

What is Gravity Die Casting?

[Gravity die casting](#) is one of the oldest methods of casting metal or metal alloys. Here, the metal is poured into the cavity in liquidus form using a ladle or container. The cavity hole must be on the top face. It is not external force but gravity that fills the mold cavity after the molten metal is poured.

There are several types of gravity casting machines:

automatic

manual

Sometimes it is necessary to tilt the mold to control pouring. If necessary, manufacturers use sand cores to retain holes or porosity in the casting.

Aluminum gravity die casting is better and faster than aluminum sand casting. But traditional aluminum die casting, which uses external force to push molten metal, is better than gravity casting.

The Step-by-Step Process of Gravity Casting

Most gravity die casting machines are done manually. However, the process is very similar for manual and automatic machines.

First, the mold is heated and a coating is sprayed inside the cavity.

The metal is then melted and conveyed through ladles. Note that if the casting machine is manual, the molten metal must be poured by hand.

After that, the liquid metal is slowly poured into the mold cavity.

Then wait for it to solidify.

Next, the parts after mold opening are taken out.

Finally, machine the part as desired.

What are the advantages and disadvantages of gravity die casting?

The benefits of gravity casting are:

No external force is required to push the molten metal.

Gravity die castings have a better density than sand castings.

The cost of this process is lower than most other processes such as vacuum casting, squeeze casting, etc.

Gravity cast parts have less porosity and a better grain structure than sand cast parts.

For medium or small batch production, it is cheaper than other methods.

Gravity cast parts have good mechanical properties and are well suited for heat treatment.

The surface of this component has a better finish than most other castings.

Some disadvantages of gravity die casting are:

Manual gravity die casting takes more time than other casting processes.

Automatic gravity casting parts are not as precise as manual gravity casting parts.

Manufacturing complex parts using this method is complex.

Is gravity die casting suitable for mass production?

When gravity casting was first invented, manufacturers used the technique to produce simple parts rather than complex ones. But over time, technology was updated and sand cores were introduced into gravity casting. Manufacturers can now make complex parts using gravity casting.

However, there are now more and newer die casting methods that can produce certain castings more quickly. Many die casting manufacturers prefer these methods over gravity die casting for mass production.

However, it is much cheaper than most other methods. While this method takes more time, it can save you a lot of money since gravity die casting machines are less costly. Plus, this method is simpler than most other casting methods.

So it is a better choice to choose gravity die casting to mass produce simpler parts. However, it would be a loss for manufacturers to use this method for the production of large volumes of complex parts.

Of course, if production volumes are small or medium, gravity casting is a better choice than most other die casting methods.