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# Perforation of Lost Foam Tooling

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## Ring Gap Vent

**Designed especially for "Lost Foam"- foundry process utilizing evaporative patterns in unbonded sand**

### **Quality criteria of the Lost Foam foam Pattern are:**

Low density with maximum achievable strength

Homogeneous, controlled fusion

Smooth surface

Uniform density distribution

No surface imprints or damage

### **Many factors affect the quality of the foam patterns :.**

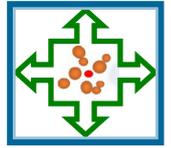
One factor that affects the quality is the tooling perforation.

The gas permeability of the tool walls required for expansion and fusion process is achieved by perforation.

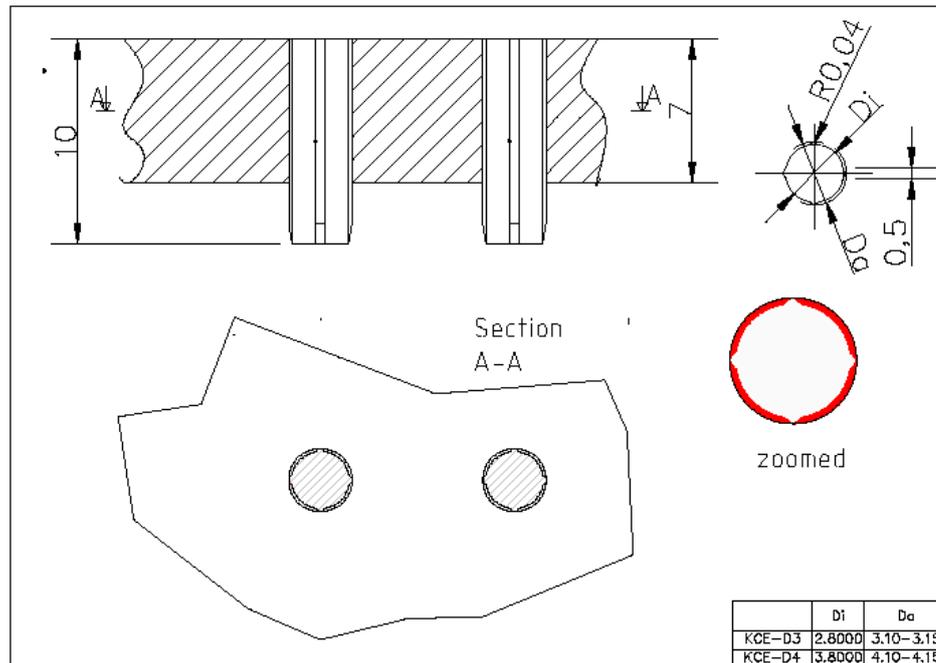
For this purpose, slotted nozzles, hole nozzles, individual pin holes or perforated inserts made of aluminum, flush with the inner contour, are pressed into the walls of the tooling walls..

When positioning the nozzles, the flow and thermal conditions for media steam, air, ejection air and beads must be taken into account.

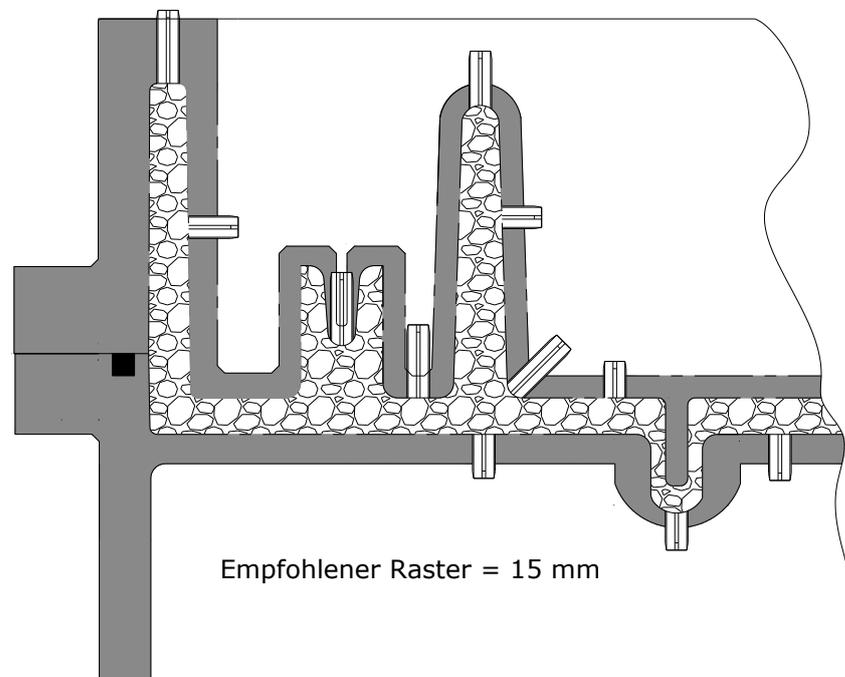
We have developed an Ring Gap Vents as some advantages compared to the common vents.



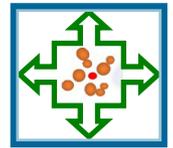
Ring Gap Vent



**"It is better to put many little vents than less big ones"**



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Empirical comparison of common vents 3 mm diameter					
	Ring Gap	Slotted	Holes	Pin Hole	Pin hole insert
Flexibility in placement 1)					
Imprint 2)					
Cross section 3)	1.24 mm <sub>2</sub> 	1.75 mm <sub>2</sub> 	0.35 mm <sub>2</sub> 	0.07 mm <sub>2</sub> 	0.07 mm <sub>2</sub> 
contour matching 4)					
Water pocket 5)					
Price 6)					
Fit costs 7)					
Maintenance 8)					

## Remarks to the comparison table

1. In particular, the narrow and complex areas of the tool must be well perforated.
2. The vent imprint in the casting part is not liked and is to avoid and causes local coating accumulation.
3. Cross-section / flow of the process media influences the quality and productivity of the process.
4. Even the tightest points and angled parts in the tool have to be perforated enough. Contour adjustment is often necessary.
5. The backs of the nozzles can store water / condensate. This will penetrate into the cavity and cause filling faults.
6. Purchase price, availability
7. Cost of drilling, pressing, finishing, polishing
8. Vents must be periodically cleaned. Mostly manual with auxiliary tool. Non-cleaned nozzles will damage the surface and cause demolding difficulties.