United States of America
Department of Transportation -- Federal Aviation Administration

Supplemental Type Certificate

Number SA02816CH

This certificate issued to Hartzell Engine Technologies LLC
2900 Selma Highway
Montgomery, Alabama 36108

certifies that the change in the type design for the following product with the limitations and conditions thereto as specified hereon meets the airworthiness requirements of Part 3 *of the* Civil Aviation *Regulations.*

Original Product Type Certificate Number: 3A16

Make: Hawker Beechcraft

Model: G58

Description of Type Design Change:
Installation of C&D Associates Kit 33 combustion heater P/N CD50000K33 in accordance with C&D Associates Installation Instructions IN50000K33, revision A, dated February 9, 2010 or later FAA approved revision.

Limitations and Conditions:

1. Compatibility of this design change with previously approved modifications must be determined by the installer.
2. Verify proper aircraft Weight and Balance.
3. Full compliance with the C&D Combustion Heater Airworthiness Limitations, MM10001 Maintenance Manual, Revision B, dated September 15, 2009, and FAA approved Airplane Flight Manual Supplement, Revision A, dated June 16, 2009 or later FAA approved revision are required.
4. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

Certification Basis: The Certification Basis for this installation is per Type Certificate Data Sheet 3A16, Revision 85, including the following 14 CFR part 23 Regulations: 23.1309 amendment 23-17:23.1309(b)(4)(i)(ii)(c)(1)(2)(i)(iii)(3)(d); 23.1351(a)(1)(2)(i); 23.1353(h) amendment 23-49.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: December 1, 2009

Date of issuance: March 10, 2010

Date reissued: April 15, 2010, July 1, 2010
February 11, 2016

Date amended:

By direction of the Administrator

(Signature)

Timothy P. Smyth
Manager,
Chicago Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

HEATER INSTALLATION INSTRUCTIONS FOR HEATER KIT P/N CD50000K33

For Hawker Beechcraft Model G58

READ COMPLETE INSTRUCTIONS BEFORE BEGINNING INSTALLATION
Accomplish all wiring in accordance with AC43.13-1B Chapter 11, Electrical Systems.
Accomplish all plumbing in accordance with AC43.13-1B Chapter 8, Section 2, par. 8-31.
Reference Hawker Beechcraft Baron Maintenance Manual.
Do not use Teflon products of any kind on any part of the heater fuel system!

1. SAFETY PRECAUTIONS
   A. WARNING:
      a. Review all local fire and safety regulations when disconnecting fuel lines.
      b. Do not wear nylon or other synthetic clothes since they will generate static electricity.
      c. Stop all other maintenance on the airplane while doing maintenance involving opening fuel lines
      d. Do fuel system maintenance in areas that permit the free movement of fire fighting and emergency equipment.

2. CABIN HEATER, refer to Beech Baron Maintenance Manual

   WARNING: Read and understand the SAFETY PRECAUTIONS before doing any work on the heating system.
   NOTE: The cabin heater blower, heater ignition unit and the heater fuel discharge nozzle are an integral parts of the heater and will remain with the heater as it is removed and/or installed.

   A. REMOVAL: (if required)

      NOTE: The heater can be removed without removing the radio shelf, but can be accomplished more readily if the shelf is loose or removed.

      a. Remove electrical power from the airplane (Ref Beech Service Manual (BSM)24-36-00, 301, ELECTRICAL POWER DISCONNECT).
      b. Remove the nose cone attaching screws and the nose cone.
      c. Label airframe wiring to heater terminal strip marked 6-1. Remove airframe wiring from heater.

      NOTE: Wires extending to overheat switch on aft end of heater as well as wires extending to combustion air switch located on forward bulkhead under nose baggage floor, left side, will also be removed with heater.

      d. Disconnect the iris valve control and combustion blower wiring.
      e. Remove Combustion Air Pressure Switch/vacuum lines and wires to heater. (Switch will be part of core to be returned as “exchange”). A new combustion air switch is attached to the new C&D unit at the Ignition Assembly.
      f. Cover holes in the bulkhead, now left by the combustion air switch removal; with a suitable patch (foil tape is a permissible patch).
      g. Remove the combustion air flex duct from the heater. (Note the routing of this hose as it will be the same route used for the new hose.)
      h. Remove the combustion air blower assembly including airframe bracket, inlet & clamp.
      i. Remove the bolts attaching the iris valve to the heater along with the forward support.
      j. Remove exhaust pipe extension from the aircraft skin.
      k. Disconnect the fuel lines from the heater and plug the openings.
      l. Disconnect the two heater drain lines.
      m. Disconnect the hot air duct from the heater outlet plenum located in the nose wheel well.
      n. Remove the aft clamp from around the heater.

o. Remove the bolts from the upper and lower plates that secure the heater to the bulkhead, and remove the plates.
p. Grasp the heater on the forward end and pull while rotating the heater to the right and left as required, until unit is clear of the surrounding structure. Remove the fuel pump.

3. INSTALLATION:

NOTE: Install the C&D Associates, Inc. TSO-C20 Approved Combustion heater, combustion air blower assembly and fuel pump utilizing the existing Aircraft Service Manual or other FAA approved source where applicable.
NOTE: Give special attention to proper grounding. The C&D heater has additional grounds that are required.

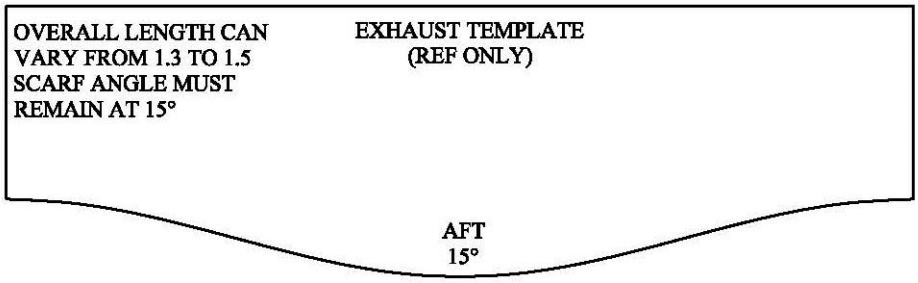
A. Grasp the heater on the front end and push while rotating the heater right and left, as required, to clear the surrounding structure.
B. Reattach the upper and lower plates on the bulkhead with the original bolts.
C. Reattach the aft clamp around the heater.
D. Connect the hot air duct in the nose wheel well to the heater.
E. Connect the two heater drain lines.
F. Reattach the forward support to the airframe
G. Reconnect the iris valve to the heater and forward support. Connect the iris valve control.
H. Install Combustion air blower assembly, P/N CD50017. Mount the motor body to the existing shelf.
I. Install Fuel Pump Assembly P/N CD50027 with filter (IN) side down.
J. Connect the fuel lines to the heater.
K. Connect the combustion air hose from the heater combustion inlet to the combustion blower outlet, using the supplied sceet hose and clamps.

4. <u>CRITICAL TO PROPER HEATER OPERATION</u>

A. WHEN INSTALLED ON BEECHCRAFT BARON WITH MCCAULEY, STRAIGHT BLADE PROPELLERS.

a. **For proper air balance, exhaust pipe needs scarf angle modification.** Trim and smooth by filing, the exhaust pipe scarf angle, (extending out of the aircraft, long end forward) with supplied template. (Connect the exhaust pipe with the attaching screws.)

NOTE: Exhaust pipe to have 15° scarf angle, long end aft. See "Exhaust Template" below and figure 1 on pg 3.



Due to printer variations this template is for reference only.
An angle gauge should be used to determine angle as the length and angle are critical measurements.

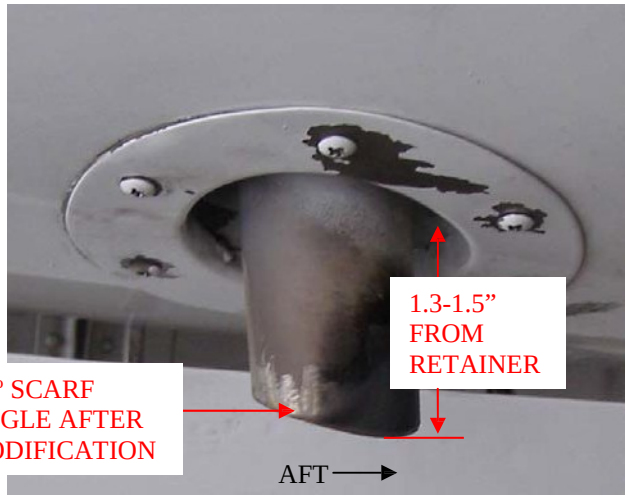


Figure 1: Exhaust Modification

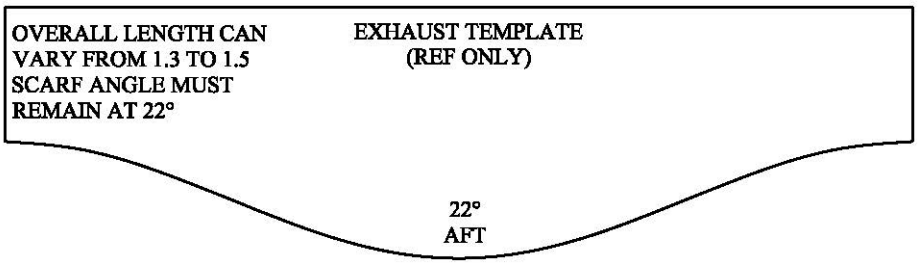
b. Install Combustion Air Inlet Assembly P/N CD22349 Rev D or later with the retainment bolt and connect the hose to the combustion air blower inlet adaptor with the hose clamp. Combustion Air Inlet angle is at 30° for McCauley propellers.

Figure 2: Combustion air inlet (30 deg scarf)

B. WHEN INSTALLED ON BEECHCRAFT BARON WITH HARTZELL SCIMITAR PROPELLERS.

a. **For proper air balance, exhaust pipe needs scarf angle modification.** Trim and smooth by filing, the exhaust pipe scarf angle, (extending out of the aircraft, long end forward) with supplied template. (Connect the exhaust pipe with the attaching screws.)

NOTE: Exhaust pipe to have 22 deg scarf angle, long end aft. See "Exhaust Template" below and figure 3 on pg 4.



Due to printer variations this template is for reference only.
An angle gauge should be used to determine angle as the length and angle are critical measurements.

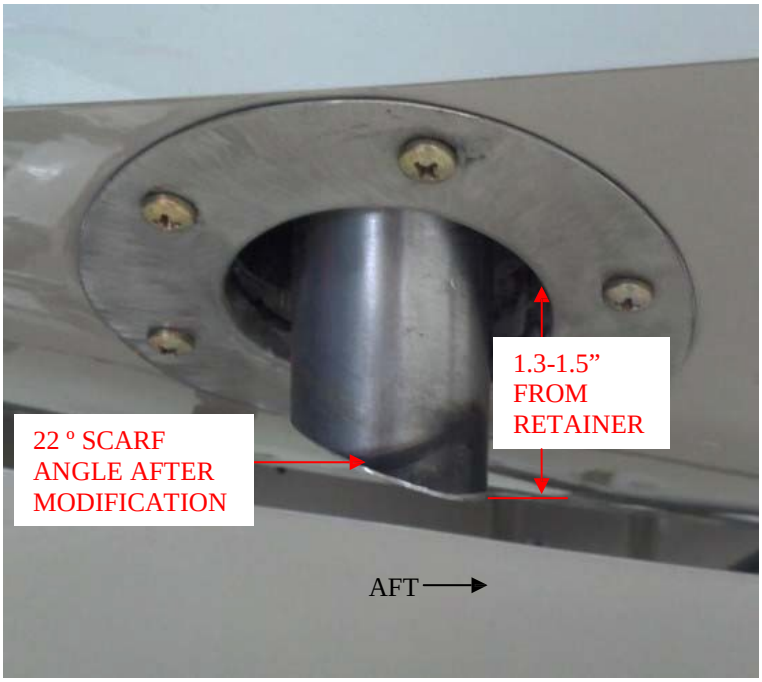
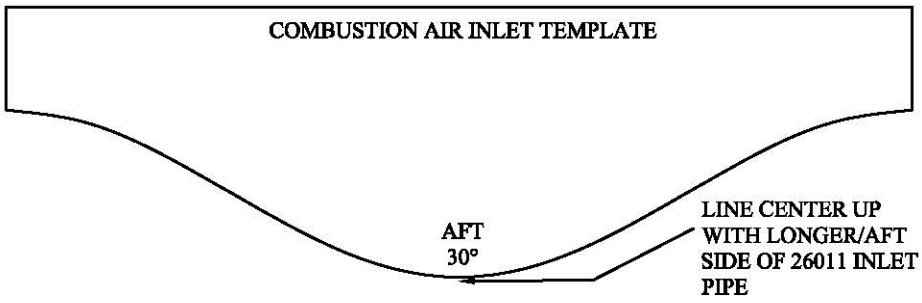


Figure 3: Exhaust Modification

b. Modify Combustion Air Inlet Assembly P/N CD22349 to 30° as shown below. Below the etched information on the combustion air inlet, make a permanent marking of "30°" instead of the etched 15. Install Combustion Air Inlet Assembly P/N CD22349 with the retainment bolt and connect the hose to the combustion air blower inlet adaptor with the hose clamp.



Due to printer variations this template is for reference only.
An angle gauge should be used to determine angle as the length and angle are critical measurements.

Figure 4: Combustion air inlet (30 deg scarf)

5. WIRING

A. Reconnect airframe wiring to heater terminal strip marked 6-1 as removed in section 2c.
B. An additional braided ground wire is attached to the terminal strip attachment screw and should be routed along with the terminal #5 ground wire to the airframe grounding location (left shelf support). This braided ground wire is identified by red warning tag.

NOTE: Give special attention to proper grounding. The C&D heater has additional grounds that are required.
C. Remove existing connector to heater fuel pump and install supplied female snap plug, P/N 60397, using appropriate insulated terminal lug crimper, such as a Paladin P/N PA8021. Insert male end of connector,

attached to the pump, to female end of the airframe wiring and verify connection. Use appropriate heat gun set to approx. 180° F to heat shrink seal both ends of the connector. Secure wiring to the airframe.

D. Restore electrical power to the airplane (Ref 24-36-00, 301, ELECTRICAL POWER – CONNECT) and verify wiring connections. See Figure 6.

6. AFTER INSTALLATION
   A. Complete the "Heater Operational Test After Installation" (Step 8) prior to replacing the nose cone with the attaching screws.

7. HEATER CONTROL SYSTEM
   A. Refer to the aircraft service manual.

8. HEATER OPERATIONAL TEST AFTER INSTALLATION: (Recommended)
   A. Install a temperature probe (min 0-500° F) in the outlet plenum aft of the heater. Find a small access point somewhere in the ducting aft of the heater near the thermostat sensor or drill a small 1/8" hole through the heat distribution plenum allowing a thermo couple to enter unobstructed, into the heated air stream. This hole may be sealed after completion of test with high temp silicone.
   CAUTION: Verify nothing will be damaged in this process. Never drill into combustion heater itself!
   CAUTION: Verify thermal couple is not touching plenum internal wall.
   B. Install the fuel pressure gauge (0-15). Tee into as shown. (Fig. 5)
   C. With the heater running, verify fuel pressure.
   Preferred pressure is between 7 psi min to 8 psi max.
   D. With the heater running, verify that the temperature is controlled by the aircraft thermostat from low (approx. 75° F) to medium to high (approx. 250° F)
   E. Place a jumper wire across the heater terminal strip numbers 2 and 3, which will bypass the aircraft thermostat and verify that the outlet plenum temperature is approx. 250°.

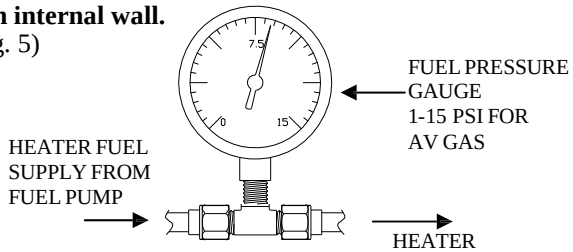


Figure 5

      a. If upper limit temperature needs adjustment the CD21252 limit switch is located in the nose wheel well on the tail of the heater. The rectangular limit switch is located next to the round automatic overheat switch.
      b. Adjust the temperature of the heat duct outlet distribution plenum to an average ambient temperature of 225º. Typical readings will be a low of 215º and high of 255º. Adjustment is made by rotating a small 1/16" screw located left of the wiring harness plug in on the side of the switch.
      c. Rotation clockwise one turn will increase temperature approx 20° F. Decrease temperature by turning counter clockwise.
      d. After adjustments is made remove the jumper wire and recheck temperature operation.
      e. After sensor is adjusted, place small drop of tamper proof seal on adjustment screw to lock in settings so as to not change due to vibration. It is recommended to use a product that can be easily removed for future adjustment if required.
   F. Remove the temperature probe sealing the hole with high temperature silicone.
   G. Remove the fuel gauge installed in step 8.B. Leave the "tee" fitting and cap off for future pressure readings if desired and pressure check all fuel connections after reassembly.

For additional information see the "maintenance manual (MM10001)" included with this heater under "Testing after installation or overhaul."

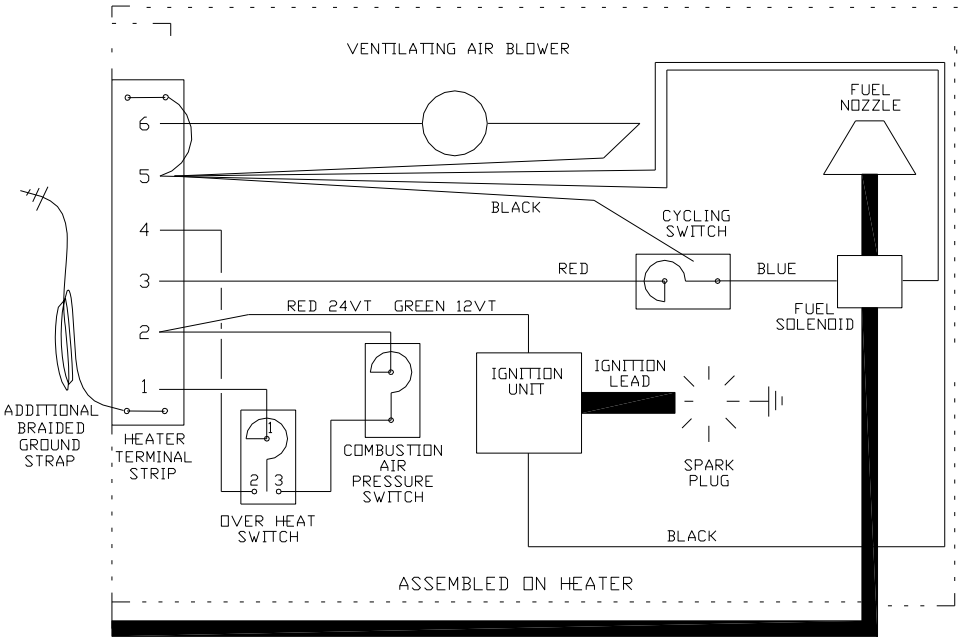


Figure 6: Wiring Schematic

9. AIRWORTHINESS LIMITATIONS:
   A. Full compliance with the enclosed FAA approved C&D Associates Inc. 'Combustion Heater Airworthiness Limitations' is required. Follow the C&D Associates Inc. 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the combustion heater "Airworthiness Limitations", Located in the MM10001 MAINTENANCE MANUAL, REV G, DATED July 24, 2012 or later FAA approved revision.
   B. This FAA-approved Airworthiness Limitations must become a permanent part of the Aircraft Operations and Procedures manual.
   C. NOTE: Removal of the Combustion Heater and the installation of the C&D Associates Products TSO-C20 approved heater will have no net effect on weight and balance or electrical load requirements.
   D. NOTE: Insert the following, into the aircraft flight manual in the heater operating section. Correct equipment list to reflect new C&D Associates, Inc. heater and part number.

"C&D ASSOCIATES, INC. COMBUSTION HEATER HAS BEEN INSTALLED IN THIS AIRCRAFT. PLEASE FOLLOW THE AIRCRAFT OPERATING MANUAL FOR COMBUSTION HEATER OPERATING SEQUENCE AND/OR C&D ASSOCIATES, INC. "INSTRUCTIONS FOR CONTINUED AIRWORTHINESS" LOCATED IN THE MM10001 MAINTENANCE MANUAL, REV G, DATED July 24, 2012 OR LATER FAA APPROVED REVISION."

DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION

1.	FAA STC # SA02816CH	____
2.	Installation Instructions IN50000K33	____
3.	MM10001 Maintenance Manual	____
4.	Instructions for Continued Airworthiness	____
5.	Quality Assurance Certificate of Compliance #527	____

HEATER KIT CD50000K33 S/N

1. (1) Heater	CD50000-1	____	_____
2. (1) Fuel Pump Assy (which included fuel pump CD50026)	CD50027	____	
3. (1) Comb Blower Assy (which includes Motor CD50016)	CD50017	____	
4. (1) Comb Air Inlet Assembly	22349	____	
5. (1) Hose Assy	21644	____	

Initials: _____ Date: _____

For warranty information see website www.cdaircraftheaters.com