Automotive

System solutions for  » Doors and Hoods  » Vehicle Bodies  » Interior  » Convertible Tops

SUSPA – Our heart is in mobile applications.
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The world-wide sales network in 70 countries assures the support and care of customers in almost any location in the world. SUSPA has their own production facilities in the USA (since 1974), and in the growth market China (since 2001) and India (since 1993). In 2000, a new production facility was set up in the Czech Republic. All this means a clear, competitive advantage for SUSPA and their customers.

SUSPA has grown to a world-wide leading supplier of custom-made applications. Our goal is to improve comfort, safety and ergonomics of customer products.

For over 50 years one has come across SUSPA products in the automobile industry and almost everywhere else. The company is a leading source for innovative system solutions for lifting, lowering, tilting and damping.

In Germany, SUSPA employs over 950 people in the locations Altdorf and Sulzbach-Rosenberg. Worldwide we employ over 1,500 people in seven of our own production facilities.

SUSPA is represented in the automobile world markets with production facilities and sales organizations. This way German engineering is spread all over the world.

In every continent, in 70 countries

Strong partner of the automobile industry

Subsidiary companies:

Global:
- SUSPA Incorporated, Grand Rapids, Michigan, USA
- SUSPA Incorporated, Detroit Office, Michigan, USA
- SUSPA Pneumatics Ltd., Chennai, India
- SUSPA, Nanjing Ltd., Nanjing, PR China
- SUSPA Compart Asia Ltd., Singapore

Europe:
- SUSPA Holding GmbH, Altdorf, Germany
- SUSPA Compart GmbH, Sulzbach-Rosenberg, Germany
- SUSPA Vertriebsgesellschaft mbH, Kleve, Germany
- SUSPA CZ, Bor, Czech Republic
- SUSPA UK Ltd., Northampton, UK
Leading the path into the future

Innovations and Mindsets

Even if the innovative solutions and products from SUSPA often are not visible, they decidedly increase comfort, safety and ergonomics in the automobile.

SUSPA obtains experience from many projects and markets, not only from the automobile industry. These experiences flow into the development of new products and solutions. The focal point always revolves around lifting, lowering, tilting and damping.

In addition SUSPA is the expert for energy absorption and crash management and is well equipped for future challenges.

Focal points for the future

> Safety
  Active and passive safety, active hood for pedestrian protection, seatbelt load limiter passenger protection

> Comfort
  Automatic door, truck and lift gate, electric adjustment systems

> Process innovation
  Beam forming, tube processing, electrical/mechanical, welding, surface technology, CNC-and machining technology

> Material
  New materials, fiber composites, magnesium, stainless steel
From the idea in the development stage – all the way to the system solution in production

Your Advantages with SUSPA as a Partner

If you are looking for a solution, for more comfort, safety and ergonomics in the automobile which conforms to your individual requirements, you found the right place with SUSPA because we can develop systems for lifting, lowering, tilting and damping in the automobile!

Take advantage of our innovation and knowledge! Utilize over 50 years of experience. Profit from the quality and availability of our production capacities ready to serve you.

World-wide: SUSPA is represented with production locations in the most important automobile markets and therefore is always available to the customer. Bet on one of the leading suppliers of system solutions in the automobile industry; if it concerns comfort, safety and ergonomics.

SUSPA – Count on advantages and benefits

To develop, produce and further improve systems. SUSPA technology benefits manufacturers and drivers. Profit from our possibilities:

1 FOR YOUR DEVELOPMENT
   > Idea, concept
   > Innovation management
   > Concept sample
   > Prototype
   > Sample and model building
   > Simultaneous engineering
   > FEA/ Computer simulation
   = shorter development time

2 FOR YOUR TESTS
   > Test lab
   > Crash tests
   > Prototype optimization
   > Endurance tests
   > Salt spray testing
   > Climate testing lab
   > Special test equipment (Metallurgy)
   > Static load tests
   = Optimum testing

3 FOR YOUR PROCUREMENT
   > Short delivery time through world-wide production locations
   > Global sourcing – local content
   > Flexible delivery concepts
   > Delivery of ready-to-install, preassembled components and systems from one source
   = efficient procurement
SUSPA is a partner with you in:
> the first inquiry
> the development of ideas
> the development phase
> the functional prototypes
> the test
> the finished series product

This way a strategic partnership and cooperation is developed for a custom made system according to your individual wishes and requirements.

The special SUSPA competence is based on decades of experience in unique applications and close co-operation with many customers. We make this comprehensive knowledge available and by working close with our customers develop integral quality and cost advantages. This applies to the product development all the way to production.

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<table>
<thead>
<tr>
<th>FOR YOUR PRODUCTION/LOGISTIC</th>
<th>FOR YOUR BRAND</th>
<th>FOR YOUR CUSTOMERS</th>
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<tbody>
<tr>
<td>&gt; Small series manufacturing</td>
<td>&gt; Better product quality</td>
<td>&gt; High dependability</td>
</tr>
<tr>
<td>&gt; Large series manufacturing</td>
<td>&gt; Increase of customer benefits</td>
<td>&gt; Optimum functional safety</td>
</tr>
<tr>
<td>&gt; Just-in-time delivery</td>
<td>&gt; More benefits for your design flexibility</td>
<td>&gt; Trend setting design, developments and system solutions</td>
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<td>&gt; Installation capable product design</td>
<td>&gt; More individuality in the vehicle</td>
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<tr>
<td>&gt; Delivery from our own world-wide production facilities</td>
<td>&gt; Better differentiation in design in comparison to the competition</td>
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<td></td>
<td>&gt; Simplest operator convenience</td>
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= Production at optimum cost  = Clear competitive advantages  = More comfort, safety, ergonomics
Overview of Application Areas

System Solutions for Lifting, Lowering, Tilting and Damping

*SUSPA’s daily task is to increase comfort, safety and ergonomics in automobiles and utility vehicles.*

The world is too versatile for standard products! For this reason we answer special customer requirements with innovative solutions.

The range of applications is very multi-faceted and goes from pure mechanical, to partial automatic, to fully automatic system solutions. In the course of decades, SUSPA has developed innovative and individual applications for lifting, lowering, tilting, and damping for all types of vehicles:

- Systems for opening and closing of doors, trunks, hoods, lift gates
- Components for the vehicle interior
- Components for automobile bodies and convertible tops
- Unique solutions for difficult tasks

These solutions are realized in a large number of automobiles and also for utility vehicles of all types.

The international experience and the total knowledge of the company always flow into the customer’s applications. At the same time, partners, customers and users profit from the results of SUSPA when comfort, safety and ergonomics of vehicles have to be distinctly improved.

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Doors, trunks, hoods, lift gates

- Gas springs, telescopic springs, spring struts, rotation dampers, stop dampers and electric drive systems for hoods, trunk lids and lift gates
- Hydraulic dampers for doors

Vehicle Interior

- Hydraulic dampers for seats, glove compartments, etc.
- Gas pressure springs for seats and folding seats
- Systems for passenger protection, e.g. for seat belts
- Crash elements and hydraulic dampers for steering columns
- Adjustment systems for seats
Vehicle Bodies

- Crash management systems for vehicle front and rear
- Crossbeam for bumper
- Crash elements for bumper
- Electric adjustment systems for rear spoilers
- Pedestrian protection systems

Convertible tops

- Convertible top drive systems
- Convertible top locks
- Convertible top dampers
- Components for hydraulic drives

SUSPA – perfect solutions for vehicles.
Mechanical, semi-automatic or fully automatic. SUSPA has developed a made-to-order system solution for any type of application for opening and closing of doors and lids in vehicles.

A vehicle door which stays open in any position with a powered system? A trunk lid which falls gently into the lock? A hood which can be lifted easily? 50,000 times open and close? A vehicle components life without maintenance?

For example, with SUSPA gas springs, lids and doors can be opened and closed very comfortably and with limited impact to the vehicle.

The newest generation of powered systems works automatically by the push of a button with specially developed electric opening and closing systems. Even with common vehicle doors such technologies find their practical implementation. The doors stay open at any position without being held by hand. This way, injuries are avoided for vehicle occupants by sudden door movement.
Opening and Closing

**Hood, lift gate**

- Automatic closing systems
- Spindle drives
- Closure damper
- Gas springs
- Telescopic springs
- Spring struts

Multiple solutions for limousines and combination vehicles for opening and closing. Mechanical, semi-automatic, or fully automatic – SUSPA covers almost all functional possibilities.

**Pickup tail gate**

- Rotation dampers

The system enables a damped opening downwards and a power supported closing upwards.

SUSPA – highest comfort for automobiles.
SUSPA simplifies safety.
Innovations which save lives and also lower the insurance rate of the vehicle, people can be protected and costs can be lowered.

Crash Management Systems (CMS) consist of a bumper with crash elements, e.g. tube-in-tube systems, which convert the impact energy from an accident and this way protect the vehicle body from damage.

For the active protection of pedestrians, SUSPA developed vehicle hood supports with compressed air or pyro-technology. Both techniques lift the hood and enlarge the crush zone.

This way, the hood takes the largest part of the impact energy and minimizes the impact to the pedestrian.

SUSPA’s pressurized systems can allow rear spoilers, controlled by sensors, to extend automatically out of the vehicle body and allow for safe driving in the upper speed range.
Absorbing Energy

Bumpers

Crash elements

Crash management systems

Crash management – SUSPA offers innovative and trendsetting solutions. Crash elements or integrated systems from steel, aluminum or a hybrid construction.

Spoiler

Rear spoiler adjustment systems

A multitude of electric and electro hydraulic controlled systems.

Chassis

Piston rods, Hydraulic damper tubes

Highest quality piston rods and tubes.

SUSPA – highest safety for vehicles.
To drive safely and arrive comfortably.
We design springs and dampers for all customer requirements,
as well as integrated intelligent systems.

Seats must increase driving safety and comfort and must provide an optimum seating position. Our seat adjustment systems work very quietly. They tilt to any wanted position. As an integrated system, dampers assure safety in the vehicle seat. At an accident they help to reduce injuries.

An integrated SUSPA damper in the steering column helps protect, together with the airbag and seat belt, the driver at a crash. This damper will adjust its damping force as designed.

SUSPA develops and produces many systems; which on the one hand increase the driving comfort and on the other hand the safety in vehicles.
Adjustment and Damping

Seats in utility vehicles, construction equipment and agricultural machinery

- Non-adjustable hydraulic dampers
- Adjustable hydraulic dampers

SUSPA systems for optimum seating comfort for commercial drivers.

Seats in passenger vehicles

- Gas springs
- Hydraulic dampers
- Gas springs with speed dependent blocking function
- Electric leg support

Intelligent adjustment systems for individual settings.

Vehicle side doors in busses, utility vehicles and passenger vehicles

- Gas springs
- Hydraulic dampers

System solutions for supported opening and closing.

Steering column safety component

- Adjustment spindles with integrated crash element
- Lockable hydraulic dampers

If the driver hits the steering wheel, the steering column and the energy is absorbed.

SUSPA – highest comfort for people.
With the push of a button you can let the sun in or keep the rain out, fully automatic – simply open, close and lock. SUSPA adjustment systems or components are applied world-wide in convertibles.

How can we offer more comfort and safety for occupants in vehicles? This has been a central question for SUSPA for decades. Engineers and automobile manufacturers are always amazed by new ideas.

In past times, you had to get out of your convertible to open and close it due to changing weather conditions.

Now you can open and close your convertible top while sitting in the car with the push of a button at any time, quickly and safely.
Opening, closing and locking

**Convertible tops**

- Convertible top drive
- Convertible top lock
- Convertible top damper
- Components for hydraulic drives

Effortless electric opening and closing. SUSPA Systems or components are installed in many convertibles worldwide.
Even though at SUSPA everything revolves around innovation, technology and quality, people are always the focal point! Experience teaches us that only smart and well-trained minds can successfully implement their enthusiasm for lifting, lowering, tilting, and damping.

SUSPA technicians simulate and optimize all applications, utilize new materials, and they extract hidden performance potentials.

The SUSPA team leaves nothing to chance: Most modern test processes guarantee safety and protection. New developments live up to any test in the automobile and vehicle industry.

SUSPA not only wants to fulfill the requirements of their partners, but wants to surpass them. This succeeds because we give the highest attention to each detail from the initial idea to the finished product. Here we bet on intelligent systems.

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SUSPA puts a high value on its own training and professional development

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Always accessible for you, world-wide

Bright and Smart Minds
SUSPA – Our best efforts are committed to our customers.