

# Heat Pipes

## Reduce Maintenance and Operating Costs

The increased waterline diameter, coolant velocity and heat capacity effectively eliminate scale formation, calcium deposits and the plugging up of small waterlines and ports. In addition, Heat Pipes operate in any coolant without corroding.

## Upgrade Existing Moulds and Dies

Heat Pipes effectively solve cooling, cycle time or part quality problems in existing moulds. They can be retrofitted as replacements for bubblers or baffles and to provide heat transfer in previously uncooled areas.

## Salvage Damaged Moulds and Dies

In certain applications, Heat Pipes can even be used to salvage or repair moulds that would otherwise have to be scrapped or extensively reworked.



## Metric Heat Pipes

LENGTH (mm)	DIAMETERS AND CATALOGUE NUMBERS						LENGTH (mm)
	2mm	3mm	4mm	5mm	6mm	8mm	
50	HTR2X50	HTR3X50	HTR4X50	HTR5X50	HTR6X50	HTR8X50	50
55	HTR2X55	HTR3X55	HTR4X55	HTR5X55	HTR6X55	—	55
60	HTR2X60	HTR3X60	HTR4X60	HTR5X60	HTR6X60	HTR8X60	60
65	HTR2X65	HTR3X65	HTR4X65	HTR5X65	HTR6X65	—	65
70	HTR2X70	HTR3X70	HTR4X70	HTR5X70	HTR6X70	HTR8X70	70
75	HTR2X75	HTR3X75	HTR4X75	HTR5X75	HTR6X75	—	75
80	HTR2X80	HTR3X80	HTR4X80	HTR5X80	HTR6X80	HTR8X80	80
85	HTR2X85	HTR3X85	HTR4X85	HTR5X85	HTR6X85	HTR8X85	85
90	HTR2X90	HTR3X90	HTR4X90	HTR5X90	HTR6X90	—	90
95	HTR2X95	HTR3X95	HTR4X95	HTR5X95	HTR6X95	HTR8X95	95
100	HTR2X100	HTR3X100	HTR4X100	HTR5X100	HTR6X100	—	100
105	HTR2X105	HTR3X105	HTR4X105	HTR5X105	HTR6X105	HTR8X105	105
110	HTR2X110	HTR3X110	HTR4X110	HTR5X110	HTR6X110	—	110
115	HTR2X115	HTR3X115	HTR4X115	HTR5X115	HTR6X115	HTR8X115	115
120	HTR2X120	HTR3X120	HTR4X120	HTR5X120	HTR6X120	—	120
125	HTR2X125	HTR3X125	HTR4X125	HTR5X125	HTR6X125	HTR8X125	125
135	HTR2X135	HTR3X135	HTR4X135	HTR5X135	HTR6X135	—	135
145	HTR2X145	HTR3X145	HTR4X145	HTR5X145	HTR6X145	HTR8X145	145
155	HTR2X155	HTR3X155	HTR4X155	HTR5X155	HTR6X155	—	155
165	—	HTR3X165	HTR4X165	HTR5X165	HTR6X165	HTR8X165	165
185	—	HTR3X185	HTR4X185	HTR5X185	HTR6X185	HTR8X185	185
205	—	HTR3X205	HTR4X205	HTR5X205	HTR6X205	HTR8X205	205

1. Insert hole diameter should be 0.1 to 0.2mm larger than the heat pipe
2. Heat pipe conductive grease must be used to fill any clearance to improve heat conductivity

## Heat Pipe Conductive Grease

### Silver Heat Conductive Grease

This grease contains micro particles of silver to provide a thermal resistance of 4.75°C in/watt. The grease is supplied in a 5cc plastic syringe. (DME recommends this product because it has 8 times lower thermal resistance than the copper equivalent).



### Copper Heat Conductive Grease

This grease contains micro particles of copper to provide a thermal resistance of 38°C in/watt. The grease is supplied in a 5cc plastic syringe.



CATALOGUE NUMBER	DESCRIPTION
HTC-06S	SILVER HEAT CONDUCTIVE GREASE
HTC-30C	COPPER HEAT CONDUCTIVE GREASE

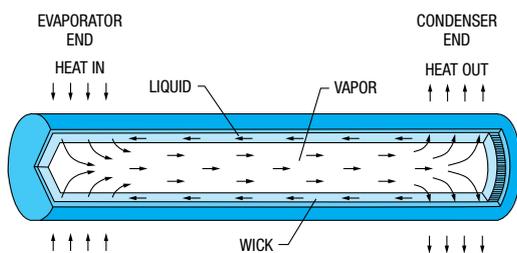
# Heat Pipes

## How and where heat pipes work

The DME Heat Pipe is a heat transfer device specifically designed for optimal performance in plastic injection moulds. It consists of a vacuum-tight copper tube containing a wick and a non-toxic working fluid. One end of the heat pipe is an evaporator, the opposite end is a condenser. Thermal energy is gathered at the evaporator end, vaporizing the working fluid. This vapor then travels through the Heat Pipe to the condenser end. At the condenser end the vapor condensates back into a liquid, giving up its latent heat in the process. To complete the cycle the condensed liquid then travels along the wick, via capillary action, back to the evaporator section. This process repeats itself continuously, transferring heat many times faster than pure copper.

## How heat pipes are used

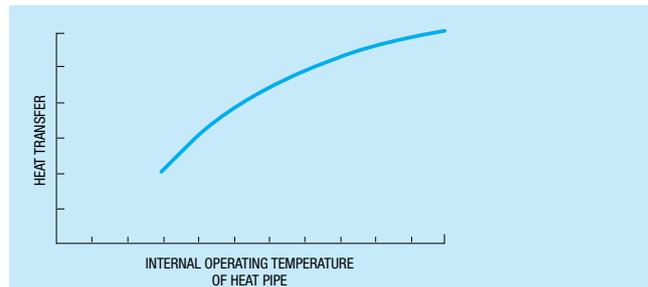
Available in a variety of standard lengths and diameters, DME Heat Pipes are used in cores, core slides, cavities and other areas of a mould or die requiring cooling or controlled temperatures. Commonly used in place of bubblers, baffles, fountains or blades, Heat Pipes transfer heat rapidly to the coolant, rather than requiring the coolant to flow into the heated area. They are also used to transfer heat to a cooler portion of the mould (which serves as a heat sink) or to open air, thereby permitting cooling of otherwise inaccessible areas and eliminating potential coolant leakage.



## Benefits of heat pipes

### Cool moulds faster and reduce cycle time

The Heat Pipe's ability to cool moulds faster and thus reduce cycle time is due to a number of factors. First, waterlines throughout the entire mould can be larger in diameter, permitting a higher coolant velocity, which transfers heat faster. Second, the larger volume of fluid flowing through the waterline results in a lower overall coolant temperature rise, so that the last Heat Pipe in the system will transfer heat as efficiently as the first. Third, the extension of the Heat Pipe into the waterline promotes turbulent flow, which transfers



### MAXIMIZING EFFICIENCY WITH WARM COOLANT

Heat Pipes work best when the coolant is between 15° and 43°C, and sometimes higher. The graph illustrates how the Heat Pipe's heat transfer capability is dependent upon its internal operating temperature. It is best to start with the coolant temperature high, then reduce it if necessary.

heat faster than laminar flow. Fourth, the ability to transfer heat away from inaccessible areas improves the overall cooling rate and reduces cycle time, even if extension into a remote waterline is impractical or impossible.

### Improve Part Quality

As the Heat Pipe transfers heat to the coolant, air or mould component, it also dissipates heat evenly along its entire length. This isothermal action provides faster and more uniform cooling, thus eliminating hot spots, which cause sink marks, pulling and spotting.

### Simplify Mould Design and Lower Costs

With Heat Pipes, waterline design is greatly simplified since coolant flow into the heated area of the mould is not required. In addition, the ability to locate heat conductors in areas inaccessible to other cooling devices can further simplify the overall mould design. In most cases, the machining and construction time required for the mould is reduced, lowering mouldmaking costs.