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

# Supplemental Type Certificate

*Number* SA01526CH

*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.*
(See Type Certificate Data Sheet No. 1A13 for complete certification basis)

*Original Product Type Certificate* *Number:* 1A13
*Make:* REVO Inc.
*Model:* Lake LA-4, Lake LA-4A, Lake LA-4P, Lake LA-4-200, Lake Model 250

*Description of Type Design Change:*
Installation of C&D Associates Combustion Heater Kit 7 (Part Number CD12011K7) in accordance with C&D Associates, Inc., Heater Installation Instructions IN12011K7, Rev. H, dated October 22, 2013, 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. 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:* June 26, 2001

*Date of issuance:* August 23, 2001

*Date reissued:* February 12, 2014;
February 11, 2016

*Date amended:*

*By direction of the Administrator*

(*Signature*)

Timothy Smyth
Manager, Propulsion and Program Management Branch
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.*

# C&D ASSOCIATES, INC.



**HEATER INSTALLATION INSTRUCTIONS FOR MODEL CD35K KIT, P/N CD12011K7**

For Lake LA-4, LA-4A, LA-4P, LA-4-200, Lake 250

READ COMPLETE INSTRUCTIONS BEFORE BEGINNING INSTALLATION

1. Heater Mounting Bracket Installation: (see figure #1)

   A. Place a centerline mark on top of the cabin from the engine pylon forward 30" for alignment of the heater mounts and bonnet. Remove the vent outlet panel located aft of the overhead control panel.
   B. Doubler plate P/N 20710: At station 1470 identified approximately 12" forward of the engine pylon, where the aircraft skin overlaps. Remove the row of rivets (three on either side of the C/L), which holds the overlapped skins to a rib. Place the doubler P/N 20710 with the rivet locator line marked on the doubler over the removed rivets line (2 5/8 hole aft) and equally over the centerline mark. Transfer the existing rivet hole locations to the new doubler and temporarily fasten into place. Without moving the doubler, transfer the other holes in the new doubler to the roof of the aircraft. Install the new doubler using the original rivet pattern. Install the heat transfer adapter p/n 20709 (longer end down) through the 2 5/8" hole. The ¼" bead will keep the adapter from passing through the hole.
   C. Aft Heater Support Assembly P/N 20706: Mount this assembly, flanges forward, onto the new doubler P/N 20710 using three AN3-5A bolts, six AN960-10L washers and three AN365-10132 self-locking nuts.
   D. Forward Heater Support Bulkhead P/N 20704: Locate this support (flanges aft) over the center line (mounting hole to mounting hole) 19" from the aft heater support. Install using 3 each AN3-5A bolts, six AN960-10L washers, and three AN365-10/32 self-locking nuts.

2. Combustion Air Blower Installation:

   A. Mount the combustion blower (housing to left side) onto the doubler just forward of the pylon, secure with four 10/32" self-locking nuts. Adjust motor clamps as needed for clearance when bonnet is installed.
   B. Install temporarily the new heat distribution plate. P/N 20708. Install the transfer adapter P/N 20709 thru the 2 5/8" hole from above to rest on the distribution plate. From above, mark the hole and cut the distribution plate as needed to allow the transfer adapter to extend down through the distribution plate. Remove the distributor plate, P/N 20708 until step #9.

3. Aft Bonnet Section: (see figure #2)

   A. Exhaust opening on the right side of bonnet. Measure along the lower mounting flange from the front 7 ¾" using a 90° square measure up 3 ½". This will be the location of a 2 1/8" hole to be cut in the bonnet. After the hole is cut, use a square to extend the opening down to within ½" of the bottom flange.
   B. Overheat reset access: On the right side of bonnet measure along the lower mounting flange from the front 3 1/8" and up 4 7/8". Make a 1" hole for the overheat reset access.
   C. Combustion Air Blower Inlet: On the left side measure from the front 18 ¼" along the lower mounting flange and up with the square 2 ½". Make a 2" hole.
   D. Drain location: On the left side, measure from the front 1" along the lower mounting flange and up with the square 1". Make a ½" hole for the drain.

4. Installing the heater: Insert the front of the heater into the front bulkhead mount and aft cradle mount. Adjust heater so that the forward drain is square with the roof, and the outlet plenum adapter fits into the transfer adapter P/N 20709, which may need to be trimmed for a secure fit. Before tightening the 6" clamp for final installation verify that, with the bonnet installed, the exhaust of the heater is in correct alignment with the top of the bonnet exhaust cut out. After a trial fit of the bonnet, tighten the 6" clamp on the aft mount. Connect the Combustion Blower to the combustion air inlet adapter by using the 1 ½" sceet hose and clamps.

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5. Regulator/Fuel Pump Installation: Install at the aft, left side, of the rear heater support assembly. For fuel injected A/C (20-35 PSI supplied) install the fuel regulator with the out port up. Aircraft that have carburetor (1-7 PSI supplied) install the fuel pump with the removable filter cap down.

6. Fuel Line Connections: Install the #4 fuel line from heater to "out" port of fuel regulator or fuel pump. Connect fuel line from fuel regulator or fuel pump to existing fuel line "T" fitting.

7. Electrical: Provide a 20 amp fused circuit up to the existing overhead panel just forward of the new heat distributor housing. Install the new heater control switch in a convenient location in this panel using the new "heater control" decal as a pattern. Route the white, blue, and two yellow wires back to the wire bundle going up through the cabin roof. Secure as needed.

   A. Heater Control Switch Wire Connections: Red to 20 amp circuit breaker, white to terminal #1 on heater, blue to terminal #6 on heater, yellow to thermostat sensor yellow wires (non polarity), located on back of heater outlet plenum.
   B. Thermostat Sensor: On back of outlet plenum "red wire to heater terminal #2, blue wire to heater terminal #3."
   C. Combustion Air Blower: Red to heater terminal #1, black to #5(ground)
   D. Regulator or Fuel Pump: Regulator - "green wire to heater terminal #2, black wire to heater terminal #5." Fuel Pump – "wire to heater terminal #2."
   E. Hour Meter (optional): wire to terminal #2, wire to #5 (ground).
   F. Heater Terminal Strip: Terminal #5 to airframe for grounding purposes.

8. Place the assembled bonnet over the installed heater and transfer the flange holes to the aircraft roof. Install eleven 8/32" rivnuts in the roof and reinstall the bonnet using eleven 8/32" x 5/8" screws. Install the upper fairing P/N 20702.

   A. Exhaust Shield P/N 20711: Place over the exhaust and transfer the four mounting holes to the bonnet. Install four 8/32" rivnuts into the bonnet and secure the shield in place with four 8/32" x ½" screws.
   B. Fairing P/N 20702: Install over the new bonnet, locating the two lower holes as needed to match the rivnuts in the bonnet.

9. Heat Distribution Plate and Housing P/N's 20708 and 20707 installation: Reinstall the Distribution plate P/N 20708. Make sure the adapter P/N 20709 is extending thought the 2 5/8" hole and seal with silicone. Heat distribution outlets may be installed in the distribution housing P/N 20707 as desired. Secure the housing through the plate and onto the cabin ceiling.

10. AIRWORTHINESS

    A. Follow the 'Combustion Heater PREFLIGHT/OPERATIONAL CHECK AND SHUTDOWN PROCEDURE' outlined within the Combustion Heater "Airworthiness Limitations," First Edition, Revision A, dated 12-15-99 or later revision, included with these instructions. This FAA approved Airworthiness Limitation must become a permanent part of the Aircraft Operations and Procedures manual.

    B. NOTE: Full compliance with the enclosed 'Combustion Heater Airworthiness Limitations' is required.

    C. NOTE: Electrical requirements 12 VDC, 18 amps

    D. NOTE: Weight and balance change: Install C&D heater kit weighing 40 pounds.

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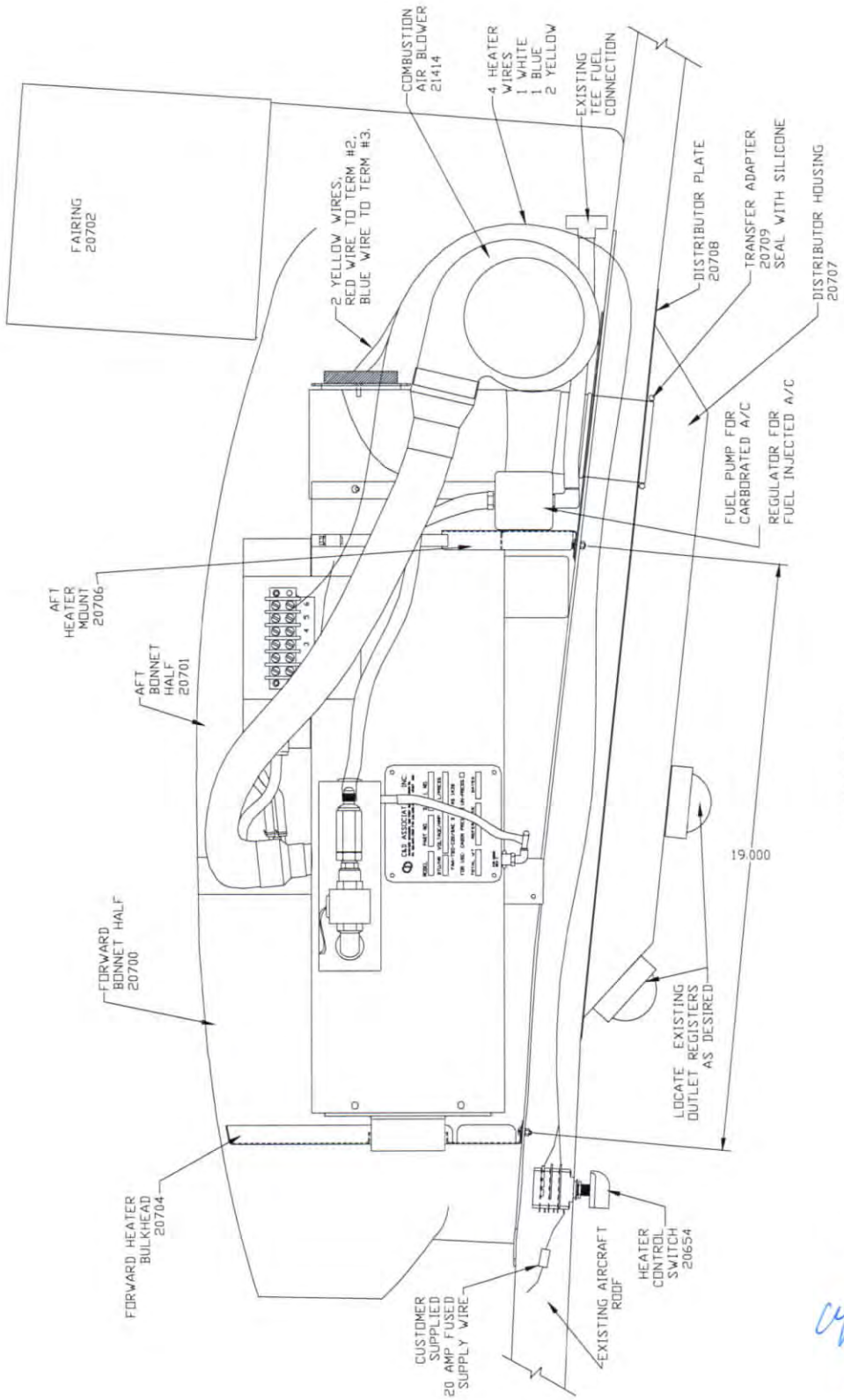


FIGURE 1

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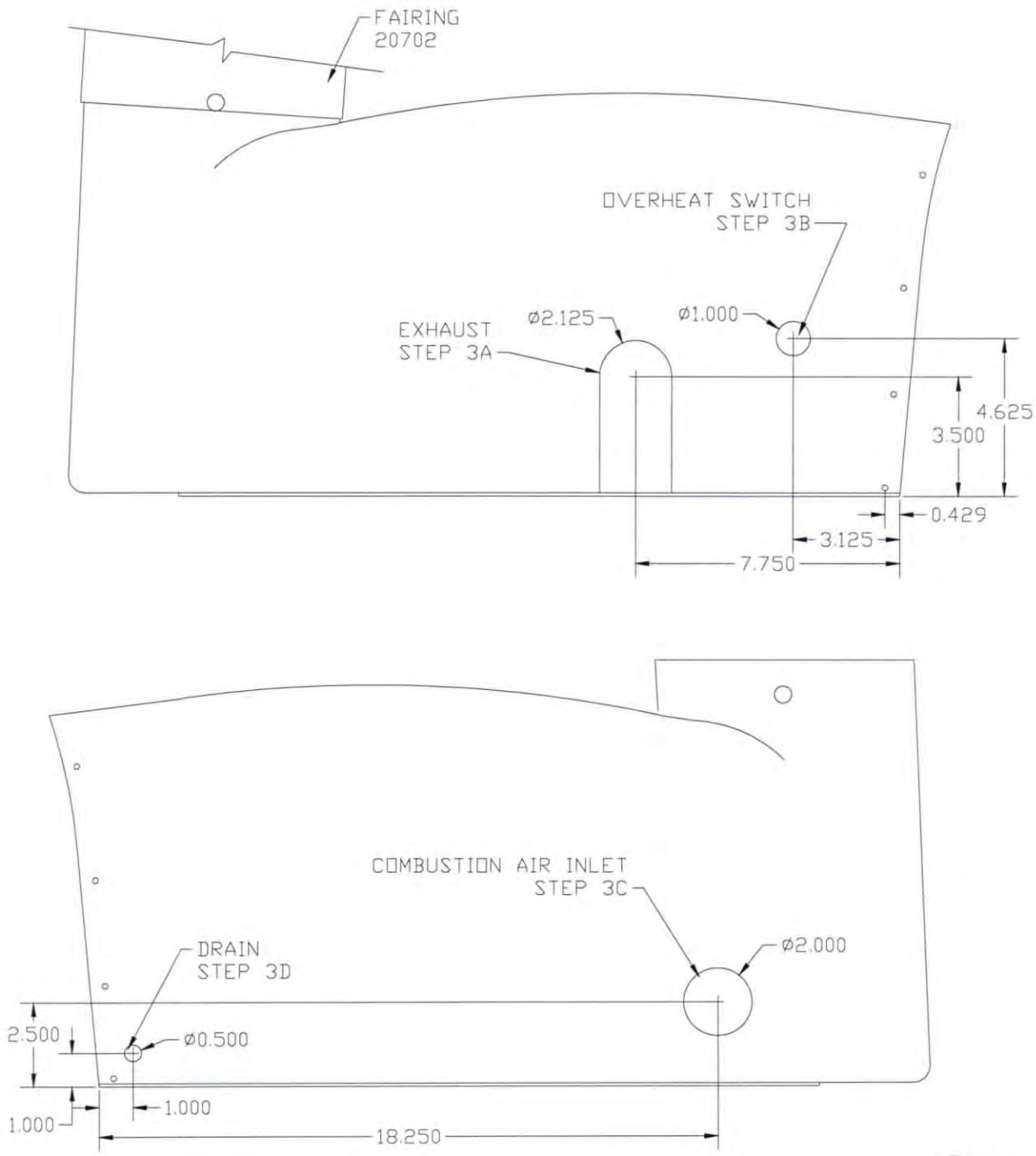


FIGURE 2, BONNET, AFT SECTION P/N 20701

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