

Waltek Investment Casting

Metal castings have been used to replace more expensive manufacturing processes for ages. But only recently has technology allowed it to be done with such extraordinary precision...

Investment castings offer tremendous flexibility in the design and production of metal parts and components - at significantly reduced cost. Modern developments in precision injection equipment, statistical process control (SPC), and computer aided testing are a few of the reasons why.

ADVANTAGES OF INVESTMENT CASTINGS

Small, intricate, or hard-to-machine shapes can be produced much more efficiently with the investment casting process. By using a wax impression mold, elaborate and expensive tooling (such as multiple or progressive dies) can be avoided when producing parts with unusual designs or with complex *internal* configurations.

Often several machined parts can be combined into one casting, eliminating or greatly reducing other labor intensive operations like welding, assembly, and finishing work (possibly reducing cost up to 80%!).

Because each part is formed from the same master mold, each finished part is virtually identical. For many parts you can achieve higher quality, more detail, greater consistency and better repeatability than traditional metal forming methods.

Because investment castings are ideally suited for both long and short runs, prototype production becomes more practical for a larger number of applications.

GENERAL CAPABILITIES

Waltek has been producing precision investment castings for more than 40 years - across a broad range of industries and commercial applications including aerospace, medical, computer, valve/pump, food processing, machine tool, packaging, communications and others.

We can cast virtually any metal, ferrous or non-ferrous, to tolerances of +/- .005 in./in. depending on the configuration of your part.

Waltek casts parts from under one ounce to 30 pounds and from .1" to 18" in size. Secondary operations such as plating and machining are also available.

Prototype parts can be shipped in less than two weeks from your supplied CAD file.

QUALITY CONTROL (ISO 9001:2008)

With our complete in house QA department, Waltek can remain highly competitive while maintaining strict quality standards.

Metal chemistry is tested for every melt with a computerized in-house spectrograph. Other tests such as Rockwell (hardness) are conducted as required. Job chemistry is recorded daily on computer.





ENGINEERING SUPPORT

We can help you decide if the investment casting process is the most efficient and economical way to produce a part. We'll also help you conform your design to the investment casting process with expert advice on intricate and close tolerance designs, metalurgy, and tool and die requirements.

WALTEK INNOVATION

Waltek does many things to assure excellent quality and to make parts production more efficient. For example:

- Wax injection is computer controlled to allow greater accuracy on demanding configurations
- Job statistics (such as pour temperatures, etc) are entered into our data files for instant recall on future runs making jobs more consistent and repeatable.
- An automated centralized wax distribution system which improves production efficiency by keeping wax fully conditioned (and at constant temperature) 24 hours a day.
- A 50 ton 3-way straightening press for precision controlled parts adjustments to minimize rejects.
- In-house machining and finishing

You can depend on waltek to continue to find ways to make the investment casting process efficient, precise, and economical.

PRECISION INVESTMENT CASTINGS

- sizes 0.1" to 18"
- weights: <1 Oz to 40lbs
- tolerances to +/- .005" in./in.
- small intricate parts
- complex internal cavities
- prototypes, short or long runs

FERROUS AND NON-FERROUS METALS

- alloy steels
- carbon steels
- tool steels
- nickel alloys
- aluminum alloys
- stainless steels

CONTACT US TODAY!

If you would like more information about Waltek - or a free evaluation of your prints with an estimate - contact Waltek today!

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THE INVESTMENT CASTING PROCESS...

OFTEN CALLED THE "LOST WAX PROCESS", INVESTMENT CASTING CAN BE TRACED BACK TO THE OLD WORLD CRAFTSMAN.

TODAY'S TECHNOLOGICAL ADVANACES ALLOW THE PRODUCTION OF PARTS IN HIGH VOLUME WITH EXTRAORDINARY PRECISION.

1. A master production wax impression mold is made to precise specifications. Note that all parts are made from ONE master mold to insure uniformity in complex and intricate parts.



2. Specially formulated hot liquid or paste wax is injected into the mold and allowed to harden into an exact replica, or pattern, of the finished metal part. Waltek Inc. uses multi-cavity tooling to produce many identical parts per injection.



3. Multiple wax patterns are ganged together on a single expendable wax sprue. These sprues are then repeatedly dipped in ceramic slurry, coated with refractory sand, and allowed to dry in a temperature and humidity controlled environment.



4. The new ceramic "shell" is autoclaved, melting out the wax core, leaving an empty ceramic shell that will produce multiple parts. The shell is fired at high temperature becoming the precision mold into which the molten metal is poured for casting.



5. When the metal cools down the ceramic shell is removed using a variety of methods and each precision part is cut from the sprue. Parts then go to grinding, machining and other secondary operations as required.

W-WALTEK
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