



## Axially Grooved Heat Pipes — Simple and Reliable



**Axially grooved constant conductance heat pipes (CCHPs) from Thermacore provide unsurpassed thermal transfer of high heat (hundreds of watts) over relatively long distances (up to 3 meters or more) and they can cost less to fabricate than heat pipes with conventional wicks.**

Axially grooved constant conductance heat pipes, almost maintenance-free, are ideal for [satellite thermal management](#) applications. For electronics [enclosure cooling](#), the long-range heat transfer capabilities of these heat pipe solutions are ideal for increasing design flexibility, giving engineers a variety of options for cooling electronic components in various challenging locations.

Axially grooved heat pipes work best where gravity is not a factor, e.g., in horizontal configurations or aerospace/satellite applications. Axial groove heat pipes like this one are very efficient in returning condensate to the evaporation.

Axially grooved heat pipes use a circle of grooves in the interior wall of the heat pipe envelope as the wick efficiently pulls condensate back to the evaporator from the cooler surfaces where working fluid had condensed.

### Axially Grooved Heat Pipe Advantages

- No moving parts to fail — extremely reliable
- Long-distance transfer of heat is possible — greater range than sintered powder metal or screen wick heat pipes
- Wide operating temperature range: -200°C to 250°C
- Low mass
- Flight qualification
- Customizable



Fichier : BCFMKM\_Thermacore\_Axially Grooved Heat Pipes\_082010.doc

Création : 05/08/2010 15:21

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### **Thermacore Axially Grooved Heat Pipe Experience and Capabilities**

- Wide range of heat pipe envelope materials to choose from:
  - Aluminium
  - Copper
  - Stainless steel
  - Titanium
- Wide range of working fluids to choose from:
  - Ammonia
  - Water
  - Acetone
  - Ethane
  - Ethanol
  - Propylene
  - Nitrogen

### **Standard and Custom Profiles**

- Single- and dual-bore geometry
- 1/4" (12.5 mm) and 5/8" (15.9 mm)
- Other sizes and profiles available
- Straight or bent heat pipe configurations

### **Manufacturing Capabilities**

- High-purity working fluid processing
- Non-Condensable Gas (NCG) testing
- Proof pressure testing
- Aerospace qualified welding
- Maching bending and forming
- Post-pinch leak testing
- Thermal cycling
- 100% thermal performance testing
- Embedding into radiator panels

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