SILICA-SOL INVESTMENT CASTING / PRECISION CAST PARTS

INVESTMENT CASTING COMPONENTS

Near-net-shape castings for complex geometry in stainless steel, carbon steel and alloy steel.

INTEGRATED MANUFACTURING

- Casting / Forging
- CNC Machining
- Heat Treatment
- Surface Treatment
- Inspection

TIANHUI MACHINE

Ningbo Tianhui Machinery Co., Ltd.

ISO 9001 | IATF 16949 | OEM / ODM



REPRESENTATIVE COMPONENT Investment-Cast Stainless Steel Lock Component

Made to drawing. Built around the function of the part.

TIANHUI MACHINE specializes in silica-sol investment casting for custom metal components with complex geometry, detailed features and controlled surface quality. CNC machining, heat treatment, straightening, grinding, polishing and passivation can be integrated after casting where the drawing requires them.

Complex Geometry

Investment casting forms detailed external shapes and transitions that may be expensive to machine from solid.

Near-Net Shape

Useful geometry is cast close to final form so machining can focus on functional surfaces.

Material Range

Stainless steel, carbon steel and alloy steel grades are selected around corrosion, strength and service conditions.

Finished Components

Casting can be followed by machining, heat treatment, finishing and dimensional inspection.

For quotation, the drawing matters more than the product name.

Material, quantity, critical datums and tolerances, heat treatment, surface finish, assembly interfaces and inspection requirements define the practical manufacturing route.

Manufacturing Routes

01

Wax Pattern & Shell

Wax patterns are assembled and repeatedly coated to build a ceramic shell around the required geometry.

02

Pouring & Cleanup

Molten metal fills the fired shell; cast trees are then knocked out, cut and cleaned.

03

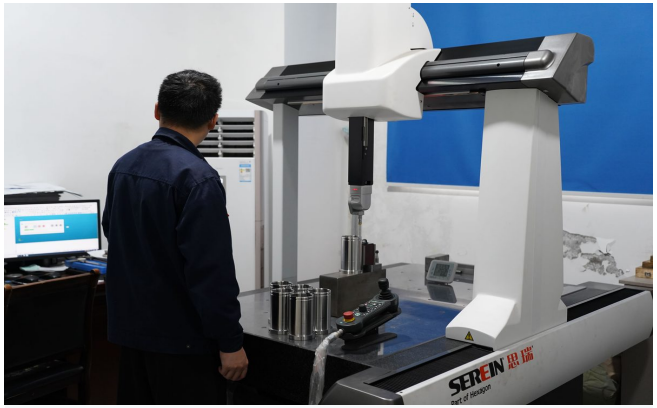
Machining & Finishing

Bores, threads, sealing faces and other critical interfaces are machined or finished to drawing.

Secondary operations can be integrated into the same project route

- Heat treatment
- Surface treatment
- Grinding / finishing
- Welding where specified
- Dimensional inspection
- NDT / pressure test by requirement

Quality Control



CMM Verification

Complex geometry, datum relationships and critical dimensions can be verified by CMM.



In-Process Measurement

Critical dimensions are checked during production, not only after the full batch is completed.



Detailed Final Inspection

Part features, finish and specified acceptance points are reviewed before release.

Inspection capability by project requirement

- Material verification
- Hardness
- Surface roughness
- Salt-spray
- Torque / dynamic balance
- NDT
- Pressure testing
- Spectrometer
- ERP traceability

Representative Investment Casting Components

SELECTED PRODUCT EXAMPLES



Investment-Cast Stainless Steel Lock Component

Stainless Steel / Investment Casting

Representative example - made to drawing / sample



Investment-Cast Stainless Steel Snow Melting Component

Stainless Steel / Investment Casting

Representative example - made to drawing / sample



Investment-Cast Stainless Steel Industrial Component

Stainless Steel / Investment Casting

Representative example - made to drawing / sample



Investment-Cast 4140 Alloy Steel Rail Vehicle Component

Alloy Steel / Investment Casting

Representative example - made to drawing / sample



Investment-Cast Stainless Steel Component

Stainless Steel / Investment Casting

Representative example - made to drawing / sample



Cast Stainless Steel Elbow Pipe Fitting

Stainless Steel / Casting

Representative example - made to drawing / sample

Representative products only - broader custom range available on thcastings.com

What we review before production starts

The objective is to align the manufacturing route with the functional features of the component before tooling, fixtures or batch production are committed.

Wall Thickness

Section changes and transitions are reviewed to support filling, cooling and dimensional consistency.

Fillets & Transitions

Sharp changes are reduced where practical to improve mold filling and lower local stress concentration.

Shrinkage & Allowance

Tooling compensation and machining stock are assigned around the material and critical dimensions.

Machined Interfaces

Only surfaces that genuinely need tighter control are reserved for secondary machining.

The goal is to cast as much useful geometry as practical, while preserving machining for the dimensions and surfaces that affect fit and function.

SEND THE DRAWING.

WE REVIEW THE MANUFACTURING ROUTE.

RFQ CHECKLIST

- 2D drawing / 3D model or sample
- Material grade and applicable standard
- Order quantity / annual demand
- Critical dimensions, datums and tolerances
- Heat treatment / surface treatment
- Inspection or documentation requirements
- Application notes and mating interfaces
- Drawing revision and target delivery plan

CONTACT TIANHUI MACHINE

Website

www.thcastings.com

Email

seo@cn-tianhui.com

WhatsApp

+86 177 6731 7668

Scan for Investment Casting Componen

No. 12 Hongxi Industry Zone, Fenghua, Ningbo, China

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