

OEM/ODM Construction Fasteners: Custom Manufacturing & Design Support

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Key Takeaways

120 - Hex Nut — GB/T 6170 □ ISO 4032 (Series 059) — GB/T 6170 □ ISO 4032

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- Construction fasteners include structural bolts, screws, nuts, washers, anchors, and threaded rods, each suited to specific load and connection types.
- Material selection depends on strength requirements and environment: carbon steel to ISO 898-1, stainless steel A2/A4, and coated finishes for corrosion protection.
- Customization services like to-print manufacturing and private labeling are available from design brief to full PPAP documentation.
- Procurement teams should evaluate both mechanical properties and long-term durability when specifying fasteners for construction.
- All custom runs include mill test reports, dimensional inspection, and lot traceability as standard.

OEM vs ODM Scope: Standard-to-Spec and Special/To-Print Fasteners

103 - Clamping Handle Screw (Short) — DIN 6336 □ GN 313 (Series 042) — DIN 6336 □ GN 313

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Off-the-shelf construction fasteners cannot always address unique structural requirements, aggressive environments, or assembly processes. Our OEM and ODM services close that gap. We manufacture fasteners to your detailed print for tight-tolerance OEM applications, and we also offer collaborative design support (ODM) when you need engineering input on thread form, head configuration, or material selection. Whether you need a modified anchor bolt for seismic loads or a custom screw for a facade system, we provide the manufacturing expertise to produce reliable, code-compliant construction fasteners in commercial volumes.



► Watch video: <https://www.youtube.com/watch?v=wiy11Vq9RAI>

METALCON 2021 - Fastener Selection and Installation Guidelines— by MetalConstructAssoc on YouTubeMETALCON 2021 - Fastener Selection and Installation Guidelines.

Attributes You Can Customize

Almost every parameter of a construction fastener can be adapted to your project. Typical customization options include:

- **Dimensions:** Non-standard diameters, lengths, shoulder profiles, and under-head radii. Tolerances can be tightened for precision assemblies.
- **Thread form:** UNC, UNF, metric coarse/fine, custom pitches, left-hand threads, self-tapping, or thread-forming geometries.
- **Head and drive type:** Hex, heavy hex, square, Torx, one-way security heads, truss, flat countersunk, or user-defined recesses.
- **Material grade:** Carbon steel (Grade 5, 8, 10.9, 12.9), stainless steel (304, 316), alloy steel, duplex stainless, and special alloys for high temperature or corrosion resistance.
- **Coating/finish:** Zinc plating (clear, yellow, or black), hot-dip galvanizing, mechanical galvanizing, Dacromet, Geomet, Xylan, or organic coatings. Coatings can be tailored for salt spray hours and chemical exposure.
- **Head marking:** Embossed or laser-etched identification for grade, lot traceability, and proprietary branding.
- **Packaging:** Bulk, kegs, pallets, or private-labeled boxes with custom labels and barcodes.

The Customization Workflow: From Drawing to Delivery

1. **Drawing/Spec Review:** Our engineering team evaluates your CAD files, technical drawings, or sample fasteners. We check for manufacturability and confirm tolerance capabilities.

2. **Design for Manufacturing (DFM):** We provide feedback to optimize the part for production without sacrificing performance. Thread engagement, cold-forming feasibility, and material flow are considered.
3. **Tooling:** Custom tooling is designed and built for your fastener. For profiles close to existing standards, we may adapt current tooling to reduce cost and lead time.
4. **Sampling and PPAP:** Initial samples are produced and submitted with dimensional reports, material certifications, and PPAP Level 3 documentation if required. You approve the samples before mass production begins.
5. **Production:** After approval, full-scale manufacturing proceeds under controlled processes. Statistical process control ensures consistency across large batches.

Branding, Marking, and Private-Label Packaging

For construction fastener distributors and OEMs, on-part marking and custom packaging reinforce brand identity and simplify job-site identification. Options include:

- **Embossed head stamps:** Ideal for hot- and cold-forged bolts; logos, part numbers, or grade markings are raised on the head surface.
- **Laser marking:** High-contrast and permanent on stainless steel or coated fasteners, suitable for smaller diameters or discreet branding.
- **Ink marking:** Cost-effective for color coding by length or application during construction.
- **Private-label packaging:** Custom-printed boxes, bags, and labels with your company's design, barcodes, and traceability data.

Tooling, Sampling, MOQ, and Lead-Time Expectations

Custom construction fasteners involve upfront tooling investment. Tooling costs vary primarily with part complexity, size, and material. For production quantities above certain thresholds, we often amortize tooling charges over the order volume. Minimum order quantities (MOQs) are determined by material and manufacturing process; standard carbon steel parts typically have lower MOQs than exotic alloys. Sampling lead times generally range from two to four weeks after design freeze, depending on tooling complexity. After sample approval, production lead times are typically four to eight weeks for medium-volume orders. We provide clear timelines at the quotation stage so you can plan your construction schedules with confidence.

Intellectual Property Protection and Quality Assurance

Your proprietary designs are treated as sensitive intellectual property. We sign mutual NDAs as standard practice and maintain secure, access-controlled data systems for drawings and specifications. During production, quality assurance includes full material traceability from mill to finished fastener, with mill test reports (MTRs) and chemical composition certifications available. Dimensional inspection is performed regularly using CMM, optical comparators, and go/no-go gauges. Full lot traceability and First Article Inspection (FAI) reports accompany every custom run. For projects requiring formal qualification, we provide Production Part Approval Process (PPAP) documentation.

Send Your Drawing or Specification for a Quote

Whether you have a detailed print or a functional requirement, our engineering team is ready to review it. Submit your drawing, CAD model, or sample part, and we will return a no-obligation feasibility assessment, quotation, and timeline. Start the conversation today and put our custom construction fastener expertise to work for your next project.

Construction Fastener Types and Material Selection

Selecting the right fastener for a construction project requires balancing material strength, corrosion resistance, and structural code compliance. Below we outline the primary fastener types, common material grades, and key factors engineers and procurement teams evaluate.

Key Facts Summary

- **Primary types:** bolts, screws, nuts, washers, anchors, threaded rods, and rivets.
- **Material standards:** carbon steel (ISO 898-1, ASTM A325/A490), stainless steel (A2/A4 per ISO 3506), alloy steel.
- **Coatings:** zinc plating, hot-dip galvanizing, mechanically deposited zinc, and organic topcoats for corrosion protection.
- **Selection factors:** tensile load, shear load, environmental exposure, preload requirements, and installation method.

Primary Fastener Categories

Construction assemblies rely on a range of fastener types. [Hex Bolts](#) with heavy hex or standard hex heads are typical in steel-to-steel structural connections, often paired with heavy hex nuts and hardened washers. Carriage bolts, lag screws, and timber screws secure wood components. [Hex Nuts](#), lock nuts, and flange nuts provide clamping force and vibration resistance. Flat washers distribute load, while lock washers and serrated washers prevent loosening. Concrete fasteners—wedge anchors, sleeve anchors, and screw anchors—are essential for anchoring into concrete and masonry. Threaded rods and studs enable long-distance tensioning and bracing. Rivets, both solid and blind, offer permanent connections in steel and composite panels.

Material Grades and Standards

Fastener material directly influences strength, durability, and cost. Carbon steel fasteners are commonly specified to [property classes](#) 4.6, 8.8, 10.9, and 12.9 under ISO 898-1, while ASTM A325 and A490 govern structural bolts in steel construction. Alloy steel provides higher tensile and yield strengths for demanding applications. Stainless steel grades A2 (304) and A4 (316) per ISO 3506 are chosen for corrosion resistance in coastal or chemical environments. Weathering steel (e.g., ASTM A242) is sometimes used for bolts on bridges to match the structure's patina.

Selection Factors for Construction Applications

Engineers should evaluate the load type (tension, shear, or combined), environmental exposure (indoor, outdoor, marine, chemical), required corrosion protection, and compatibility with the base material. Torque-tension relationships are critical for preloaded bolted joints; pre-certified assemblies like tension control bolts simplify installation. Code compliance—whether AISC, Eurocode, or regional standards—often dictates minimum material grades and inspection requirements. For long-term durability, consider galvanic corrosion between dissimilar metals and specify coatings or insulating washers as needed.

Construction Fastener Customization and Selection Overview

Aspect	Key Considerations
OEM/ODM Customization	Full design-to-print, DFM review, PPAP, custom tooling, head marking
Fastener Types	Bolts, screws, nuts, washers, anchors, threaded rods, rivets
Material Grades	Carbon steel 8.8–12.9, A325/A490; stainless A2/A4; alloy steel
Coatings/Finishes	Zinc plating, HDG, mechanical galvanizing, organic topcoats
Quality Assurance	MTRs, dimensional inspection, FAI, lot traceability
Selection Drivers	Load, environment, code, installation method

To discuss custom fasteners or request technical support for your next project, contact our engineering team with your specifications.

Frequently Asked Questions

What are the most common types of construction fasteners?

Common types include [hex bolts](#), carriage bolts, lag screws, structural screws, nuts (hex, heavy hex, lock), flat washers, lock washers, concrete anchors, threaded rods, and rivets. Each serves a specific purpose in steel, wood, or concrete connections.

What materials are used for construction fasteners?

Materials range from carbon steel ([property classes](#) 4.6 to 12.9) and alloy steel to stainless steel (A2/304, A4/316) for corrosion resistance. Weathering steel is sometimes used for bridges.

How do I choose the right fastener for a construction project?

Consider the load type (tension, shear), environmental exposure, required corrosion protection, compatibility with the base material, and structural code requirements. Consulting your supplier's engineering team is recommended.

What coatings protect fasteners in outdoor construction?

Hot-dip galvanizing (ASTM A153) provides heavy zinc coating; zinc plating (ASTM B633) is thinner. For severe environments, duplex systems or stainless steel may be necessary.

Can I get custom construction fasteners with my company logo?

Yes, many manufacturers offer custom head stamping, laser marking, and private-label packaging. Provide your drawing or specification to begin the quoting process.

Categories [Uncategorized](#)