



# Japanese Fastener Industry

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## History of Japanese Fastener Industry

In Japan, the first hand-made screws are made for tail valves of firearms, which were introduced in the middle of the 16th century. Then, in the middle 19th century threading machines invented to make screws for Japanese clocks.

Industrial production of screws in Japan began in the mid - 18th century when Japan began constructing steel mills and shipyards to make and repair its own ships in order to protect itself from European powers. In the late 18th century, new trading companies specialized in screw import were established and they formed a screw wholesale district in Itachibori, Osaka Prefecture. Screw production facilities, machines as well as screw parts imports in a large quantity from England.

Full scale industrial production of screws began for the first time in 1906. Domestic screw manufacturers supported and played an important part in the rapid modernization of industry, which was almost too aggressively led by the new Meiji government. They played a major part in the history of growth of small and medium companies of Japan.

Japan's super economic growth mainly in the manufacturing area was actually supported by screws as "the salt of industry." In Japan with the economic growth, the fastener industry achieved higher technology, introduced common industrial standards and new facilities, all of which supported establishment of solid industrial foundation.

## Japanese Fastener Market in Today's Economy

Screws are used in almost all manufactured products from vehicles and electric home appliances to vessels, bridges, houses and furniture to make sure that they have good quality and safety.

To meet various needs of different manufacturers, Japanese manufacturers work hard to incorporate the latest technology and equipment while distributors and trading companies try to have a wide variety of items so that they can meet all users' requirements.

Japan has approximately 1,500 screw manufacturers that have 4 or more workers. Each of them produces bolts, nuts, machine screws, wood screws and other specialty items that boost the world-class quality and reliability. Their annual production volume in total is approximately 3 million tons in weight,

or astronomical sum of approximately 300 billion screws.

Their annual sales reach approximately 1 trillion yen, which is one of the highest in the metallic manufacturing segments in the industrial survey. In fiscal 2007, Japan had approximately 400 screw distributors and trading companies whose combined annual sales were assumed to reach approximately 450 billion yen. Large distributors and trading companies sell over 50,000 items. Among them, a leading company sells more than 300,000 items.

These companies work day in, day out to improve quality of products and service they offer, with the goal of becoming the world's most advanced producers and suppliers of screws that fully satisfy customers.

## A Wide Variety of Products

Needs and preference of manufacturers and consumers are more and more diversified. Globalization is also a key to making competition in new product development even tougher. But shortening new product development time and improving product quality and cost can't be realized without good cooperation between manufacturers and suppliers. Manufacturers of fasteners are not just manufacturers

of products. They rather work hard to establish distribution systems to directly deliver their products to their customers' production lines, so that they can provide better service. They do so because they know their roles and responsibilities are to supply advanced products that meet the needs of their customers using the latest technology at the perfect timing.

## Distribution and Trade

There are hundreds of thousands of fastening parts and one manufacturer can't make all of them. Each manufacturer has its specialty and makes bolts, nuts, machine screws and other superior and original products to compete with others. Some manufacturers take orders directly from their customers and participate in the development of their customers to assure quality of fastening parts they provide.

Many of fastener users purchase fastening parts through distributors and trading companies, so manufacturers try to work together with the distributors and trading companies to supply products that their customers really need. Japan's fastening parts are superior in quality. But its environment-conscious manufacturing methods and zero-defect supply are also keys to taking the lead in the global market.

## Industry Specific Fasteners and New Technologies in the Industry

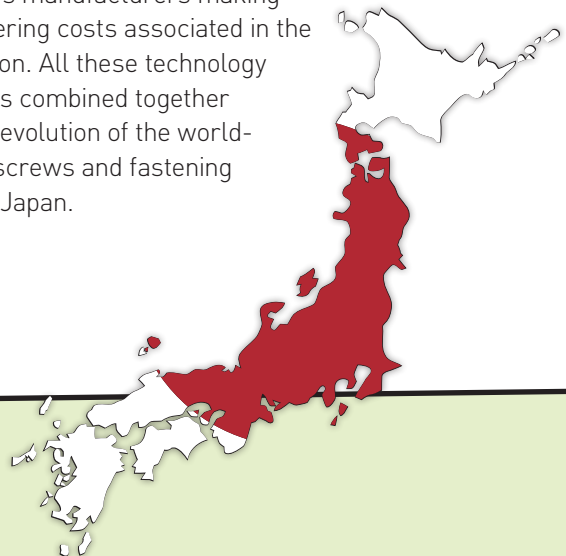
The aerospace, automotive and railway sectors and other cutting-edge industries require critical parts that are lighter and stronger, particularly fasteners that will not come loose easily. Cold working for example for SDK tool steel is now common technology even for rather unworkable titanium alloy. This therefore makes space exploration easier.

The fastener industry did not tolerate providing one defective piece out of 1 million products and aimed to guarantee every product it offered. This supported the Japanese automotive industry's battle for world dominance.

Manufacturers are making efforts to make their assembly processes more efficient while maintaining quality and the same is true in the construction industry and for its building construction processes. To meet such needs, the Japanese fastener industry develops new fastening methods and materials to help

manufacturers to make their assembly processes safer and more efficient and construction companies and builders to make their construction processes the same.

For example, in all screw production processes from forging, pressing, forming by rolling to cutting, materials, heat treatment, surface treatment and measuring and inspection, various technology and skills are implemented to assure performance and reliability of screws manufacturers making and lowering costs associated in the production. All these technology and skills combined together support evolution of the world-leading screws and fastening parts of Japan.





## Automobile Manufacturing is a Core Industry

An automobile typically is composed of 20,000 to 30,000 parts, which even the largest manufacturers cannot produce all by themselves. Automakers, therefore, either outsource production or purchase finished products. Finished products purchased by the automakers include products manufactured abroad, and the volume of imported components increases yearly. Automobile manufacturing is thus an integrated industry because it relies on many supporting industries to produce the great diversity of materials and components it uses which makes this industry as one of the most demanding markets for fasteners. Hybrid vehicles and fuel cell vehicles that are based on new drive systems and fuel types are

now in the market. But they are still required to have the same or even higher level of reliability, safety, durability, drivability and comfort than conventional vehicles.

Japan's fastener industry has been developing even stronger and lighter products to meet the stringent needs in the automotive industry. By developing screws that are strong, light, safe and reliable, manufacturers have been successful in making new excellent fastening parts to meet the requirement in the aerospace industry, nuclear power plants, wind farms, and for Shinkansen bullet trains, as well.

## Reducing Costs While Preserving Quality

Economic needs of the products are not just pricing. This is a common sense among people in the manufacturing world. But this is also often neglected when procuring parts and components. Japan is currently facing a crisis after the country was hit by a massive earthquake and now is in reconstruction process. In this stage sustainability is important when introducing cost-cutting strategies. There are many companies cutting costs with temporary savings and permanent damage to their corporate infrastructure and culture.

As a matter of course, the fastener industry is trying to cut cost directly. Also, Japanese manufacturers in general and fastener manufacturers in specific pay full attention to quality assurance of their products and service. They do so because they fully know the significance of losses and impact that quality problems can cause to their users.

Reliable manufacturers inspect all their products even though they make almost immeasurable quantities, hundreds of thousands or millions, of fasteners. Furthermore, they have strengthened distribution service to keep appropriate line operation level and stock-less inventory system. By doing this, they prevent themselves from being economically inefficient and improve productivity.

Last but not least, it's about the manufacturers contributions for environmental protection. The global warming, air and water pollution and deforestation and other selfish use of excessive energy and spread of waste are threatening the global environment. Environmental protection is therefore a critical challenge for human society. The fastener industry of Japan will take all measures it can take in all processes from material selection to machining and process management in order to stop environmental destruction and global warming.

### Source:

The Fastener Institute of Japan, Fastener Industry

The Motor Industry of Japan 2014, Japan Automobile Manufacturers Associations

Sustainable Cost Reduction, PWC

Reliable enough for Bullet Trains and Jumbo Jets, JBPress

YKK Corporation SWOT Analysis, Market Line 2014 ■