

## TAJIMA TSK INC.

### <COMPANY PROFILE>

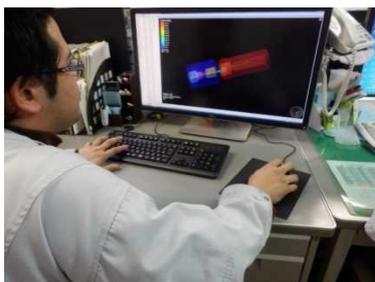
Head office	1150 Kirino, Izushi-cho, Toyooka, Hyogo, Japan 668-0242
Phone	+81-796-52-2339 (main number)
Fax	+81-796-52-5687
Number of employees	209 persons
Capital	¥56,000,000.-
Incorporated on	August 31, 1973
President	Masatoshi Murakawa

### <BUSINESS>

Manufacture of parts (metal, rubber, resin) used for cars, motorbikes, motorboats, and other industrial machinery

### <TECHNOLOGY>

Unique “small-diameter deep hole processing” technology  
Based on the company’s sophisticated cold forging technology



Die designing using the 3D forging simulation system



Sliced samples of products that have undergone small-diameter deep hole processing

Since its establishment in 1973, Tajima TSK has been engaged in the manufacture and sales of control cable parts for cars and industrial vehicles, among others. At first, the company mainly handled metal cutting work; eventually it expanded its business field to produce items via rubber molding, cold forging, and resin molding, as well as composites of these. These days, Tajima TSK's most high-profile technology is its unique small-diameter deep hole processing.

Cold forging refers to the plastic working of metals performed at normal temperature. Coils (rolled sheet metal) cut into certain sizes are pressed between die blocks and punches facing each other, and by repeating this process, products are formed. Using this method, all of the processes from material cutting to final processing can be done as a sequence and it is not necessary to supply materials that were cut elsewhere, which means the company need not stock intermediate inventory. Furthermore, this method significantly improves manufacturing speed (to approximately one piece per second). Tajima TSK's unique, long-established know-how and the 3D forging simulation system enable sophisticated manufacturing.

“Small-diameter deep hole processing” is the company's unique technology developed via the cold forging method. Normally, using cold forging, opening a hole 5 times as deep as its diameter is considered to be the limit, but Tajima TSK can open a hole 25 times as deep as its diameter. This is the top-class technology in the industry. Since the company's establishment, customers' demands for hole processing have continued to grow, and Tajima TSK has satisfied them with lower costs and shorter delivery times. The company's high-precision products with longer operation lives are aggressively contributing to the market.



Cold-forged items after each process

### **【Behind the scenes of development】**

At the time of the establishment of the company, they used drills to open holes. In order to respond to a surge in orders, it was urgently required to establish a production system based on cold forging. Then one day, the company received an estimation request for a long and thin product that had a deep hole. At that time, with normal technology, it was possible to open a hole 5-6 times as deep as its diameter. But the company, after a one-year process of trial and error, established the small-diameter deep hole processing technology and succeeded in opening a hole 10 times as deep as its diameter by improving the dies used in the process. They then created a stable production system, and finally developed an advanced technology for opening a hole 25 times as deep as its diameter through further efforts.

### **【Unique features】**

In general, punches are used to open holes. However, to handle products in complicated shapes, dies should be used. It was considered impossible to open deep holes with dies, though opening shallow holes was possible. Using its long-established technology, Tajima TSK successfully developed a method to open deep holes with dies and achieved stable production. The company designed dies and processes to open a deep hole by applying axial force, not transverse force. Also using a 3D forging simulation system enabling analysis of stress concentration on the dies, the company designs high-precision dies with longer operation lives.

### **【Future development】**

To respond to customers' requests, Tajima TSK introduced new large cold forging equipment in September 2016. It is compatible with the company's unique deep hole processing technology, and able to open a hole 50 mm in diameter and 160 mm in depth. In December of the same year, the company also introduced high-precision NC equipment. The large cold forging equipment deals with pre-processing, while the NC equipment deals with after-processing. It is expected that these machines will support further technology development, market expansion and contribution to local communities and society.

<TOPICS>

Introduced new, large cold forging equipment in September 2016

Enabling large product size and production amount!



Cold forging equipment (6-station part former)

Tajima TSK introduced specially-designed cold forging equipment compatible with the company's unique deep hole processing technology for long-size products. It contains two die-sets (die units), which allow improved production efficiency: while materials are being processed with one die-set, users can conduct changeover on the other die-set. To utilize this cold forge equipment, technical skills as well as financial resources are essential. It is a highly sophisticated machine, and only a few units have been put into use in Japan.

Selected as the recipient of "manufacturing subsidy 2015" at the first trial!



High precision NC equipment (parallel two-axis CNC lathe)

To introduce high-precision NC equipment and newly participate in the market of car parts that support basic vehicle functions, Tajima TSK made an application for the "innovative manufacturing, commerce and service development support" subsidy. The company's project was accepted, and they received the subsidy. New equipment was successfully introduced with this fund, and the company achieved shorter working hours, 10-fold increase of production capability, and 40% cost reduction. Through the application process, employees with little chance to interact with the shop floor were

able to learn about the shop floor and it was a good opportunity to build a sense of unity within the company.

<HISTORY>

- 1973 Established in Toyooka City via merger
- 1974 Started production of metal parts
- 1975 Started production of rubber parts
- 1978 Introduced 4-station cold forging equipment; started plastic working of metals
- 1988 Established a joint venture in Indonesia
- 1993 Started production of resin parts
- 2002 Obtained ISO9001 and JIS9001 certifications
- 2003 Established Yantai Tajima Automobile Parts Co., Ltd. in China
- 2008 Received Tajima industrial award
- 2016 Selected as a Hyogo “Only-One” company