

# Mastip design insights

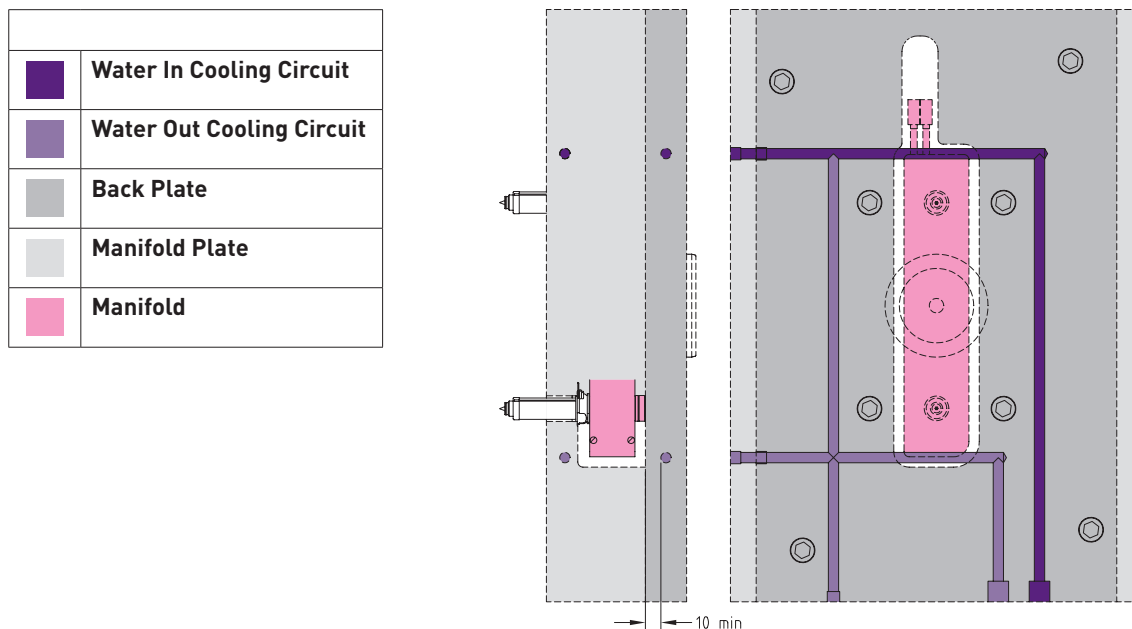
## Staying cool under pressure

The importance of Mould Temperature Control and key factors to consider in achieving an optimal design

When designing a mould that uses a Hot Runner System it is critical to consider effective cooling at the gate and in the Hot Runner System plates.

Inadequate gate cooling can result in poor thermal gate vestige, poor valve gate shut off quality, extended cycle times and part quality. Part quality issues such as excessive shrinking, blush, flow lines and warpage can also be a result of a poorly designed mould.

Insufficient cooling in the back plate or manifold housing plate can result in excessive heat transfer to the rest of the mould or machine platen, resulting in plate distortion or insufficient sealing forces within the Hot Runner System.







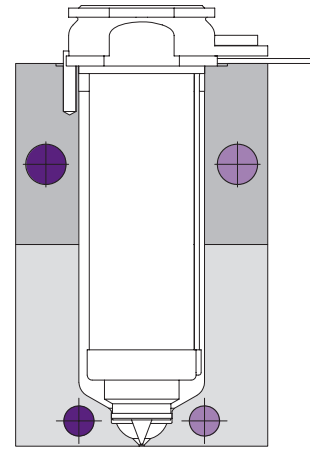
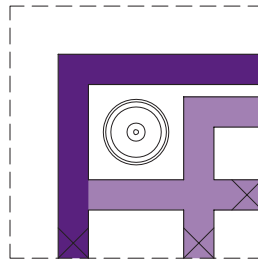
During the initial tool design process it is important to consider the following factors:.

- Gate cooling insert design and material
- Distance of circuit from gate
- Thermal conductivity of insert
- No part line between gate and circuit
- Controllability

## Gate Cooling

Gate cooling needs to be on a separate circuit to the remaining cavity cooling and surrounding platens.

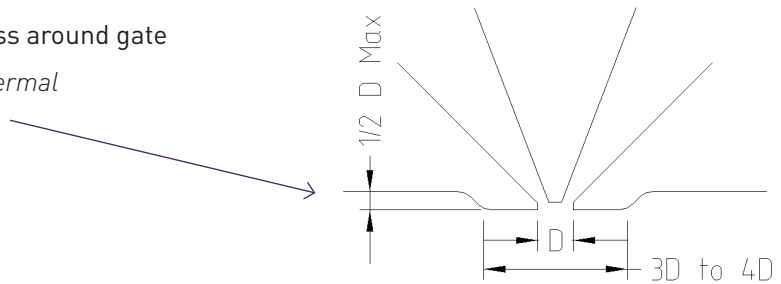
KEY	
	Water In Cooling Circuit
	Water Out Cooling Circuit
	Manifold Plate
	Cavity Plate



## Dimples

Design dimples for maximum material mass around gate

*Thin areas reduce metal mass and reduce thermal conductivity and gate control.*





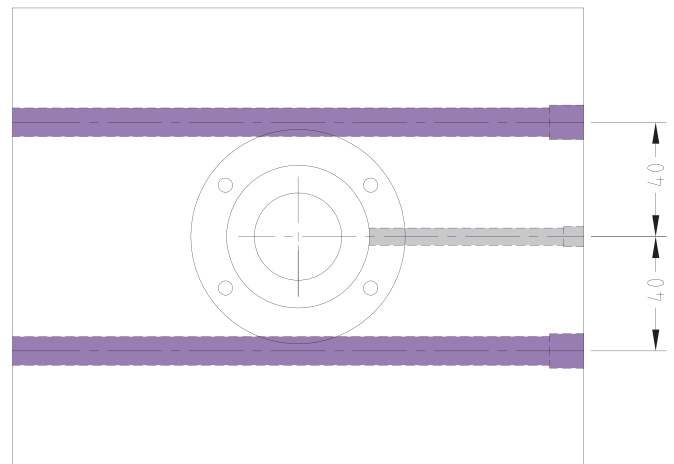
## Value Gate Cooling Circuits

Manifold plate circuit

Back plate circuit

Valve Gate Cylinders require cooling channels within the back plate on two sides of the cylinders to ensure the back plates operate at a suitable temperature so as not to degrade the seals.

KEY	
	Cooling Circuit
	Airway



## Successful Tooling Projects

Proper tool design will result in efficient cycle times, good part quality and efficient transition of new tooling into full production.

*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](http://www.mastip.com) for global contact details.*