

Developing innovative  
technology to improve  
automotive components



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While lots of other industries have already been disrupted, the automotive industry has seen very little change and consolidation in the past several years. But now the change is coming. A whole new shared mobility system enabled by automation, connectivity, and electrification will change society in the 21<sup>st</sup> century.

That's why Baolong implemented the Intelligent & Lightweight strategy to illustrate Baolong's passion to continue innovating in automotive products and solutions. Baolongers take on challenges without fearing change to let more people benefit from the development of automotive technology. Baolong did it in the first 20 years, and is ready for the next 20 years.

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Baolong began as a trading company focusing on tire valves, a business founded on May 20, 1997 by Holley Chen and Charles Zhang to provide overseas customer with cost-effective automotive components. Manufacturing first took place in the plant in Songjiang, Shanghai. Constrained by space, Holley and Charles decided to set up another plant in Ningguo, Anhui. Baolong invested in Dill Air Controls (Dill) based in the U.S.A., which has grown up into the regional leader supplier in tire valves and TPMS. Baolong stands apart from crowd worldwide in the field related to wheels, e.g., tire valves, wheel weights, and TPMS.

Baolong produces performance exhaust tips, hydroforming chassis & body parts, pressure sensors, cameras and millimeter-wave radars, and has become one of the world's leading suppliers in the field of performance exhaust tips. In 2017, Baolong held its initial public offering (IPO) and began trading on the Shanghai Stock Exchange. The same year, Baolong celebrated its anniversary, marking 20 years of developing innovative technology to improve automotive components.

When customers choose Baolong as a supplier of automotive products and solutions, they can be assured of a broad spectrum of services from Baolong's global network. Globally present, the access to Baolong's dedicated employees is never far away. Baolong's talents who all know the automotive industry and understand customers' specific demands and needs are always ready to support customers.

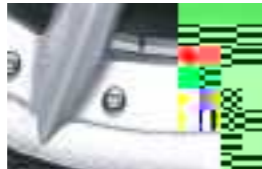
Baolong cooperates with many world-renowned OEMs and Tier 1 companies that trust us to implement the most innovative and game-changing products and solutions to improve safety, efficiency and comfort.







MADE BY BAOLONG







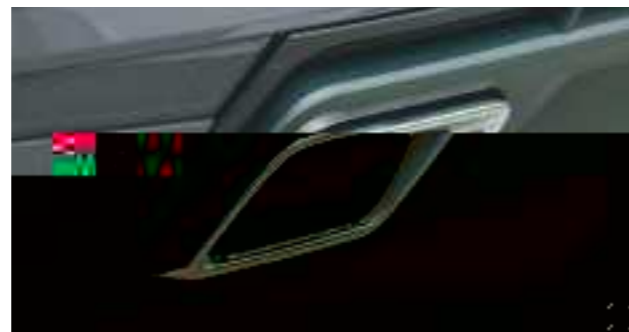
Performance exhaust tips give the back-end of the vehicle a serious stylistic boost. There are two types of exhaust tips: exhaust tips fitted directly to exhaust systems, either by means of springs, welding, clamping or simply a screw; the other type is assembled on rear plastic bumpers, integrated into the design using free form shapes.



### Baolong's Features and Benefits

- + Design: Baolong's R&D team works closely with its customers to perfect and innovate the design of exhaust tips.
- + Metal Production: A combination of standard press manufacturing and automated manufacturing is used to give the flexibility of producing complex, tailor-made parts.
- + Manufacturing Process: Baolong uses proprietary technologies, depending on design, complexity, volume and requirements for the final look. Together with its customers, Baolong manufactures the products in the most cost-effective way.

Baolong manufactures performance exhaust tips for the global automotive industry and is one of the market leaders in this field. Competitive costs, thousands of available specifications, satisfying delivery and accurate claim solutions are all ensured with Baolong's decades of experience in the exhaust systems business.



Underneath the exterior panels of every vehicle resides its structural backbone, including complex assemblies such as frame rails, floor pans, upper body pillars and body side structures.

### Baolong's Features and Benefits

Started since 2012, Baolong supplies car makers and their suppliers with hydroforming chassis & body structural parts. Through innovative hydroforming, the chassis & body parts will meet or exceed customer specifications for lightweight and crash performance. With Baolong's long-term production experience and its advanced technology on hydroforming machines and high power laser cutting machines, Baolong is at the forefront of hydroforming technology critical to automotive lightweight.

- + Metal forming: Baolong's decades of technology accumulation provides it full capabilities in metal forming, such as material performance testing equipment, forming process R&D, tooling machine development and design, whole process capabilities of trial production, in-house PLM & BPS application.
- + Overall solutions: Baolong has the ability to provide customers with overall solutions in forming and lightweight aspects, and provide the process capabilities of mass production.





### **Baolong's Features and Benefits**

Baolong's MEMS sensing technique leads to small volume, easy for installation and low-cost OEM application design.

Rain-light-humidity sensors measure the volume of rain, the ambient light levels, the temperature and relative humidity, to automatically control the wipers, lamps and air-conditioning.

## Baolong's Features and Benefits

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+ Makes driving safer and more comfortable.

+ Reduces fuel consumption and emissions by ensuring the intelligent use of the wipers, lamps and air-conditioning.

Baolong has been devoted to developing and manufacturing rain sensors for several years. Now

## Baolong's Features and Benefits

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+ Uses the leading fluxgate technology to realize the frequency difference detection scheme.

+ High reliability and safety.

ADAS systems rely on cameras to quickly and accurately detect and recognize other vehicles, pedestrians, obstacles, traffic signs, lane lines, etc. The information captured by ADAS cameras is quickly analyzed by supporting software and used to trigger a response by the vehicle to improve safety.

### Baolong's Features and Benefits

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ADAS makes driving safer. ADAS relies on several main sensor systems and sub-systems, for instance, cameras. Baolong is committed to developing the "eyes and ears" of the vehicle, focusing on automotive sensors like cameras for the purpose of ADAS. Already, Baolong's ADAS technologies are providing drivers active guidance during parking and driving. The camera systems from Baolong include rear parking camera, thermal imaging and night vision systems, dynamic vision sensors, driving monitoring systems, Face ID, 360 vision systems, BSD cameras, stereo cameras, and more.

- + Excellent Image Quality: Baolong's cameras feature high resolution, excellent image quality and high dynamic range, which enable software to quickly and accurately interpret information to keep the vehicle and occupants safe.
- + Customizable Solutions: Modular solutions that enable customers to choose from a portfolio of image sensors and image sensor processors.

On the road, millimeter-wave radars are playing a key role of ADAS, which constitutes an intermediate stage in the development of autonomous vehicles. ADAS often incorporate short- and long-range radar using electromagnetic waves for determining the distance, speed, and direction of objects.

Radars represent the better option for detection in rough weather and obscure road conditions compared with other sensors. The short- and long-range radars from Baolong are particularly useful in several ADAS technologies: BSD, LCA, RCTA, FCW, ACC, AEB, IACC. Moreover, using Baolong's sophisticated software algorithms, its fusion of radars and multi-purpose cameras generates an extremely detailed "image" which forms the basis for a highly accurate interpretation of the vehicle's surroundings. This enables the implementation of additional assistance and safety functions for ADAS.

### Baolong's Features and Benefits

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- + Baolong has been devoted to developing radars for several years and is skilled in antenna design and algorithm.
- + With decades of manufacturing experience in automotive electronics, Baolong has the ability for mass production of radars.
- + Baolong has complete radar production lines including 24GHz radar, 77GHz radar, 77GHz cascade radar and image radar.
- + Modular solution that enables the customers to choose from a portfolio of radar chips.



Baolong Automotive was founded in 1997 and is headquartered in Shanghai, China. Baolong is an automotive supplier with production facilities in China, the U.S.A., Hungary, Germany, Austria and distribution centers in China, the U.S.A., Germany, Poland, Austria, Japan, etc. Baolong uses its expertise in automotive technology to offer high-quality and creative products for its customers. The products include tire valves, wheel weights, air springs, aluminum parts, performance exhaust tips, hydroforming chassis & body parts, hydroforming exhaust piping, EGR housings, TPMS, pressure sensors, rain-light-humidity sensors, current monitoring systems, cameras, millimeter-wave radars, etc. With more