

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

Number SA01801CH

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 Civil Air Regulations.

Original Product Type Certificate Number: A-790
Make: Cessna Aircraft Company
Model: 190, 195, 195A, 195B

Description of Type Design Change:

Installation of Combustion Heater Kit P/N CD12091K11, in accordance with C&D Associates heater Installation Instructions IN12091K11, Rev.-, dated, February 4, 2003, 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. Full compliance with the C&D Combustion Heater Instructions for Continued Airworthiness, second edition, revision none, dated April 4, 2002, or later FAA approved revision, is 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.

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: February 11, 2003

Date reissued: February 11, 2016

Date of issuance: March 27, 2003

Date amended:

By direction of the Administrator




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

(Title)



**REAR HEATER INSTALLATION INSTRUCTIONS FOR
 HEATER KIT, P/N CD12091K11
 For Cessna 190, 195, 195A, 195B.**

READ COMPLETE INSTRUCTIONS BEFORE BEGINNING INSTALLATION

This system has been built to be installed on an aircraft that conforms to that aircrafts original Type Certificate (TC). If aircraft has been modified from the original TC (modifications such as props, engines, fuel system etc.) contact C&D Associates, Inc. for possible adjustments to this 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.

LOG OF REVISIONS

Rev.	Description	Pages Revised	Date
C	Reformatted and updated "Testing section"	All	9/24/15

1. PREPARATION

- 1.1. Remove the rear cabin area bulkhead located at station 102. Remove the upholstery along the left side of the cabin area below the windows.
- 1.2. Install the C&D Associates, Inc. TSO-C20 Approved Combustion Heater utilizing the existing Aircraft Service Manual or other FAA approved source where applicable.

2. INSTALLATION

- 2.1. Heater Platform Installation: (AC43.13-1B Chapter 4, Section 4, Par. 4-57, Riveting) (See Figure 1) Place the heater platform, P/N 24040, (large end forward) on the left side of the aircraft, aft of the baggage floor between stations 102 and 120.375. Position so that the back side of the platform touches, but does not overlap the bulkhead at station 120.375 and just below the longitudinal stringer running along the lower left side.
 - 2.1.1. Using the platform as a template, drill and cleco into temporary place.
 - 2.1.2. Using the inboard leg of the platform as a guide, make an index line on the floor, from the aft bulkhead at station 120.375 to the baggage area bulkhead at station 102. Through the center of the one-inch hole, make a 5/16" hole through the skin for the drain.
 - 2.1.3. Remove the platform and debur holes. Counter sink holes as needed.
 - 2.1.4. Measure back from station 102 two inches, and outboard of your index line 2.75" and place a mark for the exhaust. Measure 6.75" for the combustion air inlet and mark. Make a 2 1/2" round opening at the 2.75" mark and a 1 3/8" dia. hole at the 6.75" mark. Rivet the combustion air adapter P/N 21356. into the 1 1/2" hole, scarf facing forward to scoop in air, with six rivets evenly spaced.
 - 2.1.5. Install the heater platform and rivet into place.
- 2.2. Fuel Pump: (See Figure 1)
 - 2.2.1. Mount the fuel pump, with removable filter cap forward, onto the two mounting holes located in the front outboard section of the heater platform.



2.3. Fuel Line:

2.3.1. Fuel line fastening and routing is to be accomplished in accordance with AC43.13-1A, Chapter 8, Section 2, Paragraph 8-31, Fuel Lines and Fittings.

2.3.2. Original aircraft plumbing provided a heater fuel connection half way up the left side of the cabin area, under the middle of the windows at station 65.1875. Route a #4 line from the existing fuel line fitting aft through existing bulkhead openings back to the front fitting of the fuel pump. Clamp and secure every 12 inches as needed.

2.4. Heater Installation:

2.4.1. Place the heater on the heater platform being careful to place the exhaust in the 2 ½ exhaust opening of the fuselage. Secure using the two 6" clamps to the forward and aft mount.

2.4.2. Connect the combustion air inlet adapter (P/N 21356) to the heater combustion air blower, using the black 1 ½" hose and two clamps. Complete the fuel line connection from the fuel pump out fitting to the inlet on the heater.

2.4.3. Connect the red 4" hose to the outlet planum of the heater and fasten with a hose clamp. Direct the air to the desired location.

2.5. Inlet Plenum: (P/N 24017) (See Figure 1)

2.5.1. Mount, Air Inlet Plenum, P/N 24017, as shown in the illustration in the top upper corner under the hat shelf cross brace. Two 3/8" relief holes in the hat shelf cross brace will need to be made for the upper two rivnuts. Use the plenum as a template. Fasten to the bulkhead and hat shelf cross brace using two pull rivets. Connect the black 4" hose from the back end of the heater to the inlet plenum.

2.6. Electrical Connections: (AC43.13-1B Chapter 11 Section 8)

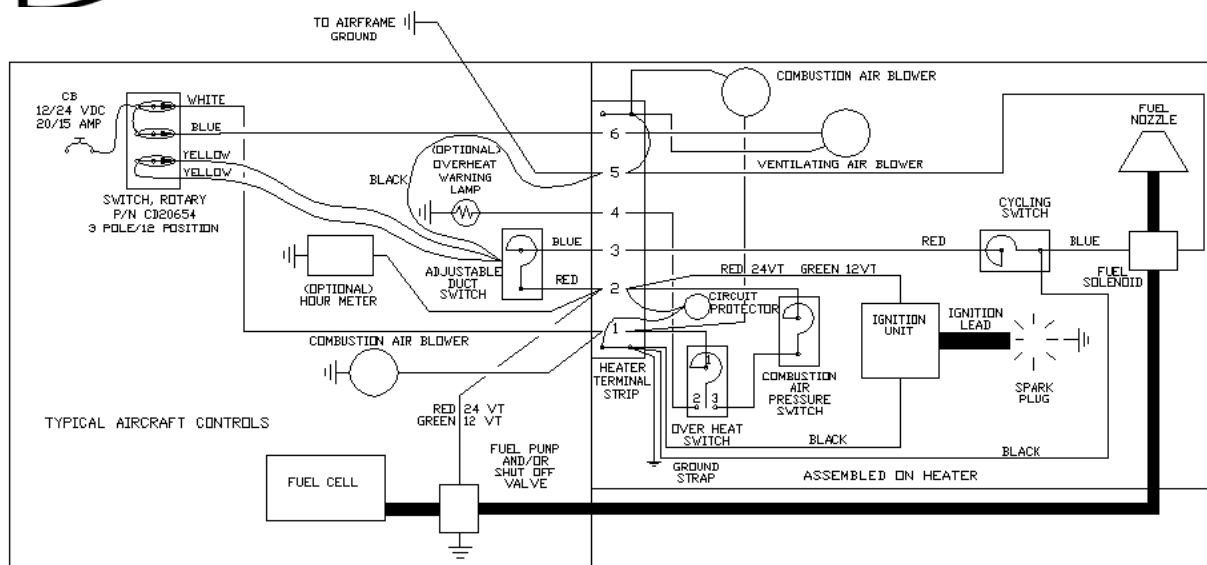
2.6.1. Switch, Rotary (CD20654A)

2.6.1.1. Install the new heater rotary control switch P/N 20654A in a convenient location on the pilot control panel making sure there is clearance around the switch body. Red wire to a 20 amp fuse at the buss bar. Black wire to ground.

2.6.1.2. Route remaining white, yellow, orange and blue wires along left side of aircraft with existing wire bundle to heater location.

2.6.1.3. Connect the wires coming from the control switch to the numbered terminal strip on the heater in the following manner.

- White 12 Gauge wire to terminal #1
- Blue 12 Gauge wire to terminal #6
- Orange and yellow wires to thermostat orange and yellow wires.
- Fuel Pump wire to terminal #2.
- Optional: Hour meter wire to terminal #2, Overheat warning light wire to terminal #4

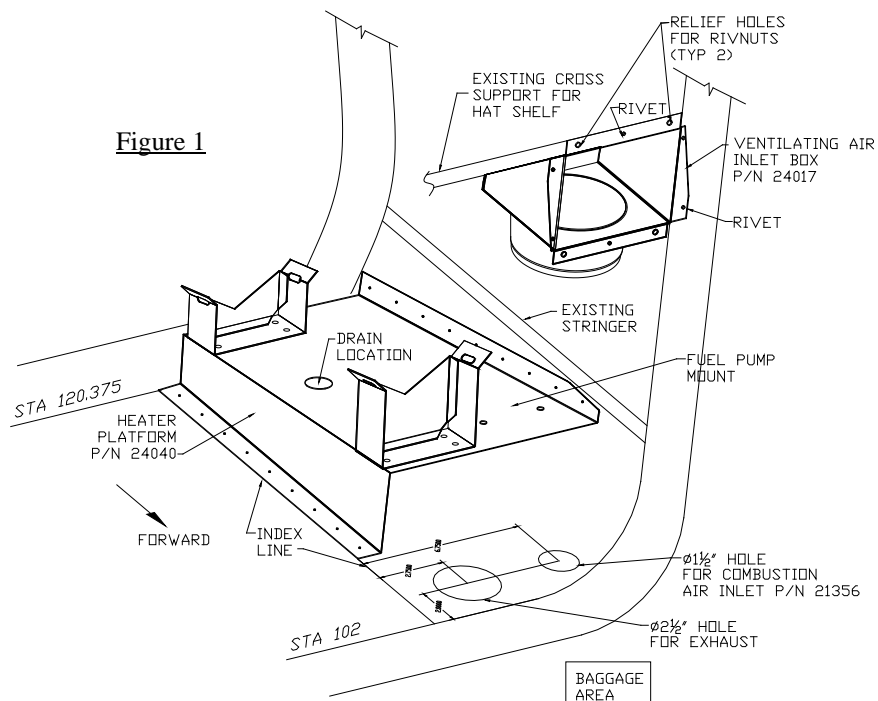


3. Operation Check:

- 3.1. With master switch on, turn the heater control to first position "Fan." Verify the ventilation fan is operational. (Airflow out of the outlet or red hose)
- 3.2. Heater Control Switch to next position "Heat." Verify that the ventilation fan is still operational and that the combustion air motor is operating with airflow out the exhaust. Check for voltage at the heater terminal strip numbers 1, 2 and 6. Rotate heater control switch clockwise until the heater fires.

IMPORTANT! Final Inspection before closing:

- Inspect all fuel lines and their connections for any possible leaks and mounting security. Verify that electrical wire, fuel line, and heater installation are clear of any aircraft control cable movement before installing flooring and panels.



4. TESTING

4.1 HEATER OPERATIONAL TEST AFTER INSTALLATION:

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

(Heater terminal strip numbered 1 2 3 4 5 6

4.1.1 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. Usually you can find a small access point somewhere in the ducting aft of the heater.

CAUTION: Verify thermal couple is not touching plenum internal wall.

4.1.2 Setting upper limit temperature upper limit switch

4.1.2.1 If your heater is equipped with a CD21252.....

- ❑ Place a 6" 20G jumper wire with 2 small alligator clips (or the like) across the heater terminal strip numbers 2 and 3, which will bypass the aircraft thermostat. (Fig. 2)

CAUTION: Be sure not to short any other terminals.

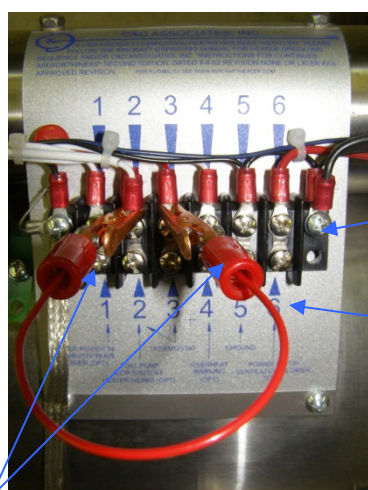
- ❑ With the heater running, verify that the outlet plenum temp. is approx. 250°. Adjust the temperature of the heat duct outlet distribution plenum to an average ambient temperature as follows.

- For non-pressurized aircraft set switch to a low of 215° and a high of 255°.
- For pressurized aircraft set switch to a low of 190° and a high of 225°.

NOTE: Adjustment is made by rotating a small 1/16" screw located next to the wires on the side of the switch. It may have a dab of inspectors lacquer over the screw. Rotation clockwise one turn will increase temperature approx. 20° F. Decrease temperature by turning counterclockwise (Fig 3).

- ❑ 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. Use a product that can be easily removed for readjustment if necessary.
- ❑ 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.
- ❑ Remove the temperature probe sealing the hole with high temperature silicone.

Figure 2



JUMPER WIRE
BYPASSING THERMOSTAT SENSOR
(AIRCRAFT WIRES NOT INSTALLED)

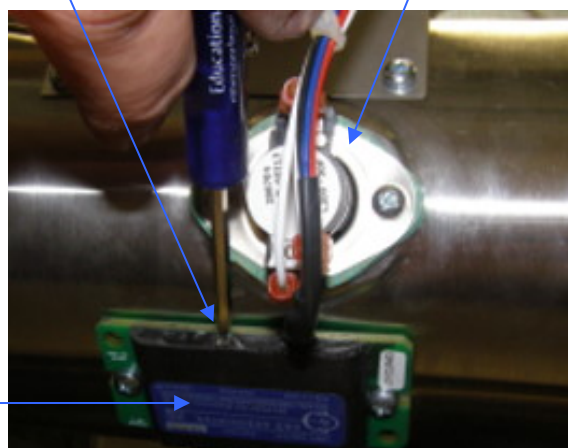
TERMINAL
STRIP

NUMBER
PLATE

CYCLING SW.
ADJUSTMENT

OVERHEAT
SWITCH

Figure 3



CYCLING
SWITCH
P/N 21252

4.1.2.2 **If your heater is not equipped with CD21252.....**

Upper limit adjustments should be made in accordance with aircraft manufacturer's instructions.

4.1.3 Install the fuel pressure gauge (0-15). Tee into as shown. (Fig. 4)

- With the heater running, verify fuel pressure.
 - Preferred pressure is 8psi. (6.5psi min, 10psi max)

4.1.4. Remove the fuel gauge installed in step 4.1.3. Leave the "tee" fitting and cap off for future pressure readings if desired.

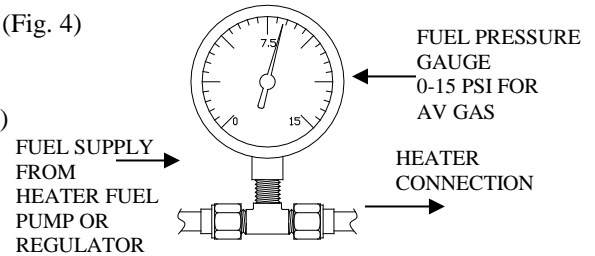


Figure 4

4.2 Verify proper installation is completed in accordance with the aircraft maintenance manual.

4.2.1 Verify all wires are secure and free of obstruction and chaffing.

4.2.2 If the hoses need to be replaced, we recommend Scelet-6 (1 1/2") red from the blower to the heater and Ceet-6 (1 1/2") black from outside air to the blower.

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

5. After installation, complete the operation and heat output tests specified in the C&D Associates, Inc. MM10001 Maintenance Manual for aircraft combustion heaters Rev L, dated 5/21/15 or later FAA approved revision. Tests should be accomplished in accordance with section 10.3 operational test, and 10.4 for heat output. Also in accordance with the "Instructions for Continued Airworthiness" "Preflight/Operational check and Shutdown Procedure." Rev E dated 5-21-15. These FAA-approved Instructions for Continued Airworthiness must be complied with and become a permanent part of the Aircraft Operations and Procedures manual.

6. Documentation:

6.1. Weight & Balance.

6.1.1. Install new heater kit of 25 lbs. The aircraft requires a weight and balance and a 337 must be completed and a copy of the STC attached. The logbook entry should contain the STC #SA01801CH_and PMA Supplement #34. Original heater replacement is authorized by way of FAA form 337. Alteration of aircraft by way of STC or PMA supplemental number and date must be recorded in the appropriate aircraft records.

6.2. 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" located in MM10001 Rev I dated 8/1/14 or later FAA approved revision."

6.3. Utilize existing aircraft combustion heater operating instructions or other FAA approved combustion heater operating instructions where applicable.

6.4. Electrical requirements: 12VDC at 18 amps.

6.5. Fuel consumption: Maximum operation 1.5 gal/hour.



DOCUMENTATION AND PARTS REQUIREMENT TABLE

DOCUMENTATION	Quantity
1. FAA/PMA Supplement #34	_____
2. Installation Instructions IN12091K11	_____
3. Label for flight manual	_____
4. MM10001 Maintenance Manual	_____
5. Quality Assurance Certificate of Compliance #527	_____
6. STC #SA01801CH	_____
7. 337 Form	_____

PARTS

		S/N
1. Heater	12091-1	_____
2. (1) Thermostat	21253	_____
3. (5'') Drain Line #4	20653	_____
4. (1) Plenum, Inlet	24017	_____
5. (1) Platform Assy, Heater	24050	_____
6. (1) Hose, Black (1.5'')	CEET-16	_____
7. (2) Clamp, Worm Drive	2 1/2''	_____
8. (1) Hose, Black (1.5'')	CEET-6	_____
9. (2) Clamp, Worm Drive	1 1/2''	_____
10. (66'') Hose, Red (4'')	SCEET-16	_____
11. (3) Clamp, Worm Drive	4''	_____
12. (1) Fuel Pump (7.5 PSI)	21370	_____
13. (2) Adapter	60136	_____
14. (2) Screw, Phillips	#10 x 1''	_____
15. (2) Washers, Starlock	#8	_____
16. (1) Inlet, Combustion Air	21356	_____
17. (1) Rotary Switch	20654	_____
18. (1) Plenum, Outlet	24045	_____
19. (25) Rivets, countersunk 1/8''	MS20470AD-AD4-3	_____
20. (2) Clamp, Worm Drive	6''	_____
21. (1) Circuit Breaker, 20 amp	W23X1A1G20	_____
22. (72'') #4 Alum 1/4'' Fuel Line	21337	_____
23. (4) B Nuts	60141	_____
24. (4) Sleeves	60156	_____
25. (1) Elbow	60144	_____
26. (1) Adapter	60136	_____

Initials: _____ Date: _____