allows compressor discharge air (P3 air) from the fuel purge tank to enter the purge port on this valve causing the fuel in the fuel manifolds to be forced back into the fuel nozzles and be burned during engine shutdown.

A stainless steel tube is installed between the fuel dump port of this valve and the engine's forward fire seal. Hoses are installed between the fire seals using bulkhead union fittings and between the check valve on the fuel purge tank and the engine's aft fire seal.

The fuel purge tank and its operations are unchanged and as described in the basic F90 Maintenance Manual except that the check valve, which was originally installed on the starter control unit purge, is not installed directly on the fuel purge tank.

See Section 6.B for part numbers.

This installation is identical to the installation for LA-204 and after which are originally equipped with PT6A-135A engines.

E. STARTER/GENERATOR:

The starter/generator has been replaced with a wet spline type starter/generator. The starter/generator quad ring adaptor has been either modified for or replaced with an applicable ring for a wet spline type start/generator. See Section 6.B for part numbers.

F. IDLE CONTROL CABLES, LINKAGE, AND SUPPORT BRACKET:

Originally the idle control cable was attached to the starter control unit located below the fuel control unit on the accessory case for the PT6A-135 engine. Since the PT6A-135A does not require a starter control unit, the idle control cable is now attached directly to the fuel control unit using a linkage assembly attaching the cable to the FCA and idle control support bracket similar to LA-204 and after aircraft which are originally equipped with PT6A-135A engines.

4. SPECIAL PROCEDURES:

None



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5. INSPECTION REQUIREMENTS:

Refer to Raytheon Aircraft Beech King Air Model F90 Maintenance Manual for the aircraft serial number being serviced and appropriate Pratt & Whitney Canada Maintenance Manual Part No. 3043512 as appropriate for the PT6A-135A engine.

6. MAINTENANCE INSTRUCTIONS:

A. INSPECTION, MAINTENANCE, REMOVAL AND REPLACEMENT, AND TROUBLESHOOTING PROCEDURES:

For all inspection, maintenance, removal and replacement, and trouble shooting procedures, refer to Raytheon Aircraft Beech King Air Model F90 Maintenance Manual for the aircraft serial number being serviced and appropriate Pratt & Whitney Canada Maintenance Manual Part No. 3043512 as appropriate for the PT6A-135A engine.

B. REPLACEMENT PARTS:

Refer to the list below for replacement parts:

FOR S/N LA-2 THRU LA-204, EXCEPT LA-202:

QTY.	PART NO.:	NOMENCLATURE:	MFG. AND NOTES:
2	PT6A-135A	ENGINE, TURBOPROPELLER	PRATT & WHITNEY
2	50-944073-71 (ALT. 19015-02-01)	BRACKET, IDLE CONTROL CABLE SUPPORT	BEEHCRAFT (ALTERNATE INSTALLER FABRICATED PER DWG. 19015-02-01)
2	19015-02-02	LINKAGE ASSY, IDLE CONTROL	INSTALLER FABRICATED FROM DRAWING 19015-02-02 AND USED ONLY WITH ORIGINAL IDLE CONTROL CABLES P/N 99-380005-1 (-13, -21)
2	109-940001-5 (ALT. 19015-02-04)	LINKAGE ASSY, IDLE CONTROL (OPTIONAL)	BEEHCRAFT AND USED ONLY WITH IDLE CONTROL CABLES P/N 90-380014-9 AND P/N 90-380014-11. ALT. INSTALLER FABRICATED PER DWG. 19015-02-04)
1	90-380014-9	CABLE, IDLE CONTROL, LEFT ENGINE (OPTIONAL)	BEEHCRAFT
1	90-380014-9-11	CABLE, IDLE CONTROL, RIGHT ENGINE (OPTIONAL)	BEEHCRAFT
4	FA5830-1	EXHAUST STUB ASSY (OPTIONAL)	FRAKES AVIATION PER STC SA8710SW
4	061-1003-501, -503, -505, -507	EXHAUST STUB ASSY (OPTIONAL)	AMERICAN AVIATION PER STC SA00686SE



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QTY.	PART NO.:	NOMENCLATURE:	MFG. AND NOTES:
1	156F005-4S-0170 OR EQUIVALENT	HOSE, FUEL BYPASS, FUEL BYPASS FITTING ON FCU TO AFT ENGINE FIREWALL FITTING GOING TO NACELLE TANK, LEFT ENG	STRATOFLEX OR EQUIVALENT TSO-C53A TYPE C TYPE HOSE
1.	156F001-4S-0176 OR EQUIVALENT	HOSE, FUEL BYPASS, FUEL BYPASS FITTING ON FCU TO AFT ENGINE FIREWALL FITTING GOING TO NACELLE TANK, RIGHT ENG	STRATOFLEX OR EQUIVALENT TSO-C53A TYPE C TYPE HOSE
2	90-3890001-1M OR 90-3890001-5M	STARTER/GENERATOR QUAD RING ADAPTOR	BEECH P/N 90-389000-1 OR 90-389000-5 WHEN MODIFIED PER DWG. NO. 19015-01-01
2	02-6100-02 OR APC02-6100-02	WET SPLINE DRIVE SHAFT	
2	23048-016	STARTER/GENERATOR	NEW OR REWORKED STARTER/GENERATOR P/N 23048-018 AFTER REPLACING ITS DRY SPLINE SHAFT WITH A WET SPLINE DRAFT (ITEM 62) PER LUCAS AEROSPACE OVERHAUL MANUAL DC STARTER/GENERATOR 23048 SERIES.
2	3032107	CLEVIS – ROD END	PRATT AND WHITNEY. REQUIRED IF GROUND IDLE LOW PITCH STOP SOLENOID IS INSTALLED PER P&W S/B 1333

FOR S/N LA-2 THRU LA-56 ONLY:

QTY.	PART NO.:	NOMENCLATURE:	MFG. AND NOTES:
2	25536-4	FLOW DIVIDER AND DUMP VALVE	PRATT AND WHITNEY
2	19015-02-03-01	TUBE ASSY, FUEL DUMP, FUEL FLOW DIVIDER (DUMP SIDE) TO FWD ENGINE FIRE SEAL	INSTALLER FABRICATED FROM DWG 19015-02-03
2	AN832-4	UNION, BULKHEAD	
4	AN960-1232	WASHER	
2	AN924-4	NUT	
4	MS21919DG9	CLAMP	
2	124J003-4CR-0154 OR EQUIVALENT	HOSE, FUEL DUMP, FWD FIRE SEAL TO FUEL COLLECTOR TANK INLET ON AFT ENGINE FIRE SEAL	STRATOFLEX OR EQUIVALENT TSO-C53A TYPE D HOSE



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FOR S/N LA-57 THRU LA-204, EXCEPT LA-202:

QTY.	PART NO.:	NOMENCLATURE:	MFG. AND NOTES:
2	26035-1	FLOW DIVIDER AND PURGE VALVE	PRATT AND WHITNEY
2	19015-02-03-02	TUBE ASSY, FUEL PURGE, FLOW DIVIDER (PURGE SIDE) TO FWD ENGINE FIRE SEAL	INSTALLER FABRICATED FROM DWG 19015-02-03
4	AN832-4	UNION, BULKHEAD	
8	AN960-716	WASHER	
4	AN924-4	NUT	
4	MS21919DG9	CLAMP	
2	124J003-4CR-0190 OR EQUIVALENT	HOSE, FUEL PURGE, FWD ENGINE FIRE SEAL TO AFT ENGINE FIRE SEAL	STRATOFLEX OR EQUIVALENT TS0-C53A TYPE D HOSE
2	156F001-4S-0114 OR EQUIVALENT	HOSE, FUEL PURGE, AFT ENGINE FIRE SEAL TO FUEL PURGE TANK CHECK VALVE	STRATOFLEX OR EQUIVALENT TS0-C53A TYPE C HOSE

7. DIAGRAMS:

None

8. APPLICATION OF SPECIAL TREATMENTS:

None

9. DATA:

The following latest FAA approved installation drawings can be used as reference data:

DRAWING NO.	TITLE
19015-01-00	INSTALLATION INSTRUCTIONS: INSTALLATION OF PRATT AND WHITNEY PT6A-135A ENGINES IN KING AIR MODEL F90 S/N LA-1 THRU LA-204, EXCEPT LA-202
18001-02	ALTERATION (OPTIONAL), STARTER GENERATOR QUAD RING ADAPTOR
18001-03	ALTERATION (OPTIONAL), IGNITION EXCITER MOUNT BRACKET
19015-02-01	BRACKET, IDLE CONTROL CABLE SUPPORT (ALTERNATE)
19015-02-02	LINKAGE ASSEMBLY, IDLE CONTROL
19015-02-03	TUBE ASSY, FUEL DUMP/FUEL PURGE
19015-02-04	LINKAGE ASSEMBLY, IDLE CONTROL (ALTERNATE/OPTIONAL)



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10. SPECIAL TOOLS:

Refer to Raytheon Aircraft Beech King Air Model F90 Maintenance Manual for the aircraft serial number being serviced and appropriate Pratt & Whitney Canada Maintenance Manual Part No. 3043512 as appropriate for the PT6A-135A engine.

11. ADDITIONAL INFORMATION FOR COMMUTER CATEGORY AIRCRAFT:

Not Applicable

12. REVISION:

Each time this ICA is revised or reissued, the revised ICA will be distributed to operators using a Service Letter/Bulletin by Blackhawk Modifications Inc.. This revision will include a new Log of Revisions page along with the revised pages. The lower right hand corner of each revised page will reflect the revision letter. That portion of text or an illustration, which has been revised by the addition of, or change in, information is denoted by a solid revision bar located adjacent to the area of change, and placed along the outside margin of a page. Revision bars show only information changed within latest revision.

13. ASSISTANCE:

For assistance with ICA issues or any other issues, contact Blackhawk Modifications, Inc. at the following address or phone number.

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