

Mastip design insights

Optimising cycle times with good dimple design

What makes a good gate dimple design and how can you achieve it?

Applications where a gate dimple is needed requires careful consideration

A gate dimple is used to ensure the vestige from a thermal gate is below the surface of a part thereby preventing any tactile interference or cosmetic imperfection.

Whenever a gate dimple is used the amount of cooling the gate area receives is compromised. The steel mass around the gate is reduced, which is responsible for controlling the gate freezing off in a timely manner.

If too much steel is removed from around the gate, resulting in a small dimple, then this could cause the gate to run too hot and will lead to part quality issues in the form of stringing or drooling gates. To counter this issue a longer cooling time can be used but this leads to longer than necessary cycle times.

The difference dimple design can make

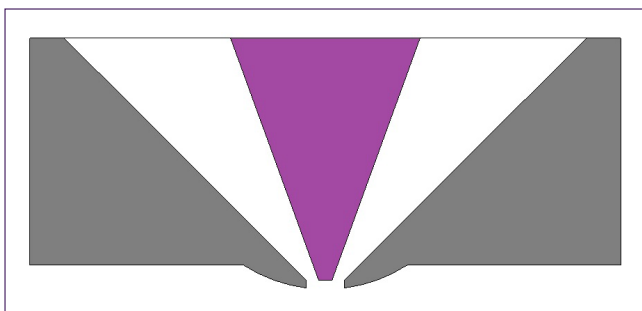


Image 1.

COMMON RADIUS DIMPLE DESIGN

Image 1 above shows a common radius dimple design but due to the reduced steel mass around the gate this results in poor heat removal and an increase in cooling time to effectively freeze off the gate.

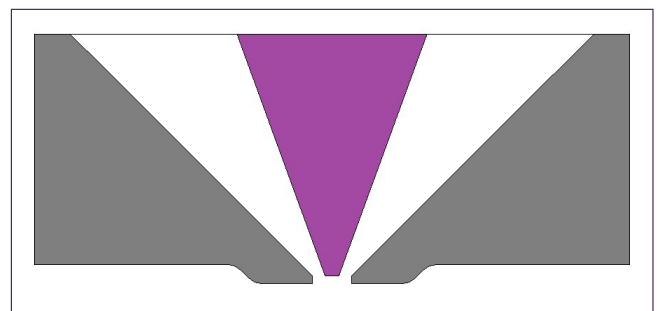


Image 2.

SQUARE DIMPLE DESIGN

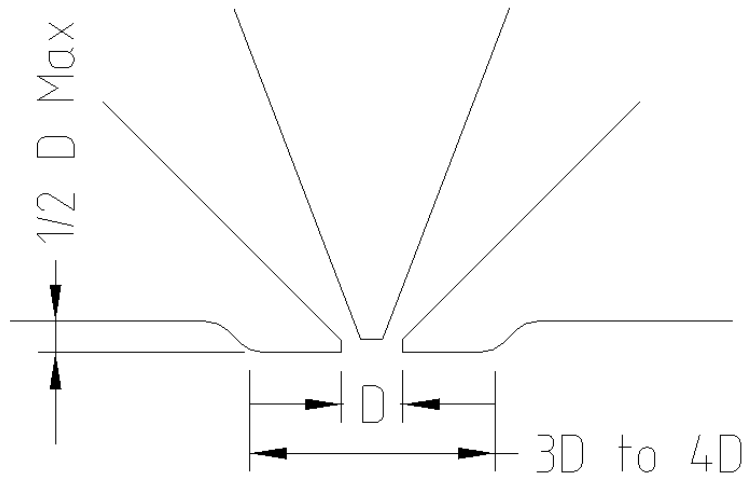
Image 2 is an improved square dimple design as it has more steel mass around the gate, thereby removing heat from the gate more effectively and achieving the lowest possible cycle time.

Gate Temperature Control

Dedicated temperature control channels around the gate are always recommended as this ensures the optimum temperature range in order to control the gate. The remaining cavity temperature control channels should then be on an alternative circuit.

Recommended Dimple Design

The ideal dimple design should be as large as possible and follow the recommendations below to achieve the best results.



Your Mastip engineering team is available for consultation during the tool design process to ensure that your new tooling project is a success. For more information contact your local Mastip Representative - visit www.mastip.com for global contact details.