

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

Number SA00971CH

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 therefor as specified hereon meets the airworthiness requirements of Part 3 of the Federal Aviation Regulations.

Original Product-Type Certificate Number: *See attached FAA Approved Model List (AML) No.
Make: SA00971CH for list of approved airplane models and
Model: applicable airworthiness regulations.

Description of Type Design Change:

Remove South Wind 940 series combustion heater and install C&D Associates, Inc. TSO-C20 approved Heater Kit 3 (P/N CD14010K3), Kit 4 (P/N CD12006K4), Kit 5 (P/N CD11214K5) or Kit 6 (P/N CD11215K6) in accordance with C&D Associates, Inc. Installation Instructions as listed on AML No. SA00971CH, 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. Check aircraft weight and balance.
3. A copy of this Certificate and FAA Approved Model List (AML) No. SA00971CH, dated April 16, 1999, or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft.
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.

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: September 12, 1998

Date reissued: February 11, 2016; June 6, 2016

Date of issuance: December 16, 1998

Date amended: April 16, 1999; October 19, 1999
January 10, 2000; May 17, 2000; March 29, 2004

By direction of the Administrator





(Signature)
Timothy P. Smyth
Manager,
Chicago Aircraft Certification Office

FAA APPROVED MODEL LIST (AML) NO. SA00971CH
 HARTZELL ENGINE TECHNOLOGIES LLC
 FOR INSTALLING COMBUSTION HEATER KIT MODEL CD14010K3, CD12006K4, CD112145K5 OR CD11215K6

Date of Issuance: December 16, 1998

ITEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS		AFM SUPPLEMENT NUMBER/DATE	AML AMENDMENT DATE
					NUMBER	REVISION & DATE		
1.	Cessna	310, 310A, S/N 35000 thru 35546	3A10	CAR 3	IN14010K3	REV. D dated 2/19/04 or later FAA approved revision	N/A	3/29/04
2.	Piper	PA-30, S/N 30-2 thru 30-401	A1EA	CAR 3	IN12006K4	REV. A Dated 2/19/04 or later FAA approved revision	N/A	3/29/04
3.	Cessna	190, 195, 195A, 195B	A-750	CAR 3	IN11214K5	REV. A Dated 2/19/04 or later FAA approved revision	N/A	3/29/04
4.	Global Amphibians	Lake LA-4, Lake LA-4A, Lake LA-4P, Lake LA-4-200	1A13	CAR 3	IN11215K6	REV. A Dated 2/19/04 or later FAA approved revision	N/A	3/29/04
5.	Piper	PA-23, S/N 23-1 and up, 27-1 thru 27-3049 27-3051 thru 27-3053	1A10	CAR 3	IN 940 MOD 1	REV. C. Dated 10/6/99 or later FAA approved revision	N/A	N/A

FAA Approved: 
 Timothy P. Smyth
 Manager,
 Chicago Aircraft Certification Office

Date amended: 4/6/1999; 10/19/1999; 1/10/2000;
 5/17/2000; 3/29/2004
 Date reissued: 2/11/2016



HEATER INSTALLATION INSTRUCTIONS FOR CD14010K3

For Cessna Aircraft 310, 310A, S/N 35000 thru 35546

- I. Follow the Aircraft Service Manual or other FAA approved source for removal of the existing South Wind combustion heater.
- II. Install the C&D Associates, Inc., TSO-C20 Approved combustion heater utilizing the existing Aircraft Service Manual or other FAA approved source where applicable.

When removing electrical connections from the old heater, identify the airframe wires and their location on the old heater terminal strip or electrical cannon plug. Some of these wires will be used in the new installation. On the new heater terminal strip, connect "C" pin or E119N wire (wire that becomes hot when heater switch is turned on) to terminal 1. Connect ground, "A" pin or E-225 wire to terminal 5 (ground). Connect red wire coming from combustion air blower to terminal #1. Tape off wire numbers "B" or 423-N, "D" or E-120N and "E" or F-121N. Optional heater hour meter may be connected to terminal #2. Optional overheat light may be connected to terminal #4 on the heater strip. Refer to typical wiring schematic figure 7 page 24 of Maintenance Manual for Aircraft Combustion Heaters Model CD25K, CD35K, CD45K.

- A. Remove the old safety valve assembly from the firewall. Install the new fuel shut-off in place of the safety valve. Reuse the T-fitting from the safety valve and install it in the shut-off. Reconnect the fuel lines to the Tee as originally installed and secure to shelf with tie wrap or clamps. Install #4 fuel line from the new shut-off to the heater. Wire the remote solenoid shut-off to terminal #2 on heater.
- B. Install the combustion air blower above the heater on the existing shelf and connect to the combustion air inlet, using the red sceet hose. Connect the short black wire to airframe ground and positive red wire to heater terminal strip at terminal #1.
- C. Install the combustion air inlet scarf forward (opposite of exhaust for scooping in air). Installation should be 12" in front of and in line with exhaust by making a 1-1/2" hole. Use the new inlet as a pattern, drilling four 3/16" holes. Place the combustion air inlet inside and secure with four 8/32" screws. Connect the black ceet hose to aluminum combustion air inlet and the stainless steel angle adapter on the combustion air blower housing. Short wire goes to ground, long wire to terminal # 1 on terminal strip.
- D. The adjustable duct switch sensor P/N CD21253 is to be installed aft of the heater in the plenum. Make two 1/16" holes 2-5/8" apart in a convenient location. Half way between the 1/16" holes, drill a 1/2" hole for the thermister and mount the switch using two sheet metal screws. Red wire to terminal #2, blue wire to terminal #3 and yellow (or orange) wires to thermostat control non-polarity yellow wires.

III. AIRWORTHINESS:

A. Operation:

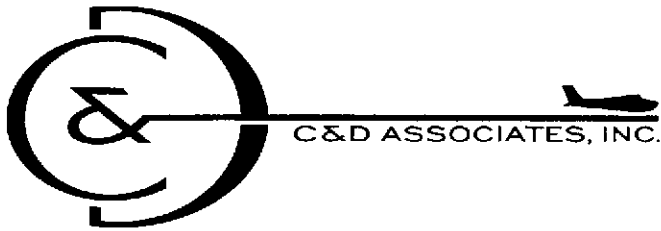
1. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10000 Maintenance Manual for aircraft combustion heaters Second Edition dated 4-4-02. Tests should be accomplished in accordance with section IX 'C' operational test, and 'D' for heat output, steps 1 and 2. Also in accordance with the "Instructions for Continued Airworthiness" step #1 "Preflight/Operational check and Shutdown Procedure."
2. NOTE: Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Instructions for Continued Airworthiness", located in the Maintenance Manual (MM10000), Second Edition, Revision: A, dated 04-04-02, or later revision, section IV. This FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

B. Documentation:

1. 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.

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2. 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."
3. Electrical requirements: 24VDC at 15Amp.
4. Fuel consumption: Maximum operation 1.5 gal/hour
5. Weight & Balance. Remove old heater of 18 lbs. And install new heater kit of 25 lbs.

DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION

- | | |
|---|-------|
| 1. FAA/PMA Supplement #XX | _____ |
| 2. Installation Instructions IN14010K3 | _____ |
| 3. Label for flight manual | _____ |
| 4. MM10000 Maintenance Manual | _____ |
| 5. Quality Assurance Certificate of Compliance #527 | _____ |

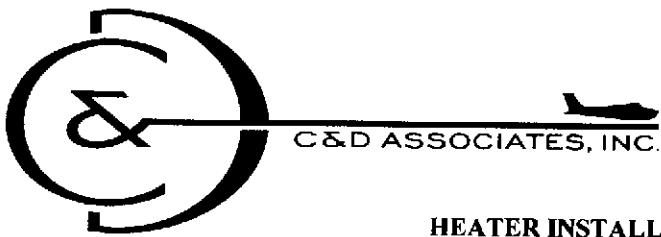
PARTS

- | | | |
|------------------------------|----------------|-------|
| 1. (1) Heater | CD14010 | _____ |
| 2. (1) Blower Assy | 21415 | _____ |
| 3. (1) Solid State Duct Sw. | 21253 | _____ |
| 4. (1) Fuel Line (24") #4 | 21337 | _____ |
| 5. (1) Fuel Line (40") | 21334 | _____ |
| 6. (1) Fuse, Inline (10 amp) | 21082 | _____ |
| 7. Hose, Sceet 1 1/2" | SCEET-6 | _____ |
| 8. Hose, Scat 1 1/2" | SCAT-6 | _____ |
| 9. (4) Worm Drive Clamps | 1 1/2" | _____ |
| 10. (1) Drain Line #4 | 21335 | _____ |
| 11. (1) Drain Hose | 21279 | _____ |
| 12. Reuse Customer Original | #2 TEE FITTING | _____ |
| 13. (1) Elbow | MS20822-3D | _____ |
| 14. (1) Mount | AN816-4D | _____ |
| 15. (1) Reducer | AN912-1 | _____ |
| 16. (1) Retainer, Exhaust | 20632 | _____ |
| 17. (1) Solenoid, Remote | 21195 W/C | _____ |
| 18. (1) Bushing Reducer | 70085 | _____ |
| 19. (1) Elbow, 1/8" Brass | 70120 | _____ |

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HEATER INSTALLATION INSTRUCTIONS FOR MODEL CD12006K4

For Piper Aircraft PA-30, S/N 30-2 thru 30-401

- I. Follow the Aircraft Service Manual or other FAA approved source for removal of the existing South Wind combustion heater.
- II. Install the C&D Associates, Inc., TSO-C20 Approved combustion heater utilizing the existing Aircraft Service Manual or other FAA approved source where applicable.
 - A. Remove the old safety valve assembly from the firewall. Install the new fuel shut-off in place of the safety valve. Reuse the original fuel inlet fitting from the old safety valve and install it in the new shut-off. Reconnect the fuel lines to the new shutoff as originally installed and secure with tie wrap or clamps. Install new #4 fuel line from the shut-off to the heater. Wire the remote solenoid shut-off to terminal #2 on heater

B. ELECTRICAL CONNECTIONS

- 1) Check wires removed from original heater for the following:
 - a. Master switch ON, heater OFF.
One of the wires from the old heater will be HOT. This wire will not be used (tape off).
 - b. Master ON, heater ON
Of the remaining wires one will now become HOT. This wire should be connected to terminal #1 on the new heater.
 - c. With switches off, use OHM meter to identify ground wire and connect to terminal #5 on the new heater terminal strip. Tape off any remaining old wires as they will not be used. The new combustion air blower red wire should be connected to terminal #1 and black wire to ground or terminal #5.
 - d. If aircraft has an old mechanical thermostat and you are reusing it, connect to terminal #2 and terminal #3 of new heater. If it is to be replaced remove it along with it's push-pull cable. See installation instructions of the new electronic adjustable duct thermostat switch CD21253 included with the kit.
 - e. Optional hour meter is connected to terminal #2. Optional overheat light may be connected to Terminal #4 on the heater strip.

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III. AIRWORTHINESS:

A. Operation:

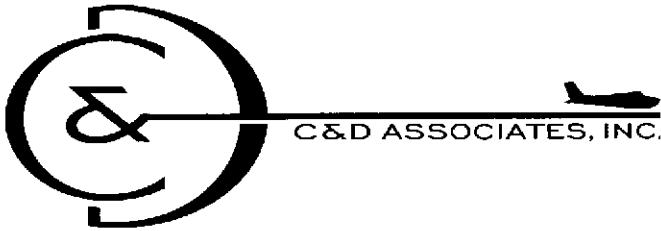
1. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10000 Maintenance Manual for aircraft combustion heaters Second Edition dated 4-4-02. Tests should be accomplished in accordance with section IX 'C' operational test, and 'D' for heat output, steps 1 and 2. Also in accordance with the "Instructions for Continued Airworthiness" step #1 "Preflight/Operational check and Shutdown Procedure."
2. NOTE: Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Instructions for Continued Airworthiness", located in the Maintenance Manual (MM10000), Second Edition, Revision: A, dated 04-04-02, or later revision, section IV. This FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

B. Documentation:

1. 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.
2. 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

302 POST ROAD, BUCHANAN, MI 49107 USA

PH: 269-695-7469 FX: 269-695-6004 WEB: www.aircraftheater.com EMAIL: sfritz@aircraftheater.com



Edition dated April 4, 2002 revision: none, or later FAA approved revision.”

3. Electrical requirements: 12VDC at 20Amp.
4. Fuel consumption: Maximum operation 1.25 gal/hour
5. Weight & Balance. Remove old heater of 18 lbs. And install new heater kit of 25 lbs.

DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION

- | | |
|---|-------|
| 1. FAA/PMA Supplement #XX | _____ |
| 2. Installation Instructions IN12006K4 | _____ |
| 3. Label for flight manual | _____ |
| 4. MM10000 Maintenance Manual | _____ |
| 5. Quality Assurance Certificate of Compliance #527 | _____ |

PARTS

- | | | |
|------------------------------|------------|-------|
| 1. (1) Heater | CD12006 | _____ |
| 2. (1) Switch, Rotary | 20654A | _____ |
| 3. (1) Solid State Duct Sw. | 21253 | _____ |
| 4. Hose, Scat 1 1/2" (black) | SCAT-6 | _____ |
| 5. (4) Worm Drive Clamps | 1 1/2" | _____ |
| 6. (1) Drain Line #4 | 21335 | _____ |
| 7. (1) Drain Hose | 21279 | _____ |
| 8. (1) Elbow | MS20822-D2 | _____ |
| 9. (1) Regulator | 20800 | _____ |

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C&D ASSOCIATES, INC.

CD11214K5
Dated 2/19/04
Rev A
Page 1 of 4

HEATER INSTALLATION INSTRUCTIONS FOR MODEL CD11214K5

For Cessna Model 190, 195, 195A, 195B

PLEASE - Before beginning-read entire instructions.

- I. **REMOVAL** -Remove the existing combustion heater, fuel control valve, and remote fuel shutoff valve. The remaining ridged fuel line, extending from the left fuel tank down along the left fuselage, should be plugged with a #4 plug at this point.

- II. **MODIFICATIONS** - Modify cabin floor as indicated in the drawing on page three as follows:
 - A. Locate step A on drawing, , mark and drill four 1/4" holes in cabin floor. Insert four keyed #10-32 rivnuts for mounting the combustion air blower rubber mounts. .
 - B. Locate step B on drawing, mark and cut a 1 5/8" hole in floor. This hole is to allow the black combustion air hose to pass through.
 - C. See step C. Install combustion air inlet adapter P/N 21356 in the existing old exhaust hole with scarf down and forward (scoops in air). Fasten with six evenly spaced 3/32" rivets. Connect the black 1 1/2" hose to the adapter with a 1 1/2" clamp. Route hose through existing lightning hose and up through new 1 5/8" hole (step B).
 - D. Locate step D. On the center line of the existing heater mounts, measure over 1 1/4" from the side of the inboard mount (3" back from step C edge) and mark for new exhaust. Measure over 8 1/4" from the side of the inboard heater mount for the new drain. Knockout the inboard mark to 2.625" for the exhaust. The other mark to 5/8" diameter for the new drain.
 - E. See step E on the drawing. Mark 5" from the edge of the old heater cavity, removing floor material identified by the dotted line. This can be done with a pair of shears.
 - F. See step F. Remove from the belly skin the old rectangular combustion air inlet adapter (drill out the old rivets) and install a small 6" by 3" patch using the existing rivet pattern.(see step F)
 - G. Set the fuel pump (as shown at step G) on the floor under the area of the ridged fuel line (capped in step 1). Locate the pump as indicated in the drawing with the removable end containing a filter toward the heater. The other end of the pump should nestle within 1/8" of the corner of the outer skin and the rib. Mark the mounting leg holes in the floor. Install two 1/4" holes for two 10-32 rivnuts and two PN 95D07-1 rubber mounts. Place the pump on the mounts and secure with ground wire, washer, and nuts in place.

III. INSTALLATION

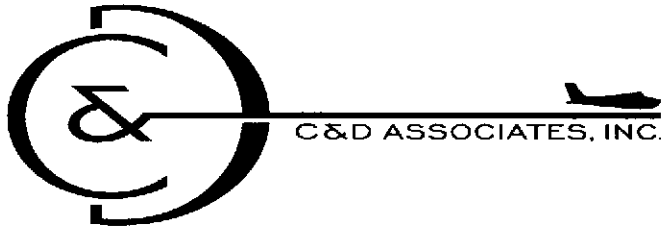
- A. Remove the two seven inch clamps from the new heater and install through the two mounting brackets that cradle the heater.
- B. Set the new heater into the cradle. Tighten the two clamps around the heater. Verify that the heater sets completely down onto the two mounts and into the floor cavity.
- C. Fasten the outlet plenum using four existing screw locations, two outboard and two inboard of the outlet plenum. (see step H) Two holes are in the flange aft of the plenum and may be used as a template to drill two holes for #8 sheet metal screws. (step I)

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PH: 269-695-7469 FX: 269-695-6004 WEB: www.aircraftheater.com EMAIL: sfritz@aircraftheater.com

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- D. Install the combustion air blower by screwing four rubber mounts into the four rivnuts previously installed, (see step A on the drawing). Connect the black hose to the blower inlet and the red hose to the heater/blower outlet with four hose clamps.
- E. Fuel Pump: Connect fuel line from heater to pump outlet and secure. Install the second fuel line at the pump inlet. Install and tighten AN815-4D #4 union in the other end of hose. Remove the previously installed plug from aircraft ridged fuel line and connect new hose with union in place.

IV. ELECTRICAL (See page 4 for wiring schematic)

- A. Identify the old wires removed from the original heater and at the old switch for the following: (Do this before installing the new switch)
 - 1. Master switch ON, heater switch OFF.
One of the wires from the old heater will be HOT. This wire will not be used (tape off).
 - 2. Master ON, fan switch ON.
Of the remaining wire, one will now become HOT. This wire should be connected to the new switch blue wire and terminal #6 on the new heater. This is power for the vent fan.
 - 3. Master on heater switch in heat position. Of the remaining wires one will now become hot and should be connected to terminal #1 of the heater.
 - 4. Remaining two wires (if they exist) may be used to interconnect the yellow (or orange) wires between the thermostat sensor and the yellow wires (no polarity) on the new switch.
 - 5. Install the new switch using the old wiring or install new wiring.
- B. Fuel Pump: Connect ground wire from pump leg to heater terminal strip #5. Hot wire to terminal #2 on heater.
- C. Combustion Air Blower: Connect black ground wire to terminal #5 of terminal strip on heater. Red to heater terminal strip #1.
- D. Outlet plenum with ignition unit and thermostat: Connect ignition wire from terminal strip number #3 to ignition unit.
- E. On the outlet plenum connect the thermostat ground black wire to terminal strip #5. Red wire to terminal strip #2. Blue wire to terminal strip #3. Yellow wires from thermostat to yellow wires on switch.
- F. Optional hour meter is connected to terminal #2. Optional overheat light may be connected to terminal #4 on the heater strip.

V. AIRWORTHINESS

- A. Operation:
 - 1. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10000 Maintenance Manual for aircraft combustion heaters Second Edition dated 4-4-02. 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."
 - 2. NOTE: Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Instructions for Continued Airworthiness", located in the Maintenance Manual (MM10000), Second Edition, Revision: A, dated 04-04-02, or later

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revision, section IV. This FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

B. Documentation:

1. 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.
2. 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."
3. Electrical requirements: 12VDC at 20Amp.
4. Fuel consumption: Maximum operation 1 gal/hour
5. Weight & Balance. Remove old heater of 18 lbs. And install new heater kit of 20 lbs.

DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION

- | | |
|---|-------|
| 1. FAA/PMA Supplement #XX | _____ |
| 2. Installation Instructions IN11214K5 | _____ |
| 3. Label for flight manual | _____ |
| 4. MM10000 Maintenance Manual | _____ |
| 5. Quality Assurance Certificate of Compliance #527 | _____ |

PARTS

- | | | |
|--------------------------------|---------------|-------|
| 1. (1) Heater | CD11214 | _____ |
| 2. (2) Clamp | 6-7" | _____ |
| 3. (1) Drain | 20651 | _____ |
| 4. (1) Drain Hose | 20652 | _____ |
| 5. (1) Outlet Plenum Deflector | 21364 | _____ |
| 6. (1) Outlet Plenum Shield | 21368 | _____ |
| 7. (1) Outlet Plenum Upper | 21365A | _____ |
| 8. (2) Fuel Hose #4 x 8.5" | 20653 | _____ |
| 9. (4) 2" Hose Clamps | 2-2 1/2 | _____ |
| 10. (1) Hose Ceet | 1 1/2 Black | _____ |
| 11. (2) Hose Sceet | 1 1/2" Red | _____ |
| 12. (1) Union | AN815-4D | _____ |
| 13. (1) Comb. Air Inlet | 21356 | _____ |
| 14. (6) Mount | 21520 | _____ |
| 15. (1) Blower Assy | 21414 | _____ |
| 16. (1) Fuel Pump | 21370 | _____ |
| 17. (1) 45° Elbow | MS20823-4D | _____ |
| 18. (1) 90° Elbow | MS20822-4D | _____ |
| 19. (1) Ground Wire | 20655 | _____ |
| 20. (1) Switch, Rotary | 20654 | _____ |
| 21. (6) Rivnuts | A10K-80 | _____ |
| 22. (6) Nuts 10-32 | MS20365-1032A | _____ |
| 23. (6) Washers #10 | AN960-10 | _____ |
| 24. (1) Bracket | 21191B | _____ |

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**HEATER INSTALLATION INSTRUCTIONS FOR
MODEL CD11215K6**

For Lake Model LA-4, LA-4A, LA-4P, LA-4-200

I. REMOVAL - Remove the existing combustion heater, fuel safety valve and drain line.

II. MODIFICATIONS - See page four illustrations:

A. Combustion air blower:

Using the existing rear heater mount bracket, the lower front left edge will be used as a reference point. Mark two lines 1.75" and 2.75" forward and parallel with the aft heater mount to airshaft centerline. From the reference point measure inboard marking two lines parallel with the aircraft center line at 2.125" and 3.625" intersecting the first two lines. Drill four 1/4" holes at intersections. Install four 10/32 rivnuts and blower-mounting bracket. Secure the combustion air blower (outlet pointing forward) with the two clamps. When properly installed the blower housing will be inline with and just touching the fiberglass heater bonnet when installed.

B. Heater Mounts:

Remove the two heater mounts and use as a template for the spacers supplied with the kit. Install spacers under each mount to provide 1/4" lift and secure into place.

C. Fuel Pump:

Carbureted series only. Mount the pump on the rear heater mount, aft left side in the location of the old safety valve which had been removed.

D. Remote Shut Off:

Fuel Injected series only. Mount the remote shut off on the rear heater mount, aft left side in the location of the old safety valve, which had been removed.

E. HEATER BONNET

1. Exhaust:

On the right side of the heater bonnet measure aft 5/8" from the back edge of the existing rectangular exhaust hole and 1 7/8" up from the bottom of the mounting flange. Using this location as a center mark cut a 2 1/4" round hole for the exhaust.

2. Exhaust Deflector:

Remove three rivets directly under the new exhaust hole and install the deflector P/N . Fasten by using three 8/32 screws, nuts, and washers.

3. Combustion Air Inlet:

On the left side of the heater bonnet measure 15" from the trailing edge and 2" up from the mounting flange. Drill a 1/2" hole and temporarily place the bonnet in place. Verify that the drilled hole lines up with the motor shaft. Make any adjustments necessary and then enlarge the hole to 2".

4. Overheat Switch Access:

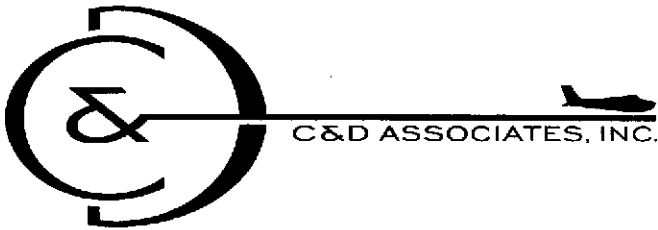
On right side of bonnet, drill a 1" hole 17" from the right trailing edge and 6" up. This will allow re-setting the over heat switch if activated without removing the bonnet.

III. INSTALLATION

A. Combustion Air Blower:

Install blower on previously installed bracket (see step II-1). Secure with tow 3" clamps. Make sure air flow outlet is facing forward. Blower assembly should be located in such a way as to minimize clearance between blower housing inlet and the bonnet when installed.

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- B. Heater:
Install plenum with hose adapter down (inline with drain). Place the new C&D heater onto the heater mounts with the drain straight down and exhaust off to the right side of the aircraft centerline. With the clamps loosely fastened, place the bonnet in place and adjust the heater to match exhaust location. Secure clamps.
- C. Drain Line:
Install from heater drain along right side of aft heater mount. Connect drain hose from fuel box to drain line.
- D. Thermostat:
Install on right aft end of outlet plenum. Drill two 1/8" dia. Holes 2 3/4" apart. Install one 1/2" hole half way in between. Mount the thermostat with two sheet metal screws.

IV. ELECTRICAL (See page 4 for wiring schematic)

- A. Identify the old wires removed from the original heater and at the old switch for the following: (Do this before installing the new switch)
1. Master switch ON, heater switch OFF.
One of the wires from the old heater will be HOT. This wire will not be used (tape off).
 2. Master ON, fan switch ON.
Of the remaining wire, one will now become HOT. This wire should be connected to the new switch blue wire and terminal #6 on the new heater. This is power for the vent fan.
 3. Master ON, heater switch in HEAT position. Of the remaining wires one will now become hot and should be connected to terminal #1 of the heater.
 4. Remaining two wires (if they exist) may be used to interconnect the yellow wires between the thermostat and the yellow wires on the new switch.
 5. Install the new switch using the old wiring or install new wiring.
- B. Fuel Pump:
1. Fuel Pump - Carbureted only. Hot wire to terminal #2 on heater.
 2. Solenoid remote shutoff - Fuel Injected only. Hot wire to terminal #2 on heater.
- C. Combustion Air Blower: Connect black ground wire to terminal #5 of terminal strip on heater. Red to heater terminal strip #1.
- D. Outlet plenum with ignition unit and thermostat: Connect ignition wire from terminal strip number #3 to ignition unit.
- E. On the outlet plenum connect the thermostat ground black wire to terminal strip #5. Red wire to terminal strip #2. Blue wire to terminal strip #3. Yellow wires from thermostat to yellow wires on switch.
- F. Optional hour meter is connected to terminal #2. Optional overheat light may be connected to terminal #4 on the heater strip.

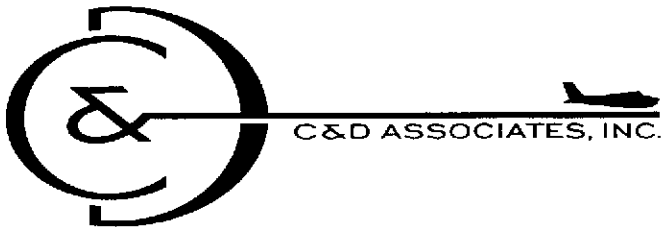
V. AIRWORTHINESS

- A. Operation:
1. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10000 Maintenance Manual for aircraft combustion heaters Second Edition dated 4-4-02. Tests should be accomplished in accordance with section LX '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."

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CHICAGO AIRPORT
MM10000



2. NOTE: Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Instructions for Continued Airworthiness", located in the Maintenance Manual (MM10000), Second Edition, Revision: A, dated 04-04-02, or later revision, section IV. This FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

B. Documentation:

1. 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.
2. 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."
3. Electrical requirements: 12VDC at 20Amp.
4. Fuel consumption: Maximum operation 1 gal/hour
5. Weight & Balance. Remove old heater of 18 lbs. And install new heater kit of 20 lbs.

DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION

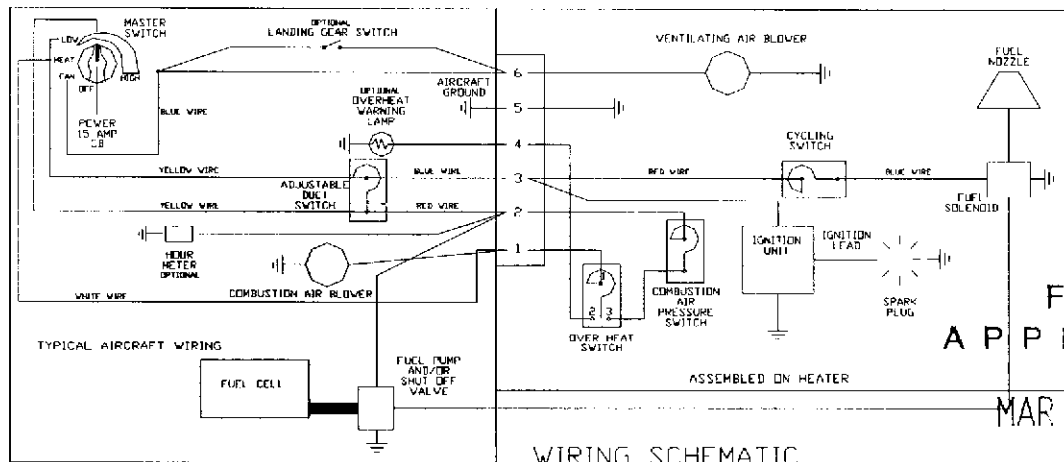
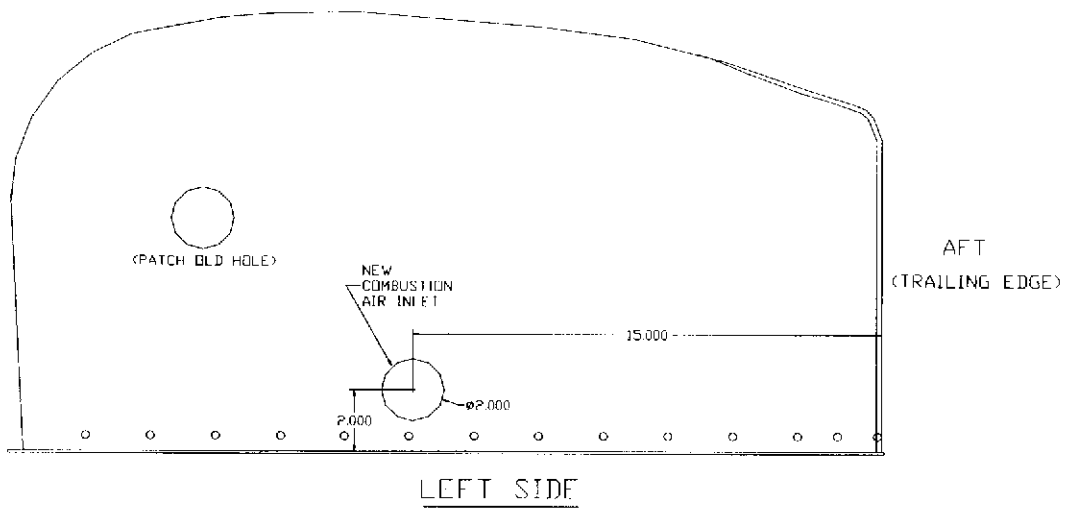
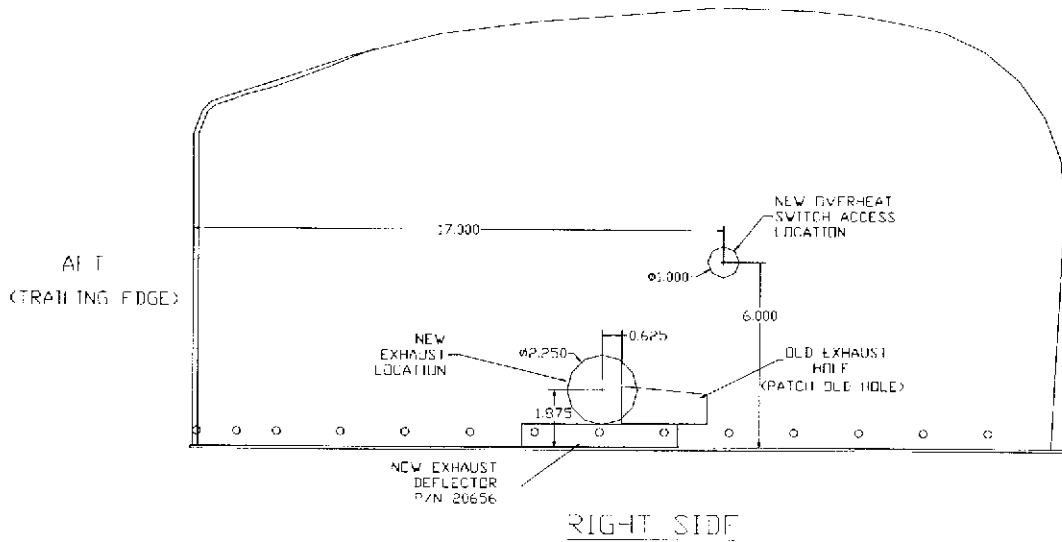
- | | |
|---|-------|
| 1. FAA/PMA Supplement #XX | _____ |
| 2. Installation Instructions IN11215K6 | _____ |
| 3. Label for flight manual | _____ |
| 4. MM10000 Maintenance Manual | _____ |
| 5. Quality Assurance Certificate of Compliance #527 | _____ |

PARTS

- | | | |
|-------------------------------------|------------|-------|
| 1. (1) Heater | CD11215 | _____ |
| 2. (1) 90° Elbow | MS20822-4 | _____ |
| 4. (1) Fuel pump | 21197 | _____ |
| 5. (1) Adapter | AN816-4D | _____ |
| 6. (1) 90 deg. elbow | MS20822-4D | _____ |
| 7. (1) Blower Assembly | 21414 | _____ |
| 8. (1) Inlet Reflector | 21373 | _____ |
| 9. (1) Switch, Rotary | 20654 | _____ |
| 10. (1) Adj. Solid State Duct Sw. | 21253 | _____ |
| 11. (1) Hose | 20650 | _____ |
| 12. (1) 7.5 Regulator | 20800 | _____ |
| 13. (1) Elbow, 1/8" NPT Male-Female | 60024 | _____ |
| 14. (1) Adapter | AN816-3D | _____ |
| 15. (1) Plenum (Optional) | 21476 | _____ |
| 16. (1) Mount (Optional) | 21477 | _____ |
| 17. (1) Mount (Optional) | 21478 | _____ |
| 18. (18") 1 1/2" x 18" Sceet Hose | CEET-6 | _____ |
| 19. (2) Worm Drive Clamps | 1 1/2" | _____ |
| 20. (1) Deflector | 20656 | _____ |
| 21. (2) Spacer (8" x 1: x 1/4") | 20657 | _____ |
| 22. (1) Drain Line #4 | 21372 | _____ |
| 23. (1) Drain Hose 9" | 21279 | _____ |
| 24. (1) Fuel Line (10") #4 | 21337 | _____ |

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**HEATER INSTALLATION INSTRUCTIONS FOR
MODEL CD25K KIT, P/N CD940-25K12 AND CD940-25K24,
MODEL CD35K KIT, P/N CD940-35K12 AND CD940-35K24,
MODEL CD45K KIT, P/N CD940-45K12 AND CD940-45K24**

For Piper Aircraft PA-23 Apache 12 and 24-volt models,
Aztec S/N 27-1 thru 27-3049, 27-3051 thru 27-3053.

1. Follow the Aircraft Service Manual or other FAA approved source for removal of the existing comb. 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.
 - A. When removing electrical connections from the old heater, identify airframe wires H2B, H4A, H5A, H9A and H10A. These wires will be used in the new installation. Tape off H2A and H3B wires. On the new heater terminal strip, connect H5A wire to terminal 1. Connect H8A wire to terminal #5 (ground). Connect H4A and H10A wires to terminal #6. Connect H2B wire to terminal #2. Connect H9A wire to vent blower red wire with knife splice.
Refer to typical wiring schematic figure 7 page 24 of Maintenance Manual for Aircraft Combustion Heaters Model CD25K, CD35K, CD45K.
 - B. Remove the old safety valve and fuel filter assembly from the firewall mounting bracket.
Fuel injected aircraft: Install the new shut-off solenoid valve in its place and secure with clamp.
Carborated aircraft: Install the new fuel pump with the removable end cap down, using the legs of the pump as a template for the new bolt pattern.
Connect the fuel lines to the remote shut-off (fuel pump) and to the heater.
 - C. Install exhaust pipe and shroud included with the heater kit. Secure with two stainless steel 10/32 bolts supplied with exhaust pipe.
 - D. Install the combustion air blower above the heater on the existing shelf and connect to the combustion air inlet. Connect the short black wire to airframe ground and positive red wire to heater terminal strip at terminal #1.
 - E. The adjustable duct switch P/N RA-21253 is to be installed aft of the heater in the plenum. Make two 1/16" holes 2-5/8" apart in a convenient location. Half way between the 1/16" holes, drill a 1/2" hole for the thermister and mount the switch using two sheet metal screws. Red wire to terminal #2, blue wire to terminal #3 and yellow wires to thermostat.
3. Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Air-worthiness Limitations", First Edition, Revision none, dated 07-01-95, included with these instructions. This FAA-approved Airworthiness Limitations must become a permanent part of the Aircraft Operations and Procedures manual.
4. NOTE: Full compliance with the enclosed 'Combustion Heater Airworthiness Limitations' is required.
5. NOTE: Current combustion heater Airworthiness Directive Piper AD 96-13-03 does not apply to the new C&D Associates, Inc. combustion heater.
6. NOTE: Utilizing existing aircraft combustion heater operating instructions or other FAA approved combustion heater operating instructions where applicable.
7. NOTE: Removal of the combustion heater and the installation of the C&D Assoc. Products TSO-C20 approved heater will have no affect on electrical load. Optional hour meter is connected to terminal #2. Optional overheat light may be connected to terminal #4 on the heater strip.

8. NOTE: For extreme conditions, fuel consumption may be as much as two gallons per hour. See operation hand-book instruction. (Insert into current operating hand-book.)
9. NOTE: Weight and balance change: Remove South Wind heater weighing 18 pounds and install C&D heater weighing 25 pounds.

Due to aircraft variables, the following additional instructions may be helpful:

940 KIT - ELECTRICAL CONNECTION HINTS

1. Remove old wires and check with volt meter.

Master switch ON, heater OFF.

One of the wires to the old heater will be HOT. This wire should be connected to terminal #1 on the new heater.

2. With switches off, use OHM meter to identify ground wire and connect to terminal #5 on the new heater terminal strip. Tape off the remaining old wires as they will not be used.
3. The new combustion air blower red wire should be connected to terminal #1 and black to ground.
4. If aircraft has an old mechanical thermostat, it may be removed along with it's push-pull cable. See instructions of the new electronic adjustable duct switch CD21253 in the installation instructions, item 2D.