TONG BALL

Precision Valve Balls for Severe Service

| Precision | Wear Resistance | Special Materials

PRECISION VALVE BALLS
EXCLUSIVE SUPPLIER OF EMERSON

YONGJIA TONG BALL VALVE CO.,LTD.

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COMPANY INTRODUCTION

Founded in 2009,Yongjia Tong ball Valve Co.,Ltd is a national high-tech enterprise specializing in the R&D and precision manufacturing of core ball valve components—with precision hard seal valve balls& seats as our flagship product—for severe service applications worldwide.

Core Competitive Advantages

Ultra-high Precision

Roundness＜0.0011mm
Sphericity＜0.002mm
Diameter Tolerance IT3 Grade

Super Wear Resistance

1.5 million on-off tests
(3x industry standard)

Special Material Expertise

Hastelloy/Monel/Inconel
Processing＞99% qualification rate

Machining Scope

- Valve Balls,Valve Seats,Valve Stems
- High Hardness Bearings and Shaft Sleeves
- High-end custom forged precision machined products

Workshop Introduction

Environmental Management

Built on ISO 14001 certification, we integrate environmental safety and clean production into our operations. Through strict cleanliness control, emission reduction and circular economy practices, we drive progress toward carbon neutrality.

Advanced Equipment

Our 180+ advanced automated machines meet the highest safety standards, enabling high-precision manufacturing for superior product quality and efficiency.

Our Team

With over 130 rigorously trained employees, our experienced core team possesses superb skills and craftsmanship, delivering excellence in precision manufacturing and product quality.

CERTIFICATES & PATENTS

Driven by tech innovation, Tongball Valves has multiple new patents —10 validated by customers, boosting value creation.

18+

Core Patents

- Dual-Seal Compensating Valve Seat
- Leak-Proof High-Pressure Sealed Ball/Seat
- Leak-Proof Special-Channel Metal-Sealed Ball
- Wide-Temperature Adaptive Ball/Seat
- High-Precision Mirror-Grinding Valve Ball/Seat
- High-Precision High-Hardness Valve Body
- Petrochemical Explosion-Proof Ball/Seat
- Ultra-Corrosion Resistant Hard-Seal Ball/Seat
- High-Temperature Fire-Safe Fixed Ball/Seat
- Integral Bidirectional Sealed Ball/Seat

Honors

Tongball is Emerson Group's exclusive ball valve parts maker in China, with valve seats proven at 1.5 million cycles and rated as a top supplier.

Tongball is also a certified National High-Tech Enterprise, honored with multiple government awards.

Certified Quality

ISO9001

CE Certification

ISO14001

BENCHMARK CUSTOMERS

Core Supplier for 50+ Global Top Valve Enterprises

Provided more than 1 Million high-precision Balls for customers in total, Tongball's products are sold to Europe,America,Southeast Asia,the Middle East and many other countries and regions in the world, with zero quality complaints, and become the preferred partner of high-end valve enterprises.

ITT ENGINEERED FOR LIFE

重庆川仪

Pekos VALVES

NEWAY

EMERSON Process Management

FLOWSERVE

MHA ZENTGRAF FlowControl Technology

中德科技

KITZ

建龙集团 JIANLONG GROUP

MICROFINISH Pumps•Valves•Automation

TJC VALVE GROUP

TYPICAL APPLICATION CASES

Ultra-high Pressure Hydrogenation Ball

- Demand: Class2500,high corrosion,1M+cycles.
- Solution: High-strength alloy substrate + DLC (Diamond-Like Carbon) coating + precision trunnion structure.
- Effect: 1.5M cycles,zero leakage.

LNG Cryogenic Ball Valve Ball

- Demand: IT3 grade,low concentricity deviation,-162°Cserivce.
- Solution: Step-by-step processing+constant temp control.
- Effect: Concentricity＜0.011mm,Sphericity＜0.002mm,stable sealing.

Mining Slurry Abrasion-Resistant Ball

- Demand: Highly abrasive slurry (ore, coal, catalyst), 1M+ cycles, strong erosion and corrosion, temperature up to 200°C.
- Solution: Duplex steel / Hastelloy substrate + Cr203 ceramic coating (HVOF) + precision spherical finishing.
- Effect: 3x service life vs. conventional coatings, <0.002mm sphericity, zero leakage after 1.5M cycles in pilot plant validation.

SPECIAL MATERIAL PROCESSING CAPACITY

Core Processing Advantages

To overcome the inherent challenges of special materials-high hardness, high toughness,deformation tendency, and coating cracking.Tongball applies customized cutting parameters, a constant temperature and humidity environment, and step-by-step processing. Full-cycle control, including pre-process material testing, real-time tolerance monitoring, and post-process 100% inspection,delivers a qualification rate exceeding 99% -far above industry norms.

TEMPERATURE RANGE: -196°C~ 1200°C

Material Range

Highly Corrosive Service

- Hastelloy-C276, C22
- Monel alloy-400, 500
- Alloy 20-20
- Titanium alloy-TA2, TC4, GR.2, Gr.5
- 316L-Stainless steel

Cryogenic Service

- Stainless steel-F304L, F316L
- Special steel-9NISteel (9 Nickel steel)
- Hastelloy-Hastelloy C276
- Inconel alloy-Inconel 625

High Temperature & High Pressure

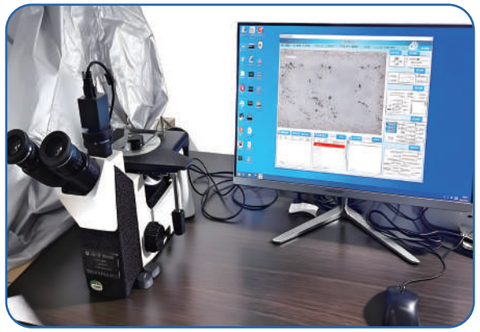
- Inconel alloy-Inconel 718, 625
- Stellite alloy-Stellite 12
- Alloy steel-F91,F92
- Ceramic material-AI203, ZrO2
- Hastelloy 282

QUALITY CONTROL

At Tongball, each process step is released only upon QA approval and our team integrates precision and reliability throughout our efficient manufacturing operations.

Incoming Inspection - Quality Begins Before Machining

Every raw material-from duplex steel and Hastelloy to Inconel and titanium-undergoes strict verification before entering our production line. Our incoming inspection protocol ensures complete traceability and zero compromise on performance:



Metallographic Inspection

Impact

Material Traceability

Tensile Test

Spectrum Analysis

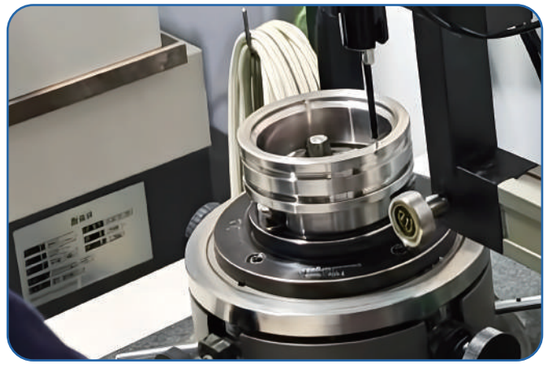
Hardness Test

PRECISION INSPECTIONSTANDARD > INDUSTRY STANDARD

Tongball's standards far exceed industry ones, focusing on validating product performance limits in each critical dimension.

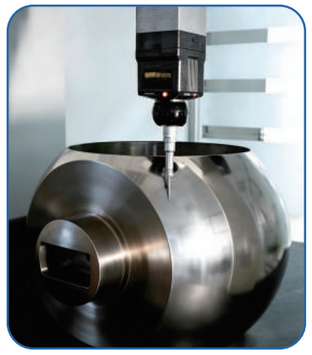
Processing Process Inspection–Precision at Every Step

Every machining operation is continuously monitored to maintain geometric accuracy and quality standards:



Roundness&Concentricity Check

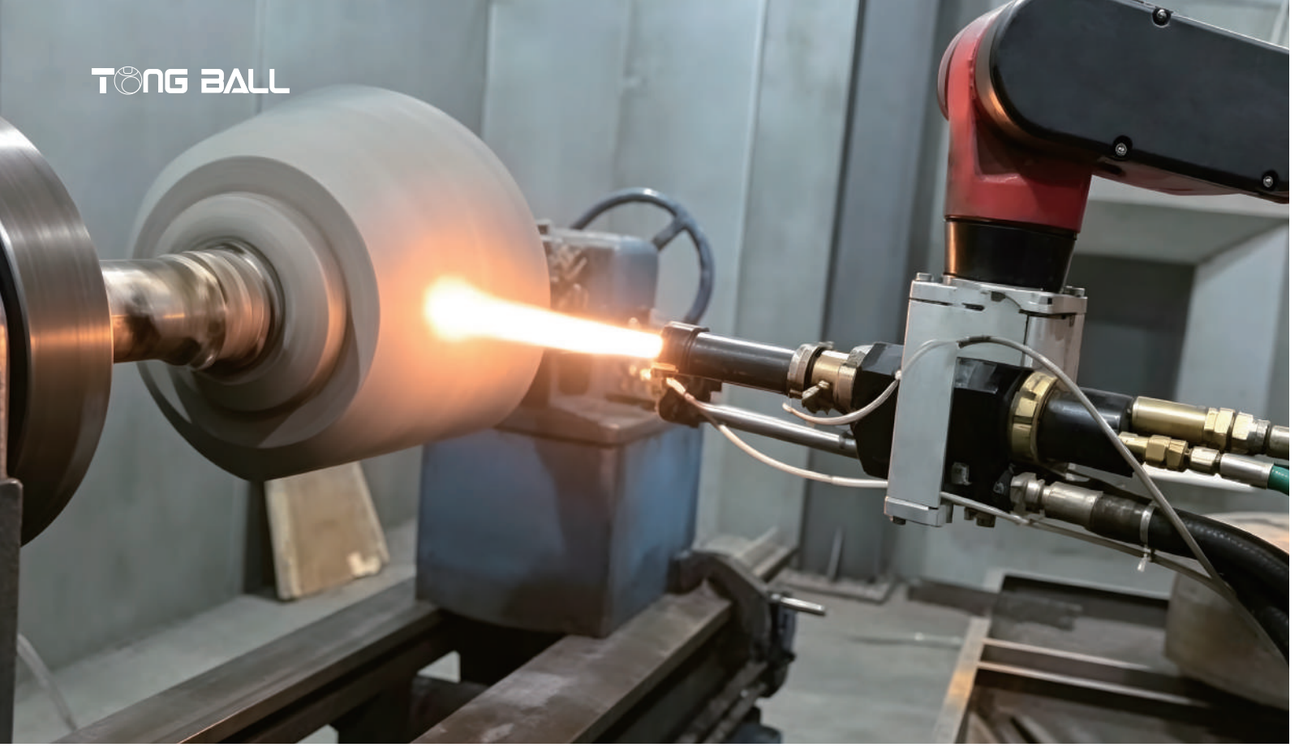
Tool Wear Monitoring



CMM Verification

First Article Inspection

Diameter Tolerance Monitoring



SPRAYING WORKSHOP

Spray and spray welding services for ball and seats cover sizes from DN10 to DN800 with an annual capacity of 40 million units.

01

Spraying Process

- HVOF Spraying
- Cold Spray
- Atmospheric Plasma Spraying (APS)
- Detonation Spray

02

Spray Welding Process

- Plasma spray welding
- Oxy-acetylene Spray Welding
- Laser Cladding

COATING MATERIALS

Electroplating & Electroless Plating

- ENP
- HCR

Coating (HVOF/Cold Spraying)

- Cr3C2, WC-Co, WC-CoCr, WC-Ni, TiC-NiMo, SiC, CrC
- ZrO2, Al2O3, Cr2O3, ZnO, TiO2, Al2O3-TiO2
- STL1/6/12
- Ni60/55/45

Overlay Welding

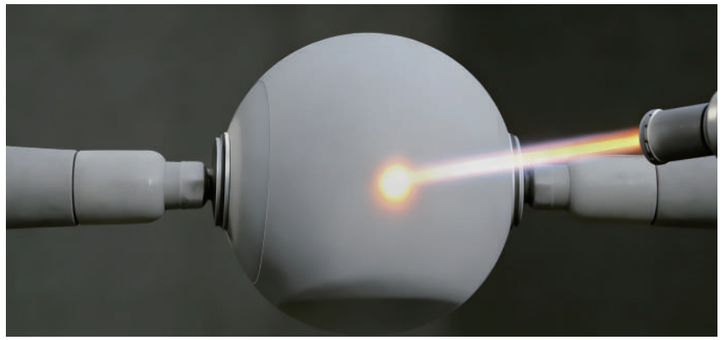
- STL6
- STL12
- STL 20

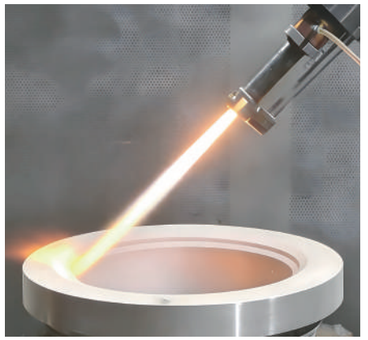
Physical Vapor Deposition

- TiN
- CrN,Cr2N
- TiAlN
- Diamond-like carbon (DLC) coating

Thermochemical Treatment

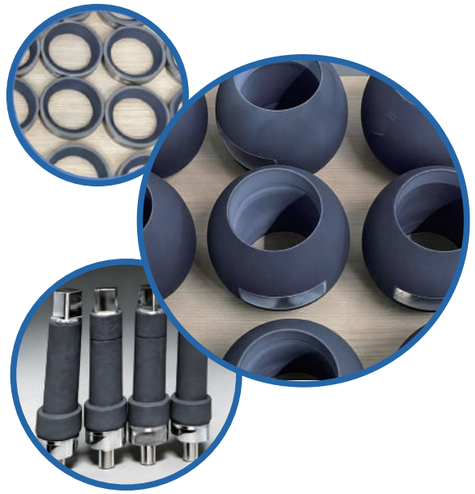
- Nitriding





FEATURED SPRAYING PROCESSES

Zirconia (ZrO_2) and Chromium Oxide (Cr_2O_3) Coatings



ZrO_2

Zirconia Oxide Coating

- Operating temperature up to 1000°C+
- Extremely low thermal conductivity; an excellent thermal barrier coating
- Suitable for critical components of ball valves in ultra-high temperature applications

Cr_2O_3

Chromium Oxide Coating

- Hardness up to HRC70+
- Excellent corrosion resistance (especially against acids and alkalis)
- Suitable for critical components of ball valves in highly corrosive and high-wear conditions

MORE FEATURED SPRAYING PROCESSES

Our advanced spraying technologies provide coatings with exceptional bond strength and density, ensuring the reliable operation and enhanced durability of critical components even under extreme conditions. We remain committed to continuously exploring more advanced processes.

F316+TiN

F316+TiO_2

F316+Al_2O_3

F316+Cr_2O_3

EXTREME CONDITION VERIFICATION

After Process Inspection, Tongball's dedicated inspectors conduct Pre-spraying Inspection to secure coating integrity,proceed with Post-spraying Inspection to verify coating quality and finalize with Finished Product Final Inspection to guarantee 100% quality assurance.

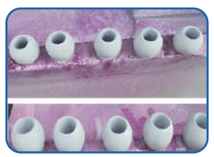
Beyond routine checks, we validate performance under extreme conditions: 1.5 Million Cycle Seal Testing with ZERO Leakage,and 500℃ Thermal Shock Testing to ensure durability in harsh environments.

1.5 Million

Cycle Tested

——"ZERO Leakage"

500°C Thermal Shock Test



PT Before Heating

Furnace Temperature

Heated to 500℃

Hold for 30 minutes

Furnace Opening Temperature

Temperature After Cooling

PT After Thermal Vibration

Sealed Sample

ADVANTAGED PRODUCTS

Critical Componts-Precision Valve Balls

High Temperature Solid Ceramic Ball

Nominal Diameter	Pressure Rating	Ceramic Material	Surface Treatment
½″ – 12″ (DN15 – DN300)	Class 150 – 600 · PN16 – PN100	Alumina (Al2O3), Zirconia (ZrO2), Silicon Carbide (SiC), Silicon Nitride (Si3N4) etc	Precision grinding & polishing, Ra≤0.02μm

Control & Diverter Ball Products

High-Pressure Hard Seal Ball – Floating / Trunnion

Nominal Diameter	Pressure Rating	Substrate (Base Material)	Coating Options
2″ – 24″ (DN50 –DN600) Floating Type up to 12"	Class 150 – 2500 · PN16 – PN420	See Page 08 and Other Special Alloys	Tungsten Carbide, Chromium Carbide, Cobalt/Nickel-based Alloys, DLC/TiN, Electroless Nickel Plating (ENP), Hard Chrome Plating

Integral Stem Ball – One-Piece Ball & Stem Design

Parameter	Range
Nominal Diameter	1″ – 24″ (DN25 – DN600)
Pressure Rating	Class 150 – 2500 · PN16 – PN420
Ball Material	See Page 08
Stem Material	See Page 08
Ball Coating Options	Tungsten Carbide, Chromium Carbide, Cobalt /Nickel-based Alloys, DLC/TiN, Electroless Nickel Plating (ENP), Hard Chrome Plating
Stem Surface Treatment	Hard Chrome Plating, Nitriding, HVOF Coating
Design Feature	One-piece forged/machined ball-stem or precision assembled design for maximum torque transmission and zero backlash

Metal Seat Multi-Port Ball – L/T/Y Configuration

Nominal Diameter	Pressure Rating	Substrate (Base Material)	Coating Options
2″ – 16″ (DN50 – DN400)	Class 150 – 600 · PN16 – PN100	See Page 08 and Other Special Alloys	Tungsten Carbide, Chromium Carbide, Cobalt/Nickel-based Alloys, DLC/TiN, Electroless Nickel Plating (ENP), Hard Chrome Plating

V/Y/C Type Metal Seat Control Ball – Flow Regulating/Custom Design

Nominal Diameter	Pressure Rating	Substrate (Base Material)	Coating Options
2″ – 24″ (DN50 – DN600)	Class 150 – 2500 · PN16 – PN420	See Page 08 and Other Special Alloys	Tungsten Carbide, Chromium Carbide, Cobalt-based Alloys, DLC/TiN (custom wear-resistant coatings)

Related Components & Forgings

Ball & Seat Matching Set

Matching Type	Seat Type	Material Matching	Sealing Class
Ball + Seat matched and lapped as a set	Metal Seated, Soft Seated	See Page 08 and Other Special Alloys	Zero leakage (compliant with API 598, ISO 5208, or custom leak rate standards)

Metal Seated / Soft Seated Seats & Bearings

Matching Type	Seat Type	Material Matching	Sealing Class	Size Range
Metal Seat Materials	Stainless Steel, Stellite®, Special Material, Tungsten Carbide Coated	PTFE, RPTFE, PEEK, Nylon (Chemically Compatible with Ball Materials)	Soft Seated: -60°C to 260°C; Metal Seated: -196°C to 1200°C	Fits ball diameters from ½" (DN15) to 24"(DN600)

High-Precision & High-Hardness Valve Stem

Materials	Surface Treatment	Size Range
See Page 08 and Other Special Alloys	Hard Chrome Plating, Nitriding, HVOF Thermal Spray Coating	Customized to valve size & pressure class specifications

Custom Forgings & Precision Components

Product Types	Materials	Manufacturing Standards	Max. Single Weight
Valve Bodies, Flanges, Pipe Fittings, Bonnets, Seat Ring Blanks& Other Custom Forged Parts	See Page 08 and Other Special Alloys	ASTM, ASME, DIN, EN, JIS, GB & Custom Standards	Up to 5 tons (11,000 lbs)