


So You Want to be an Automotive Fastener Supplier

by Laurence Claus

Although every model automobile is different, the average automobile contains several thousand fasteners. The total number is comprised of screws, bolts, nuts, washers, clips, and specialized, engineered specials and variants of all the following. The assortment and variety of different fasteners is impressive by any standard. One would think that because of this variety gaining entry into the automotive fastener market would be an easy accomplishment. This assumption, however, would be incorrect. In fact, the reality is very different; becoming a supplier to automotive customers is generally an onerous task and a monumental accomplishment.

To understand why it is so difficult one has to understand some of the differences between the automotive fastener market and all others. At the forefront is an understanding of fastener “standards”.



Fasteners were amongst the first products to have industrial standards developed for them. This legacy has established fasteners as one of the most standardized products in the world. Almost all industry segments depend on this standardization and purchase a large percentage of their fastener products accordingly.

Although individual companies will always have need for products special or unique to them, the majority of their fastener purchase can and are made from standards. This is true for almost every industry segment except automotive and medical. **Although the automotive industry claims “standards”, they are almost exclusively unique to individual OEMs.** For example, GM has a book of global fastener “standards” that it prefers to use across multiple models and regional markets. These parts, however, are not recognized by the other OEMs and, therefore, may be standard to GM but to no one else. In comparison, even the sophisticated aerospace market possesses standards that are used worldwide by anyone in that market segment. A supplier is just as likely to supply the same part to Boeing as to a small supplier making an obscure part of the airplane galley.

This OEM specificity inherently defines how the market works and complicates the process for new entrants. Instead of being able to produce a part and have multiple potential channels for its sale, in automotive there may only be one or two channels available (OEM or Tier Level Supplier). Gaining access to these channels presupposes

either an establishment of a relationship with either the OEM or its supply chain or having a new and desirable technology unavailable from their existing suppliers. Although it likely gets easier to form a new relationship as one slips further down the supply chain, it is extremely difficult to do so at the top of the chain. In fact, many of the OEMs have strict initiatives to limit the number of companies serving specific products within their supply base. These limitations are intended to be “fluid” so that new and deserving companies can be added from time-to-time, but it is clearly on an OEM needs basis and rarely without some strong incentive such as access to a new technology desired by the OEM.

In addition to the hurdle of being able to get one’s foot in the door and be noticed by an OEM or Tier Supplier, **there are other prerequisites to entry into the automotive market. Several of these are:**

1. PPAP: PPAP is an acronym for Production Part Approval Process. This process is roughly thirty years old and is the way that a supplier can show their automotive customer that they are capable of making parts in a production setting. In fact, the Fourth Edition of the PPAP manual states that its purpose is, “... to determine if all customer engineering design record and specification requirements are properly understood by the organization and that the manufacturing process has the potential to produce product consistently meeting these requirements during an actual production run at the quoted production rate.” When first employed a PPAP submission was basically a dimensional layout and a cover letter. Over the years the process has significantly evolved and today’s PPAP submissions, of even a simple fastener, are thorough studies of manufacturing feasibility. In fact, the average PPAP submission package is likely to be about 8-10mm thick and contain items such as multiple statistical process capability studies, Measurement System Analysis (MSA) studies, part layouts, certifications, Process Control Plans, and Process Failure Modes and Effects Analyses (PFMEA). Each of these items requires expertise and the automotive supplier must be prepared to employ a sufficient number of competent staff members to complete and maintain a PPAP on every automotive part.

In my experience, this is one of the areas that trips up many suppliers or would-be suppliers. They simply fail to recognize the commitment required for this activity or the true resources and expertise that it takes to fulfill the automotive customer’s expectations. As soon as this oversight is exposed, it puts a great deal of strain on the fledgling relationship. Normally, organizations are able to weather this first challenge, but not always. Suppliers new to the industry can prevent a great deal of pain and

loss of goodwill by simply understanding these requirements and preparing for them ahead of time.

2. IATF 16949: IATF 16949 is the newest version of an automotive specific Quality Management System (QMS). The previous version was ISO/TS 16949 and before that QS 9000. IATF 16949 is an automotive supplement to ISO 9001. Therefore, in many ways it will be familiar to manufacturers already operating systems under or similar to ISO 9001. It is important, however, to not be lulled into a false sense of confidence over this fact. IATF 16949 is much more comprehensive than ISO 9001 and adds almost 275 more requirements. Most automotive customers will not purchase from a supplier unless they have obtained IATF 16949 status or are in the process of doing so.

In my opinion no organization should set up a QMS to simply fulfill a customer requirement. They should rather use the QMS as it was intended, to provide a methodology to develop a world-class operating business culture. Suppliers considering raising the high bar to IATF 16949 over ISO 9001 should not discount the effort required to get and stay there. Like PPAP, this accomplishment requires extra resources and competency and an organization seeking automotive supplier status should be fully aware and committed to this before starting the journey.

3. Scheduling and Logistics: Most automotive customers operate in a just-in-time environment. The ability to meet the customer's needs in this regard from a scheduling and logistics standpoint may be different than what new entrants are accustomed to. Once again, preparing one's organization for these specific requirements will be critical to success as a supplier. In fact, several automotive OEMs place as much importance on getting shipment logistics right as they do in getting first time quality parts. A supplier's inability to do this correctly can quickly land them in hot water with their customer and result in them losing existing business, be assessed cost recovery fees, or sacrificing the consideration for new business.

4. Risk: Many new suppliers fail to understand the inherent risks of doing business with automotive customers. First among these are the costs, both tangible and intangible associated with a quality spill or recall. Automotive customers are extremely proficient in managing and passing back costs attributed to any event caused by a supplier. This may be passing back costs related to expediting a late shipment, containing a quality spill, or, in the worst case, working through a product recall campaign. Although most incidents are small and can normally be absorbed by the supplier, in the event of a major incident, the associated costs can be crippling to a small or unprepared organization. Even though many suppliers will have sales terms that state their exclusive remedy is to replace parts or pay for the cost of parts only, the automotive industry expects supplier participation (either fully

or partially) in cost recovery for any problem which the supplier is either partially or fully culpable. In other words, costs that a supplier may be responsible for include many potential additional items beyond just the cost of the parts supplied. In addition to cost risks, suppliers may be requested to accept warranty risks on parts. For fasteners, this is rare, but not unheard of.

Even though there are many high hurdles to be overcome to become an automotive supplier, for many it is still an attractive opportunity. Automotive fasteners are not run-of-the-mill parts and, therefore, present an excellent opportunity to companies that are either now providing technically advanced parts to other industries or evolving their capabilities towards more advanced parts. Additionally, once relationships are forged, many automotive OEMs and tier suppliers have great teams to work with and provide excellent working partnerships.



Engine Rocker Arm Screw

Since so many automotive fasteners are unique, it is difficult to identify a list of specific capabilities that suppliers must possess to manufacture automotive product. However, some general observations can be made regarding fasteners for different automotive systems. Following is a list of capabilities or requirements necessary for manufacturing certain automotive system fasteners:

Engine:

- Must be able to produce high strength fasteners- Property Class 10.9
- Must be familiar with producing fatigue resistant bolts- Rolling threads after heat treatment, rolling fillet radius after heat treatment, grinding, rolling MJ thread forms
- Exotic materials for high temperature applications- A286, Alloy 718
- Fasteners may be tightened to yield



Steering ball stud

Transmission:

- Must be able to produce high strength fasteners- Property Class 10.9
- Possess the ability to integrate sealing features or components under the head
- Ability to produce Banjo Bolt and other drill through embodiments
- Address galvanic corrosion issues- Especially with magnesium transmission case designs

Steering column bolt



Steering:

- Must be able to produce high strength fasteners- Property Class 10.9
- For steering columns- capable of producing parts with flats on body, flats underneath head, and left-handed threads
- For steering links- capable of producing large spherical/ball studs



Suspension ball stud

Safety:

- Must be able to produce Property Class 10.9 thread rolling screws with induction hardened points
- Must be able to meet U.S. Federal Motor Vehicle Safety Standards (FMVSS)
- Must have secondary manufacturing process capabilities- grinding, broaching, machining, and flattening



Self-tapping screws for plastics- EJOT

Brakes:

- Must be able to produce high strength fasteners- Property Class 10.9
- Must have parts forming, near net-shape capability
- Must be able to produce parts with flats on body
- Must have secondary manufacturing process capabilities- machining, grinding, and drilling
- Must be able to produce Banjo Bolts
- Many of these parts will be identified by customer as "safety critical"



Brake caliper bolt

Suspension:

- Must be able to produce high strength fasteners- Property Class 10.9
- Must be capable of making long fasteners
- Must be capable of producing large spherical/ball studs
- Fasteners may be tightened close to yield

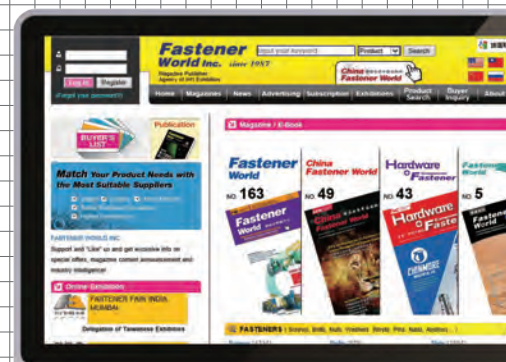
Interior:

- Must be able to provide genuine self-tapping proprietary thread forms ("knock-offs" and generics often will be unacceptable)
- Must be able to provide genuine internal recess drives ("knock-offs" and generics often will be unacceptable)
- Applications include self-tapping product for mild steel, thermoplastics, thermosets, aluminum, and magnesium.

In conclusion, automotive fastener manufacturers are among some of the most sophisticated fastener producers in the world. Just scanning the list of required capabilities above clearly illustrates why this is the case. Automotive customers are demanding, not only of the technology that they employ in their product but the suppliers they choose to partner with. It is not easy to become an automotive fastener supplier, but once established, the automotive fastener market segment can be a fulfilling place to be. ■



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