

United States of America
Department of Transportation -- Federal Aviation Administration
Supplemental Type Certificate

Number SA02118CH

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 thereof as specified hereon meets the airworthiness requirements of Part 3 of the Civil Air Regulations.

See Type Certificate Data Sheet No. A9WE for complete certification basis.

Original Product Type Certificate Number:

A9WE

Make:

Emerald Enterprises LTD.

Model:

D-1

Description of Type Design Change:

Installation of C&D Associates Combustion Heater Kit 16 P/N CD11004K16, in accordance with C&D Associates heater Installation Instructions IN11004K16, Rev. none, dated November 2, 2004 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. FAA Approved Airplane Flight Manual Supplement signed and dated March 9, 2005 is required.
3. Check aircraft Weight and Balance.
4. Full compliance with the C&D Combustion Heater Airworthiness Limitations, MM10000 Maintenance Manual, Second Edition, Rev A, dated April 4, 2002, or later FAA approved revision, is required.
5. 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.

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: November 4, 2004

Date reissued: February 11, 2016

Date of issuance: March 10, 2005

Date amended:



By direction of the Administrator

A blue ink signature of Timothy P. Smyth, written over a horizontal line.

(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.



C&D ASSOCIATES, INC.

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Rev B dated 2/13/14

**HEATER INSTALLATION INSTRUCTIONS FOR
HEATER KIT #16, P/N CD11004K16
For Emerald Wing D-1 (Derringer)**

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.

1. Follow the Aircraft Service Manual or other FAA approved source for removal of the existing Combustion Heater.
2. Install the C&D Associates, Inc. TSO-C20 Approved Combustion Heater utilizing the existing Aircraft Service Manual or other FAA approved source where applicable.
3. HEATER OPERATIONAL TEST AFTER INSTALLATION:

IMPORTANT!! Please complete the followings steps after the new heater is installed in the aircraft.

- A. Install a temperature probe (min 0-500° F) in the outlet plenum 6-8" aft of the heater. A good location would be approx. 6" aft of the heater or near the thermostat sensor.
- B. Place a jumper wire across the heater terminal strip numbers 2 and 3, which will bypass the aircraft thermostat. (Fig. 2)
- C. Install the fuel pressure gauge (0-15). Tee into as shown. (Fig. 1)
- D. With the heater running, verify fuel pressure.
Preferred pressure is 8psi. (6.5psi min, 10psi max)
- E. With the heater running, verify that the outlet plenum temp. is approx. 250°. Adjust the temperature of the heat duct outlet distribution plenum to an average ambient temperature off 225°. Typical readings will be a low of 215° and a high of 255°. Adjustment is made by rotating a small 1/16" screw located next to the wires on the side of the switch. Rotation clockwise one turn will increase temperature approx. 20°F. Decrease temperature by turning counter clockwise. (Fig. 3) **NOTE:** Adjust screw no more than ¼ turn at a time.
- F. Remove the jumper wire and verify that the temperature is controlled by the aircraft thermostat from low (approx. 75° F) to medium to high (approx. 250° F) which is what the cycling switch is set at.
- G. Remove the temperature probe sealing the hole with high temperature silicone.
- H. Remove the fuel gauge installed in step 3. Leave the "tee" fitting and cap off for future pressure readings if desired.
- I. Verify proper installation is completed in accordance with the aircraft maintenance manual.

If the hoses need to be replaced, we recommend Sceet-6 (1 ½") red from the blower to the heater and Ceet-6 (1 ½") black from outside air to the blower.

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

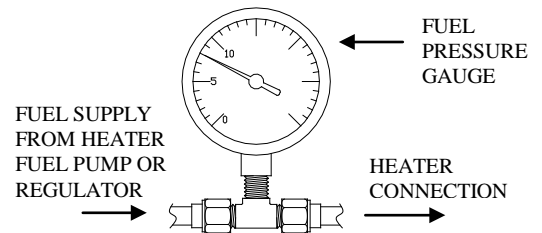


Figure 1

Figure 2

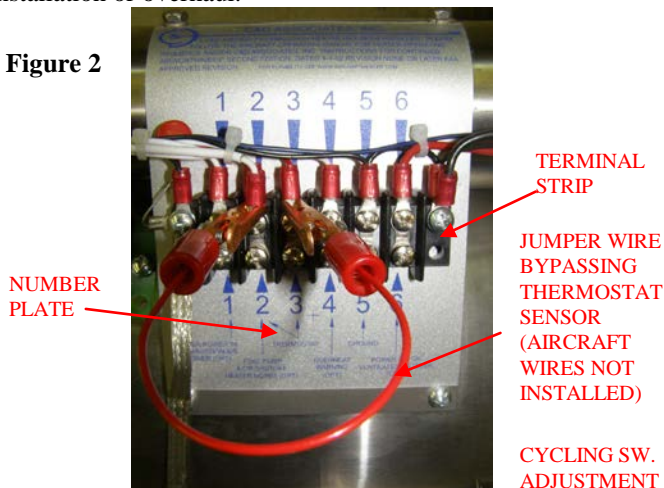
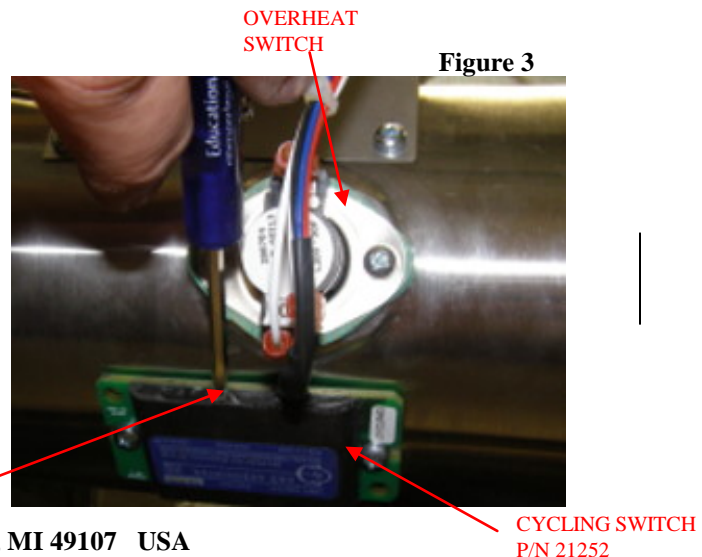


Figure 3



302 POST ROAD, BUCHANAN, MI 49107 USA

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- J. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10001 Maintenance Manual for aircraft combustion heaters dated 1/1/08. Tests should be accomplished in accordance with section IX 'C' operational test, and 'D' for heat output, steps 1 and 2. Also in accordance with the "Instructions for Continued Airworthiness" step #1 "Preflight/Operational check and Shutdown Procedure."

NOTE: Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Instructions for Continued Airworthiness", Second Edition, Revision: none, dated 04-04-02, or later revision, included with these instructions. This FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

- K. Verify all wires are secure and free of obstruction and chaffing.

4. DOCUMENTATION:

- A. Weight & Balance. The aircraft does not require a weight and balance change. The logbook entry should contain the STC and PMA Supplement #. Original heater replacement is authorized by way of FAA form 337. Alteration of aircraft by way of STC and PMA supplemental number and date must be recorded in the appropriate aircraft records.
- B. Note: Insert the following statement (label 21503 provided) in the aircraft flight manual: "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 airworthiness." "Second Edition dated April 4, 2002 revision: none, or later FAA approved revision."
- C. Electrical requirements: 12VDC at 20Amp.
- D. Fuel consumption: Maximum operation .30 gal/hour.

DOCUMENTATION AND PARTS REQUIREMENT TABLE

| DOCUMENTATION | Quantity |
|-----------------------------------------------------|----------|
| 1. FAA/PMA Supplement #44 | _____ |
| 2. Installation Instructions IN11004K16 | _____ |
| 3. Label for flight manual (21503) | _____ |
| 4. MM10001 Maintenance Manual | _____ |
| 5. Quality Assurance Certificate of Compliance #527 | _____ |
| 6. STC # SA02118CH | _____ |

| PARTS | | S/N |
|------------------------------|-----------|-------|
| 1. (1) Heater | CD11004-1 | _____ |
| 2. (1) Adapter | 21548 | _____ |
| 3. (1) Adapter Plate | 21547 | _____ |
| 4. (1) Adapter Plate, Blower | 21545 | _____ |
| 5. (1) Adapter Plate, Blower | 21546 | _____ |
| 6. (1) Blower Assembly | 21414 | _____ |

Initials: _____ Date: _____



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