
LWD
LIMITED

A Flexible Approach and the Highest Standards of Performance

From design concept to production, and from 5 gms. to 75 kg. our castings can be relied on to provide the very highest standard of performance.

Whether one off prototypes or continuous high volume production runs, our simulation and quality control systems allied to an accelerated investment programme make us the natural choice in virtually any critical engineering situation.

So whilst we optimise our use of time and resources, we help to give our customers the strength they need to stay in front.

The Advantages of The Lost Wax Development Limited Process

1. The process gives greater freedom of Design.
2. The ability to replace fabricated sub-assemblies by a single casting.
3. More aesthetic designed components.
4. The process permits a high level of consistency, batch to batch.
5. Compared to other conventional ways of manufacturing castings, the Lost Wax Development Process will normally achieve close dimensional tolerance of ± 0.125mm per 25mm and a fine smooth finish from 80 to 120 micro inches, 2.0 µ to 3.2 µ.
6. Capable of producing a wide range of alloy specifications including Stainless, Carbon and Alloy Steels, non-ferrous Alloys, Bronze and Silver.
7. Wax injection dies have very little wear and produce consistent waxes over a long period of time.
8. Minor design modifications can be carried out to existing tooling.
9. Comparatively small orders can be produced at economical prices, however the facilities at Lost Wax Development are capable of producing substantial quantities. This illustrates the order quantity versatility at Lost Wax Development Limited.
10. A high degree of metallurgical integrity can be achieved by the Lost Wax Development Process.

At the Forefront of Casting Technology

The Lost Wax Development Limited Process

Wax Injection & Assembly

Wax patterns are produced by injecting wax under pressure into accurately machined metal dies.

Wax patterns are assembled onto a runner system with handling arrangements designed for robotic shell coating.

Shell Manufacture

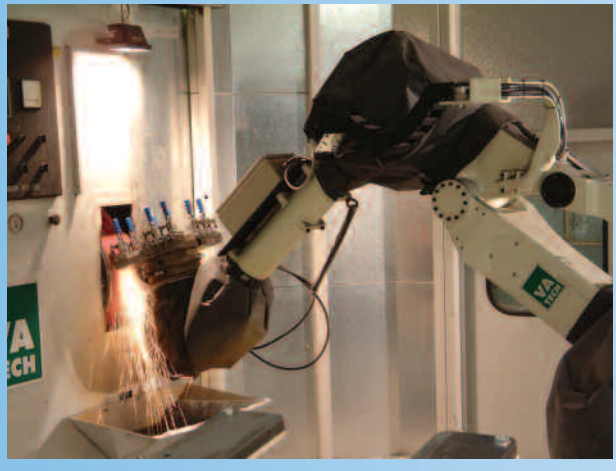
The wax assembly is coated with a ceramic shell utilising specially designed robots by repeated dipping into ceramic slurries and stuccoing with graded refractory materials.

De-Waxing & Casting

The wax is removed from the shell which is fired at over a 1000°C in a specifically designed pre-heat furnace.

Induction melting units are used to melt the alloy.

The molten metal is poured into the pre-heated ceramic shell and allowed to solidify.



Finishing

When the metal filled ceramic shell has fully cooled the ceramic is removed mechanically from the cast assembly, which is cleaned in a carousel shot blast cabinet. All cast parts are then removed from the runner system.

The final casting is subject to a variety of blasting techniques to customer requirements.

General Casting Tolerances

Castings are manufactured to the Form of Supply detailed in our quotation and are generally within the dimensional tolerances given below. Where dimensional requirements are closer than can be obtained by casting, final machining may be necessary.

Depending upon configuration, castings may distort during cooling from casting to room temperature. In such cases, a setting operation may be necessary.

Angular tolerance +/- 0.5 degrees
Linear tolerance +/- 0.125mm per 25mm

Concentricity

Typically	Outside dia:	19.0mm	25.0mm	37.5mm	50.0mm
	Inside dia:	6.4mm	12.5mm	19.0mm	20.0mm
TIR/Eccentricity		0.20mm	0.25mm	0.30mm	0.38mm

Ovality

Diameter	Up to 12.50mm	12.50mm-25.00mm	25.0mm-37.50mm
Ovality	0.25mm	0.30mm	0.38mm

Flatness

0.125mm-0.25mm per 25mm dependant on configuration.

These figures are produced from qualitative inspection observations over many years of manufacture, but should only be used as a guide. It is important to discuss your specific requirements if in doubt.

Examples of Cast Metal Alloys

Carbon and Low Alloy Steels; ..... BS 3146 CLA1 through to CLA13, EN8, EN14, EN16, EN19, EN24, EN34, EN40
Tools Steels; A2, D2, D3, H13
Iron Based; ..... SG Iron
Stainless and Heat Resistant Steels; ..... 303, 304, 310, 316, 17/4PH, EN56, EN57, BS 3146 ANC 1 through to ANC 22
Cobalt Based; ..... Stellite type alloys
Nickel; ..... Monel, Inconel 625
Brasses; ..... HTB1, 70/30, Phospher Bronze, Beryllium Copper, Silicon Bronze
Aluminium; LM25, LM6

Dimensional Tolerances

These depend on size, shape and section but generally fall into the tolerance bands listed below.

Dimensions	Tolerances
Up to 20mm	+/-0.10mm
30mm	+/-0.15mm
45mm	+/-0.20mm
65mm	+/-0.28mm
85mm	+/-0.36mm

Surface Finish

As-cast finishes will vary with alloy specified but generally fall within the range quoted. For a ground finish an allowance of 0.01in. (0.25mm) should be made.

	C.L.A Value Micro-inches	
Metal	As-cast	Machined
Stainless steels	90-126	60-125
Cobalt - Chrome alloys	80-100	50-100
Carbon steels	90-125	60-125

Minimum Section Thickness

Wall thickness will depend upon area of casting and alloy selected. the following values are a guide from general experience.

Material	Minimum wall thickness obtainable
18/8 Stainless steels	1.62mm
25/12 Stainless steels	1.50mm
Carbon steels	2.25mm
Cobalt - Chrome alloys	1.12mm

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