STANDARD HEATPIPES

Version 2016/4

HEATPIPE SOLUTIONS

HEATPIPE ADEO

Standard applications are the entry point of **ADEO** to the heat-pipe market. We can support in following basic applications:

SIMPLE Heatpipe

Selling heatpipes without any processing, support, nor testing is not the goal of **ADEO**. If you have inquiries in OEM quantities please contact us. We support requirements for machine- and control-units industry, medical industry, white goods and at "C" & "D" classified parts in the automotive industry.

POINT-to-POINT Heatpipe

One or several heatpipes connection from hotspots to cooling areas. Normally the heatpipe defines the basic shape of the cooling system. For cooler systems the **ADEO_lowtemp** heatpipe can also be used in combination with TE (peltier) moduls. Hotspots on an assembled circuit board can be connected to a cooling section (heat sink) for efficient heat transfer. The heatpipe can also incorporate fins for fan cooling. We do design support, tools, fixture, production, marking and testing at **ADEO**

FAN-Cooler Heatpipe

Very common are all kind of fan cooled heatpipe systems. **ADEO** is open to all kind of custom-made designs. The market shows to our customer a very wide range of design freedom. We support this market trends with adding plastic molds (air guide) or die-cast parts (ruggedized application) and/or steel punched parts.

ADEO-Standard

ST = Standard, sintered version, optimized for electronic equipment, working point +45°C.
LT = Low Temp, sintered version, not freezing until –15°C , high efficient
HT = High Temp, sintered version, optimized for mold industrie, working point +125°C

HEATPIPE

General Information

Since heatpipes were introduced in the market some decades ago, there have been a large variety production technologies for heatpipes. In the last years flexibility in geometry became a major requirement, which gave the market lead to the sinter technology. Adeo is producing sintered heatpipes almost exclusively for water filled heat pipes.

Groove (channel) heatpipe:	mostly used in heatkicker (high power), vertical use, cheap.
Mesh (metall or fiber) heatpipe:	mostly used for other fluids than water.
Sintered (granulate) heatpipe:	for ADEO the standard heatpipe, free geometry, adjustable, flat shape possible, bendable.

HEATPIPE

General Information

Design rules:

It might be necessary to bend the heat pipe in order to get around object or to flatten some of its area for better heat transfer. Here is what should be kept in mind in order not to lose to much its efficiency.

Bending of heat pipes Each bend leads to a small derating, therefore best is to avoid any bending at all. Use following minimum bending radius as design rule.

Flat heat pipe sections Flat heat pipes are subject to some derating, please take the following scale as indication.

Performance of liquids (there are several fillers (liquid) available, never the less water has the best performance - and is the standard filler for industrial applications)

Heatpipe filler (fluids)

working temp in C°	fluid / medium	pipe material
-200 to +80	Fluid nitrogen	Stainless steel
-70 to +60	Ammoniac	Al, stainless steel
-45 to +120	Methanol	Cu, stainless steel
-5 to +300	Water (with additive)	Copper
+190 to +550	Mercury	Stainless steel
+400 to +800	Potassium	Stainless steel
+500 to +900	Natrium	Stainless steel

bending radius / design guide

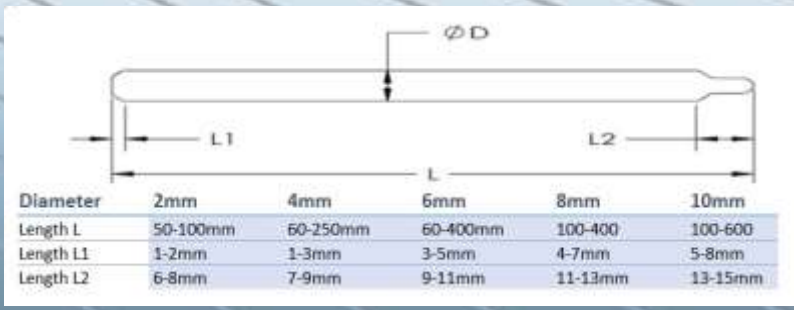
Material	Diameter in mm	Bending radius (neutral line)
Cu	3	9
Cu	4	12
Cu	5	20
Cu	6	24
Cu	8	40
Cu	10	50
Cu	>30, ...	not possible!

round or flat: Qmax on 200mm lenght

Flatness	DIA 6mm	DIA 8mm
2.8	25Watt	-
3.0	30Watt	45Watt
3.5	40Watt	50Watt
4.0	45Watt	55Watt
5.0	-	65Watt
DIA 6	60Watt	-
DIA 8	-	100Watt

ADEO 2mm HEATPIPE

Dia. in mm	Length in mm	Sintered Heat Pipe	Model	Part Number
2	60	yes	round-straight	SHP2-060-RS/ST
2	80	yes	round-straight	SHP2-080-RS/ST
2	100	yes	round-straight	SHP2-100-RS/ST



Diameter	2mm	4mm	6mm	8mm	10mm
Length L	50-100mm	60-250mm	60-400mm	100-400	100-600
Length L1	1-2mm	1-3mm	3-5mm	4-7mm	5-8mm
Length L2	6-8mm	7-9mm	9-11mm	11-13mm	13-15mm

For requesting of other length, please use the nomencalture:

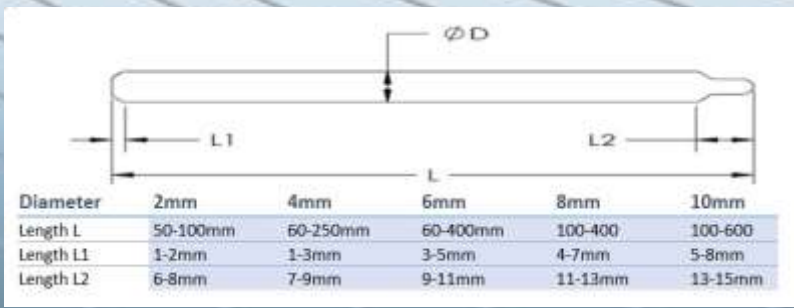
S	HP	_	-	___	-	RS	/	ST
Technologie		Diameter		Length in mm*		Model		Temperatur- Range

Technologie		Diameter	Length in mm*	Model		Temperatur- Range	
S	*Sintered*	2 mm	min.: 040mm	RS	*round/straight*	ST	*Standard*
M	*Mesh*	4 mm	max.: 600mm	CD	*Customized*	HT	*High-Temp.*
GF	*Glassfiber*	6 mm				LT	*Low-Temp.*
		8 mm					
		10 mm					

* max. length ist depending of diameter / please note the production tolerance of ±2-5mm in length (depending of diameter!)

ADEO 4mm HEATPIPE

Dia. in mm	Length in mm	Sintered Heat Pipe	Model	Part Number
4	70	yes	round-straight	SHP4-070-RS/ST
4	100	yes	round-straight	SHP4-100-RS/ST
4	150	yes	round-straight	SHP4-150-RS/ST
4	200	yes	round-straight	SHP4-200-RS/ST
4	250	yes	round-straight	SHP4-250-RS/ST



Diameter	2mm	4mm	6mm	8mm	10mm
Length L	50-100mm	60-250mm	60-400mm	100-400	100-600
Length L1	1-2mm	1-3mm	3-5mm	4-7mm	5-8mm
Length L2	6-8mm	7-9mm	9-11mm	11-13mm	13-15mm

For requesting of other length, please use the nomencalture:

S	HP	_	-	___	-	RS	/	ST
Technologie		Diameter		Length in mm*		Model		Temperatur- Range

Technologie		Diameter	Length in mm*	Model		Temperatur- Range	
S	*Sintered*	2 mm	min.: 040mm	RS	*round/straight*	ST	*Standard*
M	*Mesh*	4 mm	max.: 600mm	CD	*Customized*	HT	*High-Temp.*
GF	*Glassfiber*	6 mm				LT	*Low-Temp.*
		8 mm					
		10 mm					

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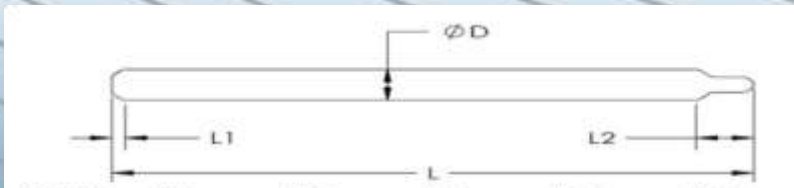
ADEO 6mm HEATPIPE

Dia. in mm	Length in mm	Sintered Heat Pipe	Model	Part Number
6	100	yes	round-straight	SHP6-100-RS/ST
6	150	yes	round-straight	SHP6-150-RS/ST
6	200	yes	round-straight	SHP6-200-RS/ST
6	250	yes	round-straight	SHP6-250-RS/ST
6	300	yes	round-straight	SHP6-300-RS/ST
6	350	yes	round-straight	SHP6-350-RS/ST
6	400	yes	round-straight	SHP6-400-RS/ST



Diameter	2mm	4mm	6mm	8mm	10mm
Length L	50-100mm	60-250mm	60-400mm	100-400	100-600
Length L1	1-2mm	1-3mm	3-5mm	4-7mm	5-8mm
Length L2	6-8mm	7-9mm	9-11mm	11-13mm	13-15mm

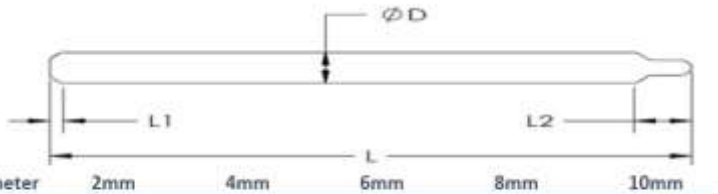
For requesting of other length, please use the nomencalture:

S	HP	_	-	_ _ _	-	RS	/	ST
Technologie		Diameter		Length in mm*		Model		Temperatur- Range
S Sintered		2 mm		min.: 040mm		RS round/straight		ST Standard
M Mesh		4 mm		max.: 600mm		CD Customized		HT High-Temp.
GF Glassfiber		6 mm						LT Low-Temp.
		8 mm						
		10 mm						

* max. length ist depending of diameter / please note the production tolerance of ±2-5mm in length (depending of diameter!)

ADEO 8mm HEATPIPE

Dia. in mm	Length in mm	Sintered Heat Pipe	Model	Part Number
8	100	yes	round-straight	SHP8-100-RS/ST
8	150	yes	round-straight	SHP8-150-RS/ST
8	200	yes	round-straight	SHP8-200-RS/ST
8	250	yes	round-straight	SHP8-250-RS/ST
8	300	yes	round-straight	SHP8-300-RS/ST
8	350	yes	round-straight	SHP8-350-RS/ST
8	400	yes	round-straight	SHP8-400-RS/ST



Diameter	2mm	4mm	6mm	8mm	10mm
Length L	50-100mm	60-250mm	60-400mm	100-400	100-600
Length L1	1-2mm	1-3mm	3-5mm	4-7mm	5-8mm
Length L2	6-8mm	7-9mm	9-11mm	11-13mm	13-15mm

For requesting of other length, please use the nomencalture:

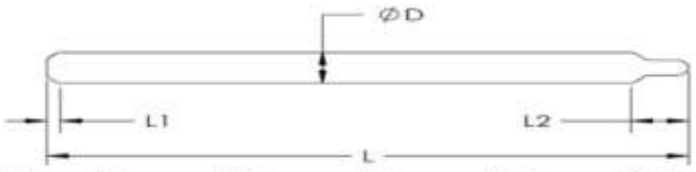
S	HP	_	-	___	-	RS	/	ST
Technologie		Diameter		Length in mm*		Model		Temperatur- Range

Technologie		Diameter	Length in mm*	Model		Temperatur- Range	
S	*Sintered*	2 mm	min.: 040mm	RS	*round/straight*	ST	*Standard*
M	*Mesh*	4 mm	max.: 600mm	CD	*Customized*	HT	*High-Temp.*
GF	*Glassfiber*	6 mm				LT	*Low-Temp.*
		8 mm					
		10 mm					

* max. length ist depending of diameter / please note the production tolerance of ±2-5mm in length (depending of diameter!)

ADEO 10mm HEATPIPE

Dia. in mm	Length in mm	Sintered Heat Pipe	Model	Part Number
10	100	yes	round-straight	SHP10-100-RS/ST
10	150	yes	round-straight	SHP10-150-RS/ST
10	200	yes	round-straight	SHP10-200-RS/ST
10	250	yes	round-straight	SHP10-250-RS/ST
10	300	yes	round-straight	SHP10-300-RS/ST
10	350	yes	round-straight	SHP10-350-RS/ST
10	400	yes	round-straight	SHP10-400-RS/ST
10	500	yes	round-straight	SHP10-500-RS/ST
10	600	yes	round-straight	SHP10-600-RS/ST



Diameter	2mm	4mm	6mm	8mm	10mm
Length L	50-100mm	60-250mm	60-400mm	100-400	100-600
Length L1	1-2mm	1-3mm	3-5mm	4-7mm	5-8mm
Length L2	6-8mm	7-9mm	9-11mm	11-13mm	13-15mm

For requesting of other length, please use the nomencalture:

S	HP	_	-	___	-	RS	/	ST
Technologie		Diameter		Length in mm*		Model		Temperatur- Range

Technologie		Diameter	Length in mm*	Model		Temperatur- Range	
S	*Sintered*	2 mm	min.: 040mm	RS	*round/straight*	ST	*Standard*
M	*Mesh*	4 mm	max.: 600mm	CD	*Customized*	HT	*High-Temp.*
GF	*Glassfiber*	6 mm				LT	*Low-Temp.*
		8 mm					
		10 mm					

* max. length ist depending of diameter / please note the production tolerance of ±2-5mm in length (depending of diameter!)

ADEO CUSTOMIZED HEATPIPE

Selling heatpipes without any processing, support, or testing is not the goal of **ADEO**. If you have inquiries please contact us. We support requirements for machine- and control-units industry, medical industry, white goods and at "C" & "D" classified parts in the automotive industry.

We can support you with design work in SolidWorks, Creo or Catia native data. Although preferred is any kind of industrial 3D data (stp, step, igs and others)

For requesting of specific application and working ranges, please use the nomencalture.
This is only a small overview of possibilities:

S	HP	_	-	_ _ _	-	_ _	/	XT
Technologie		Diameter		Length in mm*		Model		Temperatur- Range
S Sintered		2 mm		min.: 040mm		RS round/straight		XT Customized
M Mesh		4 mm		max.: 600mm		CD Customized		
GF Glassfiber		6 mm				0		
		8 mm						
		10 mm						
		0						

other Dia, up to 70mm

- Flat
- Bent
- Assembling
- ....

* max. length ist depending of diameter / please note the production tolerance of ±2-5mm in length (depending of diameter!)

YOUR DESIGN

S	HP	_	-	_ _ _	-	_ _	/	XT
Technologie		Diameter		Length in mm*		Model		Temperatur- Range

DRAWING:

>> SPECIFY GRAVITY

>> SPECIFY POWER IMPUT

POWER: .....

TEMP. RANGE: .....

SURFACE TREATMENT: .....

SPECIAL REMARKS:

NOTES

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