



INSTRUCTION – AV/CABIN HEATER INSTALLATION

Subject: THP3094 series of Avionics/Cabin Heaters

Document No: TN03094

Revision: E

Date: NOV-16-2018

RECORD OF REVISIONS

When updated, this document is changed in its entirety.

REV	DATE	DESCRIPTION	BY	CKD
E	NOV-16-2018	Add CB4000E3CR14 stud correct narrative pg jump § 6.	DNE	GDO
D	NOV-02-2018	Rewrite adding mounting and controller options.	DNE	GDO
C	JUL-14-2016	Add Figs 3 & 4 Locating and clearances	DNE	DNE

Current revision approval: _____

1. PURPOSE

This instruction provides guidance for installation of Subject heater listed above. When configured for occasional use refer to Section (§) 4.

2. DESCRIPTION

THP3094 series of heaters are self-contained 500-watt forced air positive temperature coefficient (PTC) heaters. They Do Not operate in flight and are not connected to or dependent on aircraft systems.

Designed for compartment volume of 180 ft³ / 5 m³ (4 to 6 seat aircraft), expected temperature rise above ambient, 35°F / 18°C approximate.

Output: 500 watts ± 10%

Dimensions: 6 x 5.75 x 2 inches (150 x 145 x 45 mm) Approximate

Weight: 1.3 lbs (0.6 Kg) Approximate (installation hardware not included)

Heater lead length: 6 inches (15 mm) Approximate

Voltage: 100-240 VAC

Current draw: 6-amps @ 100 VAC 3-amps @ 240 VAC

Inrush: 9-amps (up to 15-amps temperatures below -10°C / 14°F)

Static Resistance: 26.5 Ω (21°C / 70°F)

Warranty: 3 yrs. (36 mo.) from the date of shipment.

3. RATINGS

UL94V-0 Flammability UL: 20150703-E239394 CE: R 50314338 P.1-4_CE

IP20 (IEC60529) TUV RHEINLAND: R 50314338

PROPRIETARY DATA

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4. INSTALLATION



Caution: Not for use or installation in areas exposed to weather, fluids, or fuel vapors.

Technicians and user of this guide must determine whether design change is compatible before starting installation and are to be familiar Installation Guide TNG1000.

For circuit and current load requirements, refer to Figure 6.3.

Occasional use:

THP3094-500 heater is supplied configured for occasional use, with rubber feet and 6 ft (1.8 m) power cord (TPS3129).

To use heater place horizontally floor below avionics suite and connected to power. For recommended minimum ducting clearances, refer to Figures 6.4 and 6.5, and Operating Guide TPG3094. Note: Extension cord to connect external shore power outlet (GPU) not included.

Permanent installation:

Heater, unless configure through NHA, is not supplied with installation hardware, cabling or controller, refer to Figure 6.3.

Installation to be consistent with installation methods, techniques and practices for avionics equipment reference AC 43.13-2 (as amended) Chapter 1 and 2.

- a) When not installed as subcomponent of higher level kit, permanent or seasonal installation may require field approval (337), to be determined (TBD) by installing authority.
- b) Instrument panels as well as other panels throughout the aircraft may be structural or nonstructural in design. Structural loads must be adequately transferred to primary airframe members.
- c) 500 series heaters are supplied with rubber feet, remove before starting installation. Feet and TPS3129 power cord not used. Do Not remove 6-inch heater lead.
- d) For Weight and Balance requirements refer to TNG1000.

List of common/optional components used with heater installation:

Cabling:

TC03164 Cable, with circuit protection device (CPD) available in various lengths, refer to drawing 03164.

Controller Kits:

TU03238 Thermostat Kit, with adjustable thermostat and control cable, for installation and specifications refer to instruction TN03235.

TU03253 Thermal Control Kit, with fixed temperature controller; open on rise 25°C (77°F) and control cable, for installation and specifications refer to instruction TN03251.

Mounting Hardware:

Click Bond Studs, CB3000 (steel base) or CB4000 (fiber base) series, refer to Figure 6.8.

Dual Lock™ Strips, TU03239 series strips, refer to Figure 6.9.

For additional hardware and material standards refer to Materials section of TNG1000.

5. MAINTENANCE AND SERVICE

There are no authorized repair procedures. Heater is not to be modified beyond removing rubber feet for installation. Should a malfunction be detected, refer to TCA1000 for trouble shooting.

- Keep dry and free from Foreign Objects and Debris (FOD).
- Annually inspect: security of attachment, air intake and outlet ports for FOD and obstructions, and verify operation.

6. FIGURES

Examples in section are for reference. Actual configuration and installations may vary by application, operational requirement, specific kit and/or subcomponent installation instruction.

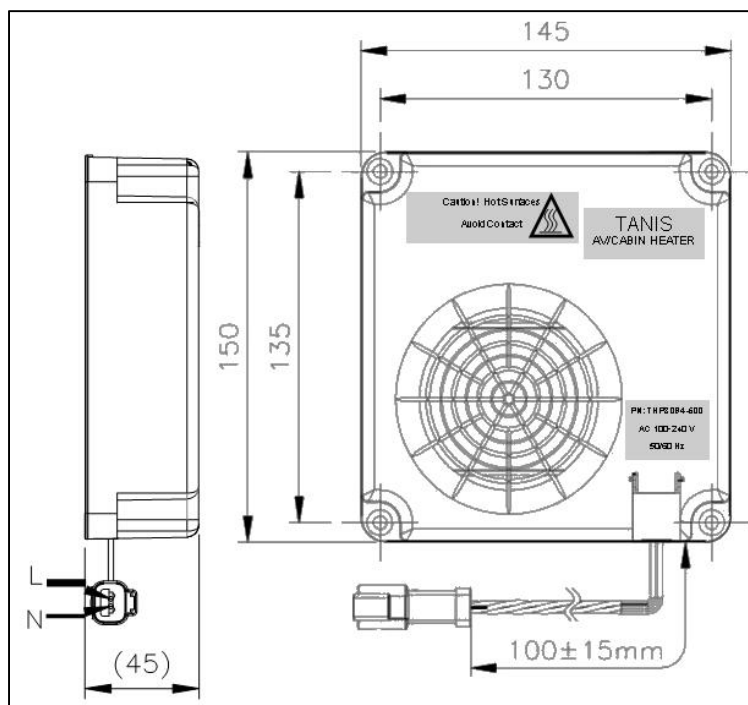


Figure 6.1. Outline Dimensions: 5.9 in x 5.7 in x 1.8 in (150 mm x 145 mm x 45 mm)

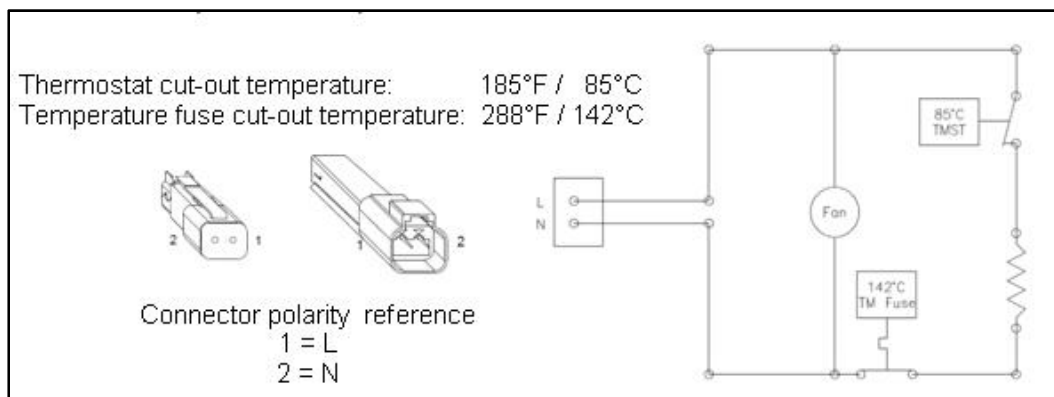


Figure 6.2. Internal heater circuit with thermostat, temperature fuse, and polarity.

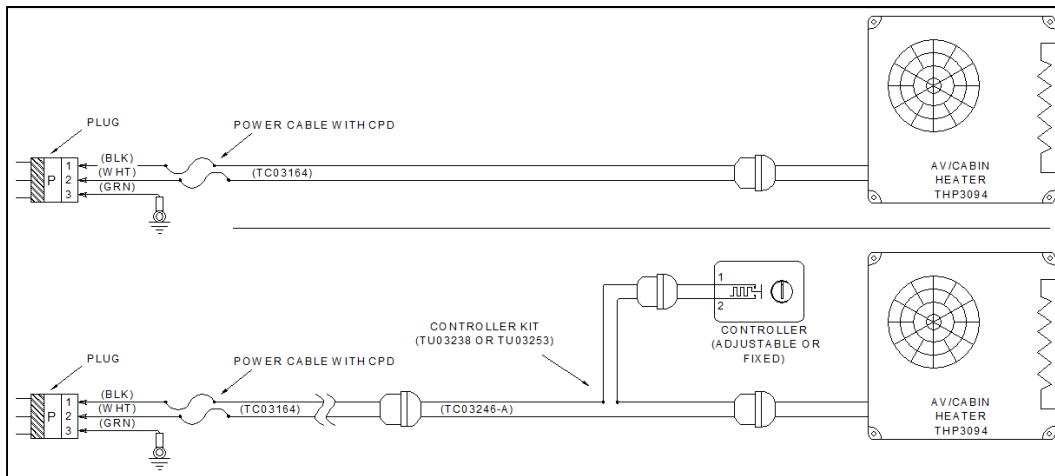


Figure 6.3. Reference diagrams for heater configurations.

Permanent or seasonal installation requires plug and cabling with dedicated circuit protection device (CPD). Optional controller kits available or supplied through NHA: TU03238 Thermostat Kit with adjustable thermostat, instruction TN03235. TU03253 Thermal Control Kit with fixed temperature controller, instruction TN03251.

Note: Circuit load requirement, constant 6-amps, inrush 9-amps (up to 15-amps at temperatures below -0°C / 14°F).

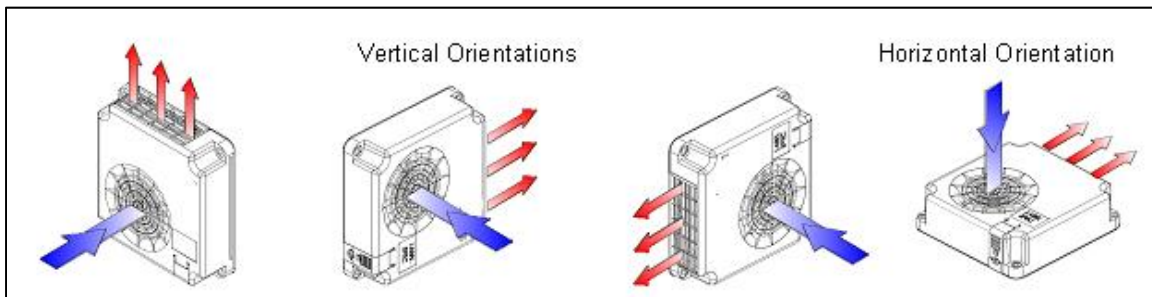


Figure 6.4. Locating orientations with ducting flow

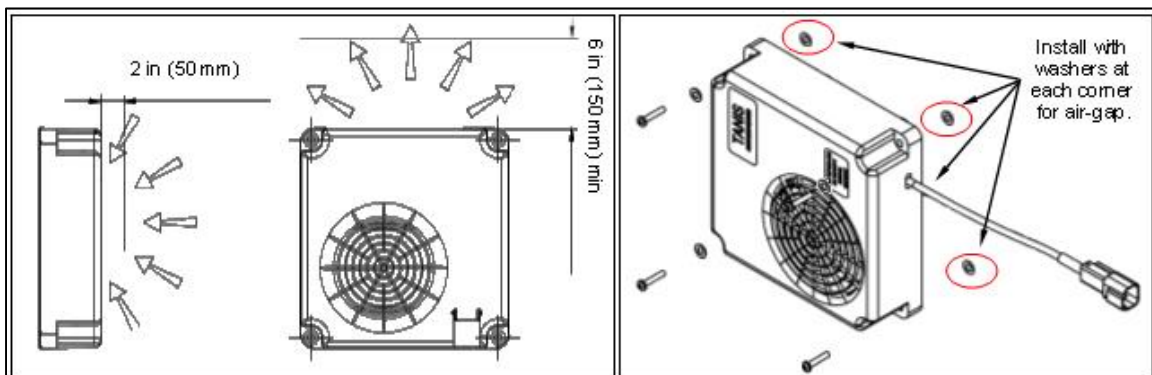


Figure 6.5. Maintain minimum ducting clearances to avoid warm air standstill and/or overheating of heater and items near outflow, 2 inches inlet, 6 inches outflow. Permanent installation requires 0.032 in (0.8 mm) min air-gap.

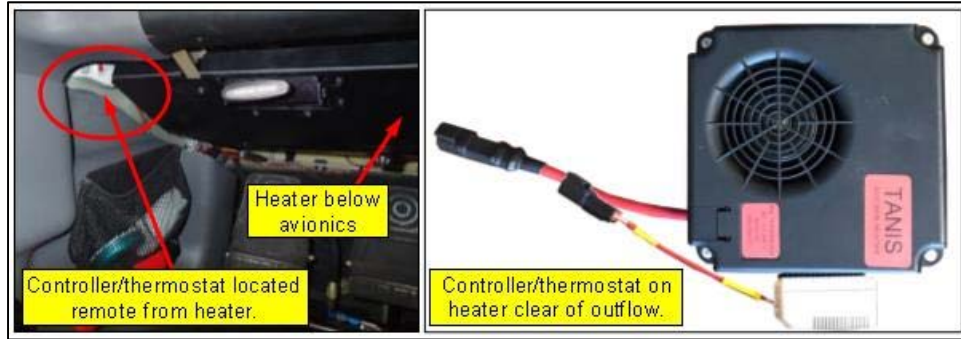


Figure 6.6. Example of heater configured with controller. Location of controller TBD by installing technician or NHA instruction, may vary due to sensing requirements.

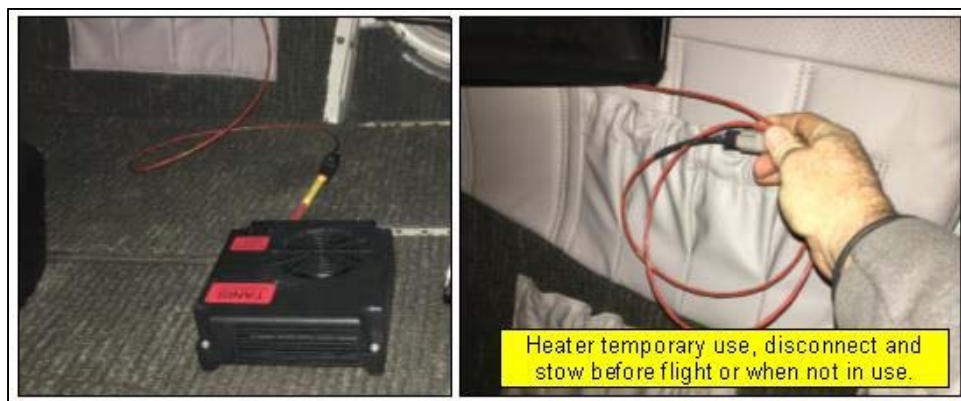


Figure 6.7. Example of heater configured for temporary use with power cable TC03164. Cable routed from shore plug to heater, disconnect and stow before flight.

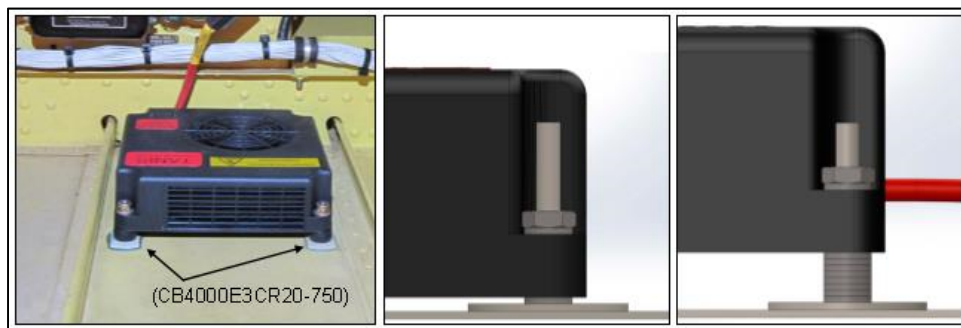


Figure 6.8. Example of heater located with Click Bond™ stud mounts at each corner, use spacers or washer as required by installation.

CB4000E3CR14 or 16 (7/8/1.0 inch 10-32) or CB4000E3CR20-750 or equivalent CB3000 (steel base) or CB4000 (fiber base) series, round or trimmed base (-750). Stud length may vary as required for installation. For alternates refer to Click Bond drawings CB3000 Rev 23 and/or CB4000 Rev 23 or later.

Requires CB92 adhesive mix kit or CB200 acrylic adhesive, refer Click Bond Data Sheet CB200 for site preparation and product installation.



Figure 6.9. Example of heater located horizontally with TU03239-02 Dual Lock™ Strips 1x2, two each corner.

Surface preparation: Lightly abrade glossy surfaces with scotch bright to improve the adhesive bond. Just prior to locating strips clean contact surfaces of mounting site and heater with CB911 solvent wipe, rubbing alcohol, or heptane. To prevent redistribution of contaminants, dry with a clean dry cloth before solvent evaporates.

Do Not use shop towel, rags or paper wipes contaminated with oil, soap, or reclaimed solvents.

Without touching adhesive remove liner from strip adhesive and firmly press strip in place. To insure 100% of adhesive strip is in contact, especially around perimeter, press in place with down force pressure of 5 to 10 lbs. Be sure not to damage re-closable fastener stems.

For additional application procedures refer to 3M Dual Lock™ Application Guide.



Figure 6.10. Examples of heater installation, left on avionics plate/shelf and right on firewall.

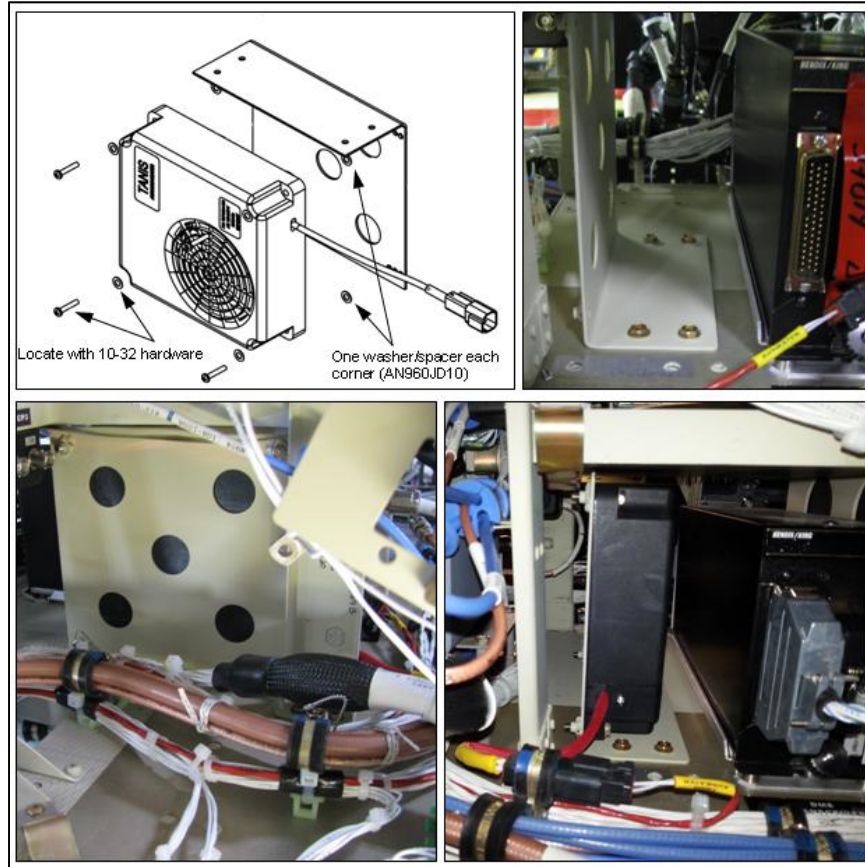


Figure 6.11. Example of heater located on existing avionics shelf using TU03143 bracket configured with 10-32 nutplates, composite shelf fitted with 4 each 80-005-2 threaded inserts in shelf (size accordingly based on shelf thickness) or locate with appropriate through bolt hardware. When locating on composite panel/shelf, pot holes with Hysol EA934NA (299-974-100 Type II Class 2), or EA9309NA (299-974-125 Type I) or equivalent OEM approved sealant.

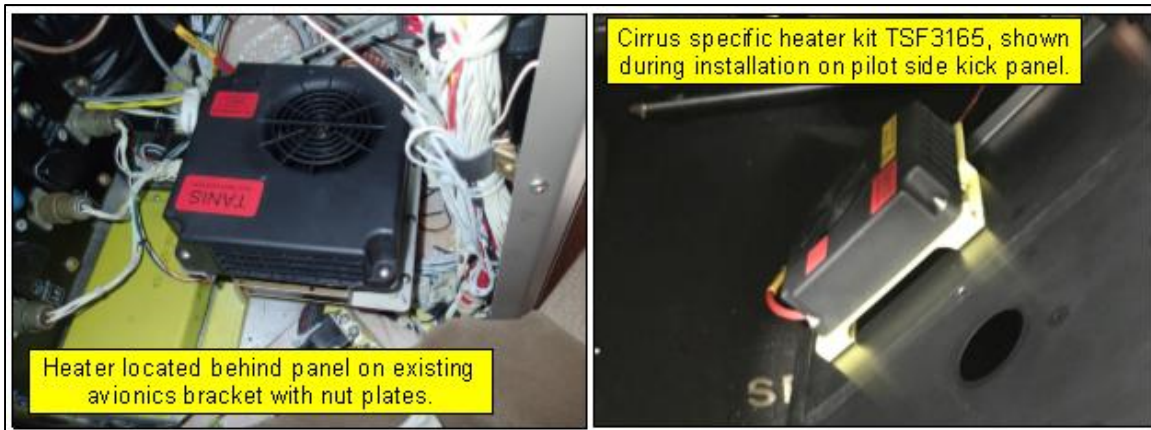


Figure 6.12. Examples of heater located behind and below avionics panel. When locating in restricted area position with outflow pointing away from avionics and maintain minimum ducting clearances.

***** NOTHING FOLLOWS *****