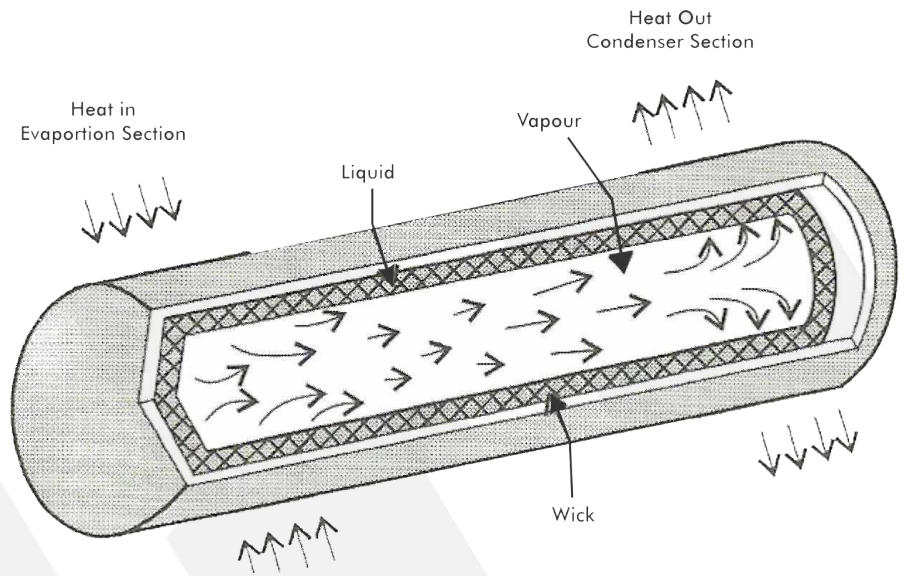


## Heat Pipes

Heat pipes being manufactured by m/s GOLDEN STAR technical services pvt ltd

Basically a Heat Pipe is a thermal energy absorbing and transferring system which can carry about one thousand times more heat energy than all equivalent size of Copper rod for the same temperature gradient. In other words it has an effective thermal conductivity several hundred times more than an equivalent size of copper. When heat is added to the evaporator section, the working fluid boils and converts into vapor absorbing latent heat.



After reaching the condenser section, due to partial pressure build up, the vapor transforms back into liquid thus releasing latent heat. From the condenser section, heat is taken away by means of water cooling / air cooling with fins etc. The liquid condensate returns to the original position through the capillary return mechanism, completing the cycle. Due to very high latent heat of vaporization a large quantity of heat can be transferred.

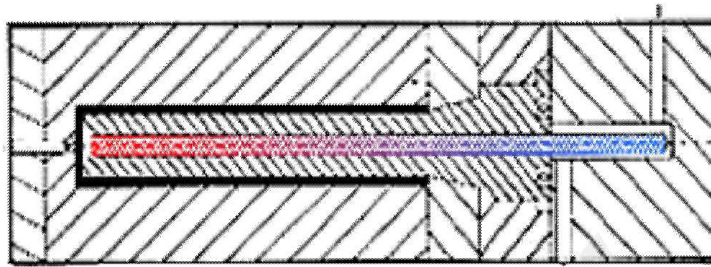
### Good Reasons To Use Heat Pipes:

- Reduce cycle time
- Eliminate hot spots
- Reduce wastage
- Improve product quality
- Increase mould life
- Eliminate core clogging
- Cut mould and Moulding costs
- Upgrade old moulds
- Use damaged moulds

**Golden star** have introduced Heat Pipe for the first time in plastic moulding and die casting in India. Heat Pipes are widely used for improving cooling efficiency of injection and die casting moulds all over the world. this method of cooling has helped to reduce cycle time, rejection and improve quality of product.

## Heat Pipes

### Ball Pen & Syringe Moulds



In small cores like ball pen barrel and disposable syringes, normal water-cooling becomes very difficult. Cooling channels get blocked either due to rust or impurities in water causing production problems. Heat Pipes are now first choice for all pen mould manufacturers. It was found that moulding cycle reduces upto 40% compared to normal cooling. In case of disposable syringes rejection due to warping was very high with normal water-cooling. But after introduction of Heat Pipes total cycle and rejection came down substantially.

### Temperature Range

Heat Pipes are available in two temperature ranges.

#### For Injection Moulds:

Heat Pipes having temperature range from +5 deg. C to + 200 deg. C. The main application of these types of Heat Pipes are in Injection Moulding, Compression / Transfer Moulding and Rotation Moulding, Spiral Screws.

#### For Die-Casting Dies:

Heat Pipes having temperature range from +5 deg. C to + 350 deg. C. The main application of these types of Heat Pipes are in Die-Casting, Spiral Screws in plastic moulding.

It is advisable to order the Heat Pipes suitable to the applications temperature range. If the Heat Pipe gets heated above its operating temperature, it releases a small amount of non-toxic gas and becomes inoperative.

**Material of construction:** Copper/Stainless Steel

### How to get the best out of Heat Pipes

It is essential to design cooling system in mould design stage only. Normally water-cooling is given after mould is complete. Due to mould elements like return pins, ejector pins, inserts, alien bolts, etc. only limited space is available for providing water channels. Mould cooling controls productivity of mould and hence one should think about cooling design first and then should give ejector pins, return pins, alien bolts, guide pillars and other standard items in the vacant places. Selection of correct dia. and length of Heat Pipe is important. Based on product raw material, weight of the product and desired cycle time, the number of Heat Pipes required for a particular mould is decided. Once size and quantity of Heat Pipes is finalised, installation of Heat Pipes in the mould needs to be done accurately to get maximum efficiency.

# Heat Pipes

## Heat Pipe Standard Range Details

Heat Pipes are readily available in standard diameters from 3 to 12 mm and in lengths from 50 to 250 mm shapes as shown in the chart. Other sizes from 2 to 24 mm and in any lengths are also available on request. .  
If you need any further information and help in solving your mould cooling problems; our technical service people will assist you.

### Note:

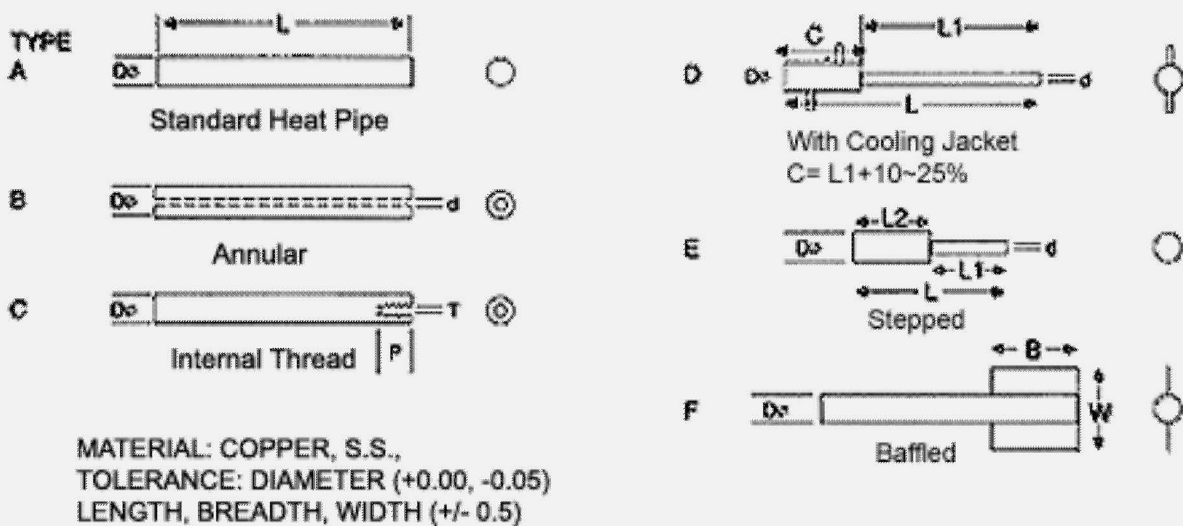
**All Heat Pipes are 100% tested to highest international standards.** Now all major plastic companies and mould makers have started using our Heat Pipes. Some of them have changed over from imported Heat Pipes to our high performance Heat Pipes, which are available at competitive rates.

DIA Ø mm						Length(mm)										
A	B	C	D	E	F	50	75	100	125	150	175	200	225	250		
	d	TP	L1-L	L1-L2-D	B W	•	•	•	•	•	•	•	•	•		
3	~	~	PLEASE STATE	PLEASE STATE	PLEASE STATE	•	•	•	•	•	•	•	•	•		
4	~	~				•	•	•	•	•	•	•	•	•	•	•
5	~	3-3				•	•	•	•	•	•	•	•	•	•	•
6	3	3-3				•	•	•	•	•	•	•	•	•	•	•
8	4	6-6				•	•	•	•	•	•	•	•	•	•	•
10	6	8-8				•	•	•	•	•	•	•	•	•	•	•
12	8	8-8				•	•	•	•	•	•	•	•	•	•	•

# Heat Pipes

## Heat pipe application Guide:

Heat Pipes are widely used for improving cooling efficiency of injection moulds and Die casting dies all over the world. This method of cooling has helped reduce cycle time, reduce rejection and improves quality of product. Sketches given inside the folder describe various applications where one can confidently use Heat Pipes. These are taken from actual examples of moulds, which are in production all over India. In conventional water cooling, effectiveness of water cooling goes down due to rusting, blocking of cooling channels. In case of Heat Pipes since water is not circulated directly in the core, cooling efficiency remains the same throughout the life of the mould



## Heat Pipes

### Guidelines for the Heat Pipe Installation:

- \* Select the largest dia. of Heat Pipe considering core strength.
- \* Drill and ream the hole to get 0.05 larger hole than Heat Pipe diameter. Scrub the hole with solvents to remove dirt and oil.
- \* Water to be circulated on 10 to 25% of Heat Pipe length.
- \* Do not cut or pierce Heat Pipe. This will make it inefficient.
- \* Before inserting Heat Pipe in the hole, coat uniformly with installation paste over entire length except the portion in which water is circulated and insert with gradual rotation of Heat Pipe to displace air from the hole.
- \* Do not put any packaging over Heat Pipe in case hole becomes oversize. Use higher size Heat Pipe.
- \* Position inlet and outlet of water to get turbulent flow over Heat Pipe cooling end.
- \* Position the color end of Heat Pipe into water line

