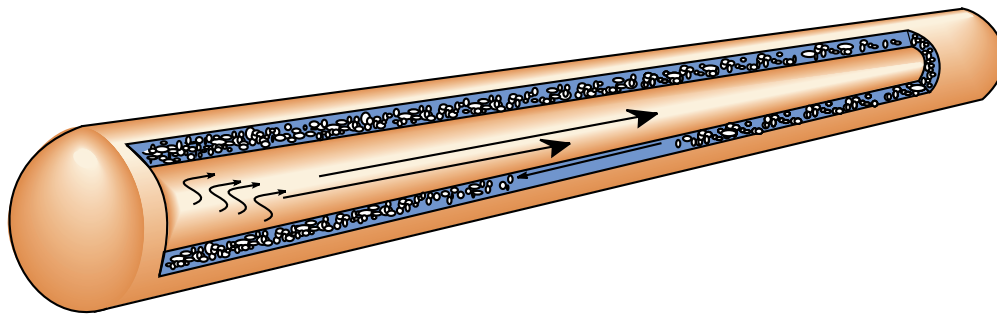




# THERMACORE

## HP-1 Heat Pipe



- ◆ HIGH POWER DENSITIES
- ◆ OPERATION IN ANY ORIENTATION
- ◆ WITHSTANDS -65°C ENVIRONMENTS

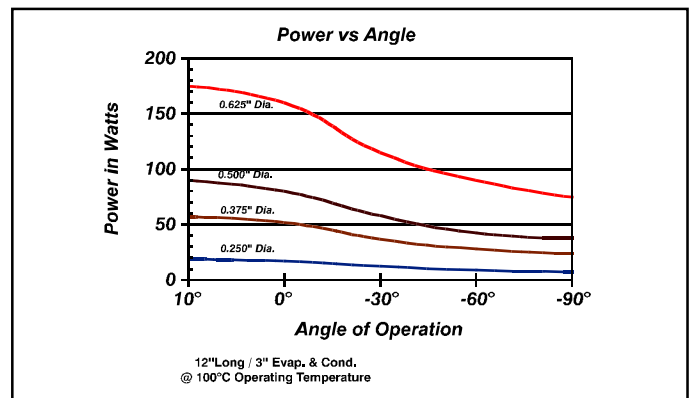
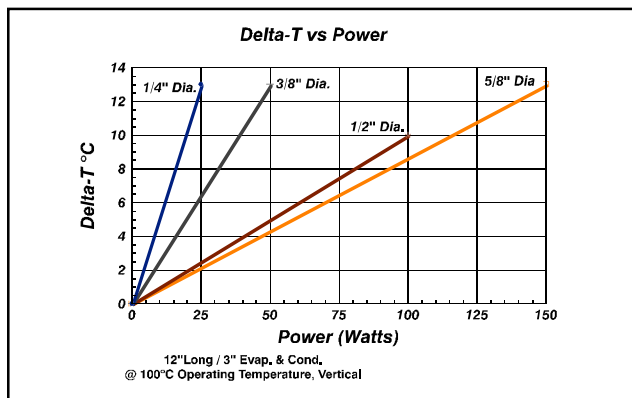
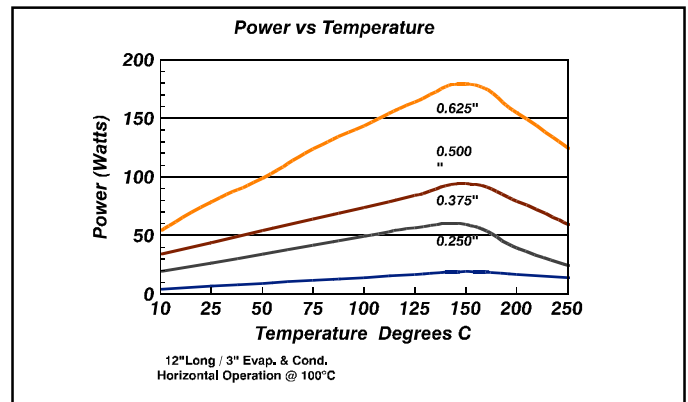
### SINTERED COPPER POWDER WICK STRUCTURE

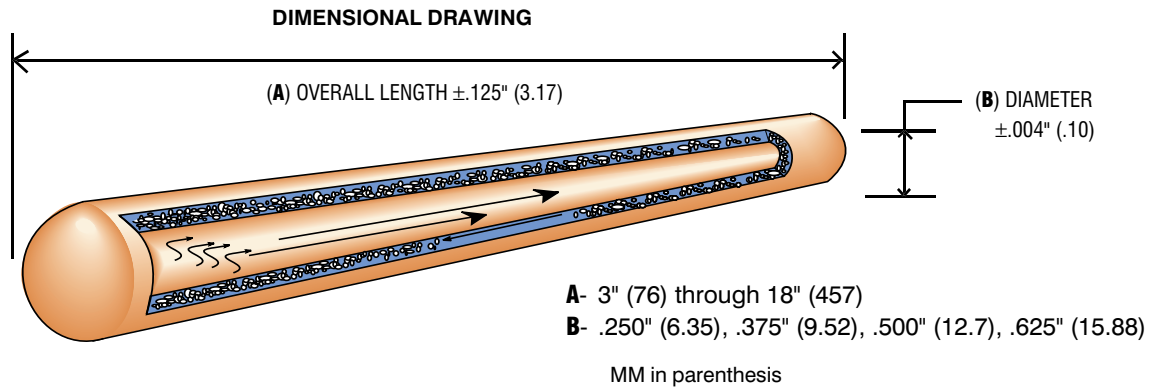
The HP-1's high performance sintered wick structure permits the effective operation of the heat pipe in any orientation. See Fig. #2 for thermal performance. This wick structure assures the HP-1 will tolerate continual freeze/thaw cycling found in many commercial and military applications.



The HP-1 is a high performance heat pipe designed to handle demanding applications. With a power density capacity of 50 W/cm<sup>2</sup> and the ability to operate against gravity, the HP-1 will provide effective cooling for electronic components.

The HP-1 Heat Pipe is available in diameters of .250" (6.35), .375" (9.52), .500" (12.7) and .625" (15.88). It is available in lengths from 3" (76) through 18" (457). The HP-1 heat pipe is manufactured with a copper envelope, copper sintered wick structure and water as the working fluid. The HP-1's nominal operating temperature is 40° to 180° C.



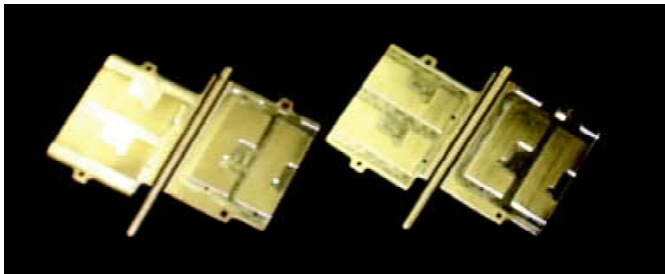
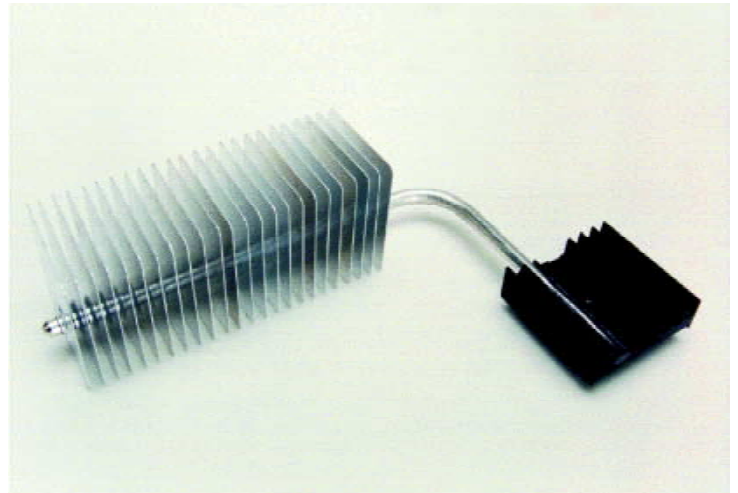


### OPERATION

Maximum power density in the evaporator is 50 W/cm<sup>2</sup>

The **HP-1** will withstand the effects of freeze/thaw cycles and can tolerate storage temperature of -55° to 180° C.

The **HP-1** Heat Pipe is intended to be clamped, epoxied or soldered to both the heat source and heat sink. When soldering, avoid heating above 180° C. The **HP-1**'s design is proven and has a substantial safety margin to accommodate variation in both manufacture and use. It is manufactured under uncompromising quality control with each production run subjected to complete testing. The world's largest life testing program on heat pipes is conducted under the supervision of Thermacore's Engineering Department. This assures the guaranteed life of the **HP-1** Heat Pipe.



### HEAT PIPE APPLICATION

The evaporator of the **HP-1** is shown soldered to a copper plate that is a mounting plate for high power electronic components. The heat pipe's condenser is then attached to a liquid cooled heat sink. This application is in an electronic tester that is subject to operation in any orientation.

### ORDERING INFORMATION

The standard **HP-1** Heat Pipe is available in four diameters: .250" (6.35), .375" (9.521), .500" (12.7) and .625" (15.88) and in lengths from 3" (76) to 18" (457). Order the diameter and length that is required for your application. When ordering, make allowances for the fill tube (inoperative length). Length tolerance of the **HP-1** is  $\pm .125''$  (3.17).

Besides the standard sizes of **HP-1**, Heat Pipes can be ordered from Thermacore in a variety of sizes, shapes and performance ratings. Other Thermacore products include customized Heat Pipe Assemblies, Isothermal Rollers as well as products for Military and Commercial electronics cooling. Thermacore also manufactures Cabinet Coolers and Liquid to Air Heat Exchangers

### SAFETY

The end seal of the **HP-1** is designed to open in the temperature range of 250° C, which provides a safe release for internal pressure. It is the responsibility of the user to make provisions to assure the **HP-1** will not be operated above its stated maximum operating temperature. After the high internal pressure is released, the heat pipe is inoperable.

The **HP-1** is made from annealed copper and is easily bent. Care must be taken to make sure the heat pipe is not damaged by rough handling or dropping.

### LIMITED WARRANTY

Thermacore warrants the **HP-1** Heat Pipe to perform in accordance with the information on this sheet for one year from date of purchase. **There are no warranties which extend beyond the description stated herein.** Thermacore will, at its option, repair or replace any **HP-1** Heat Pipe determined by Thermacore to be defective, provided the **HP-1** is returned to Thermacore's factory transportation charges prepaid. Thermacore shall not be obligated to repair or replace any **HP-1** Heat Pipe that has been abused, altered, operated outside of its published rating or otherwise misused or damaged in any way.

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