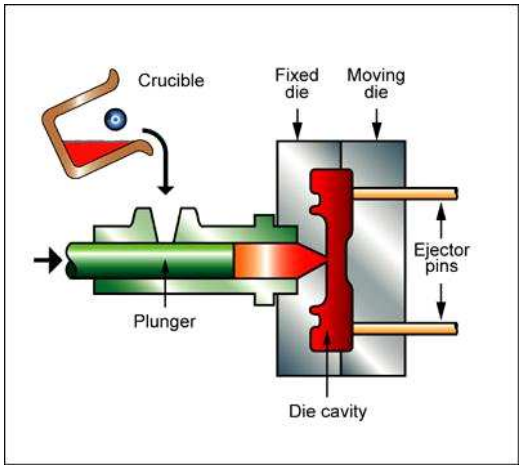
Level 1 Die casting

IMAGE

(1) Mold for Carbon Frame © Felt LLC at Wikimedia Commons (CC BY-SA 3.0) (2) Wheel rim © Granta Design

Most small aluminum, zinc or magnesium components with a complex shape—camera bodies, housings, the chassis of video recorders—are made by DIE CASTING. It is to metals what injection molding is to polymers, and the two compete directly. In the process, molten metal is injected under high pressure into a metal die through a system of sprues and runners. The pressure is maintained until the component is solid, when the die is opened, and the component ejected. The dies are precision-machined from heat-resistant steel and are water cooled to increase life.

PROCESS SCHEMATIC



Pressure die casting

MATERIAL COMPATIBILITY

Metals - non ferrous	True

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SHAPE

Circular prismatic	True			
Non-circular prismatic	True			
Solid 3-D	True			
Hollow 3-D	True			

PHYSICAL ATTRIBUTES

Mass range	0.01	-	50	kg
Range of section thickness	0.5	-	12	mm
Surface roughness (A=v. smooth)	A			
Tolerance	0.15	-	0.5	mm

ECONOMIC ATTRIBUTES

Relative tooling cost	high			
Relative equipment cost	high			
Labor intensity	low			
Economic batch size (units)	1e4	-	1e6	

SUPPORTING INFORMATION

Typical uses

Record player and video player chassis, pulleys and drives, motor frames and cases, switch-gear housings, housings for small appliances and power tools, carburetor and distributor housings, housings for gearboxes and clutches.

LINKS

MaterialUniverse

*No warranty is given for the accuracy of this data. Values marked * are estimates.*

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