

Gate Types, Dimensions & Location

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Manually trimmed gates: Manually trimmed gates are those that require an operator to separate parts from runners. Use these gates if:

1. The required gate is too large to be sheared from the part as the tool is opened or the part is too thin to allow automatically trimmed gate.
2. Using shear-sensitive materials and high shear rates inherent to the design of automatically trimmed gates would damage the part.
3. A larger gate is needed to achieve simultaneous flow distribution across a wide front.

Gate types trimmed from the part manually include:

Sprue gate	Overlap gate	Diaphragm gate	Spoke gate	Flash or Film Gate
Edge gate	Fan gate	External ring	Multipoint gate	Tab gate

Automatically trimmed gates: Automatically trimmed gates incorporate features in the tool to break or shear the gate as the molding tool is opened to eject the part. Automatically trimmed gates should be used to:

1. Avoid gate removal & avoid the need for a press operator
2. Maintain consistent cycle times for all shots.
3. Decrease cycle time and decrease part price.
4. Reduce runner size and runner waste.
5. Minimize gate scars.

Gate types trimmed from the part automatically include:

Pin Gate	Submarine (tunnel) gate, Sub gate	Hot runner gate	Valve gate
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Suggested Gate Dimensions: Gate cross section is normally between 1/2 and 2/3 of the part thickness and smaller than that of the part runner & the part, allowing easier separation from the runner and a minor visible scar on the part. The end of packing is identified as the point that material in the gate reaches freeze temperature. Gate thickness controls packing time. Larger gates may reduce frictional heating, permit lower velocities, and allow application of higher packing pressure for a longer period of time. If appearance, low residual stress, and better dimensional stability are desired, then a larger gate may be best. A min. size of 0.8 mm is recommended for unreinforced materials. Smaller gates may induce high shear and thus thermal degradation. Reinforced materials require larger gates > 1 mm. It should not exceed the runner or sprue diameter. The maximum land length should be 1 mm.

Suggested Gate Locations:

1. At the heaviest cross section, to permit part packing & minimize voids & sink.
2. To minimize obstructions (flowing around cores or pins) in the flow path.
3. Where molded in stress around the gate will not affect part function or aesthetics.
4. To allow easy manual or automatic gate and runner separation.
5. To minimize jetting.
6. To minimize flow marks in cosmetic areas.
7. To minimize potential knit lines.
8. To minimize flow path length.

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