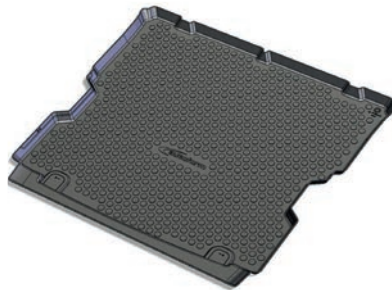


CalixKlippan

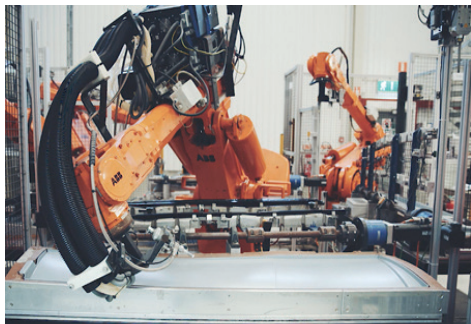


Welcome to CalixKlippan AB

- A company group with headquarters in Sweden supplying the global automotive industry -

This is CalixKlippan AB (CKAB)

CKAB provides the automotive industry with products and systems improving safety, comfort and styling. CKAB is a privately owned Swedish group with customers all over the world. The major part of our business is directed to the automotive OEM industry, supplemented with aftermarket accessories and products. The OEM projects are carried out from a product development phase via industrialization and manufacturing to delivery. In the aftermarket, the accessories and products are mainly distributed under the Calix and Carbox brands. CKAB provides our customers with R&D capacity, technical knowledge and state-of-the-art production facilities which results in quality supplies.



Facts about CKAB

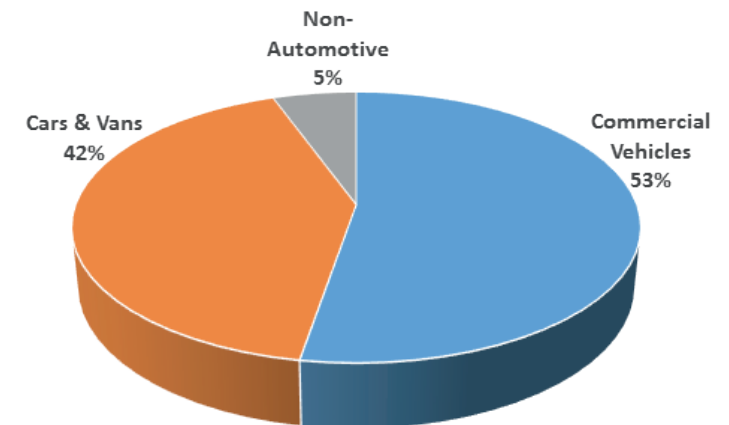
Sites in the world:

- Eskilstuna, Sweden
- Gothenburg, Sweden
- Klippan, Sweden
- Malung, Sweden
- Veddige, Sweden
- Broby, Sweden
- Stargard, Poland
- Munich, Germany
- Achim, Germany
- Sao Paulo, Brazil

Market split:

Automotive, cars and vans: 42%
 Automotive, commercial vehicles: 53%
 Non-automotive: 5%

Quality and environmental systems:
 IATF 16949 and ISO 14001



BEDS AND CARGO STORAGE SYSTEMS

Comfort and safety

Klippan Safety is a system partner for the automobile manufacturers with highly unique competence in the fields of safety and comfort.

The company develops and manufactures complete bed and cargo storage systems such as integrated occupant restraint systems for truck cabs.

For passenger cars and vans, the products consist of various cargo storage solutions, restraint systems and seat belts.

The organization is an advanced partner for OEM's and Tier 1's in safety and comfort solutions for automotive applications.



Upper bed in truck cab



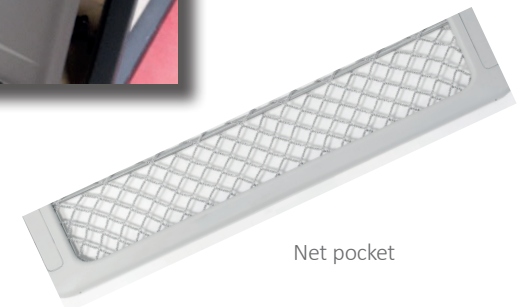
Seat belt



Truck cab interior



Storage system in truck cab



Net pocket



Luggage room divider/bed extender installed in car



Cable bag



Safety net

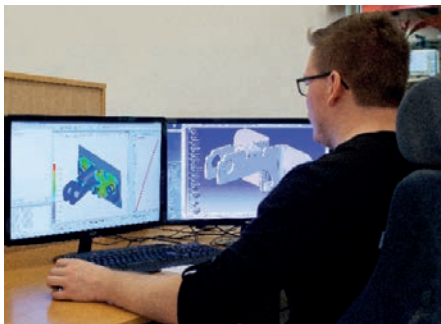
Development and pre-production

The design process creates the best possible solution optimizing cost efficiency and attractive styling while meeting all technical demands on the system. System performance is verified by CAE analyses and functional testing, including testing in our own crash test track. This facility is also used by external customers.

The Product Development System is a well-defined and structured methodology to take products from the design phase all the way to implementation of the industrial manufacturing process.

Manufacturing

The manufacturing process is trimmed to meet all expectations from the automotive industry as a zero such as failure rate regarding quality and a high delivery precision. This is achieved by engaging highly skilled employees in combination with substantial investments in modern production methods.



CAE station



Crash test track



Factory interiors

METAL PROCESSING AND PLASTIC MOULDING

Products and applications

Preciform's major activities are metal sheet processing, welding, injection moulding, and assembly. Preciform is a specialist in combining these processes in order to create the most cost-effective components for its customers, especially when there is also a demand for decorative and sustainable surfaces.

Tread and Scuff plates

Decorative Tread and Scuff plates for passenger vehicles are fitted on the sill. Tread and Scuff plates typically consist of an injection moulded plastic carrier and a metal plate assembled on top of the carrier. A logotype or text can be applied on the metal plate and surface treatment ensures the correct appearance of the product.



Tread plate

Skid plates and door styling

Skid plates for passenger vehicles are fitted in the front and in the rear of the car and consist mainly of injection moulded parts and decorative stainless steel plates. Door styling components are injection moulded and assembled mostly using vibration or ultrasonic welding. A door styling part can have a grained, painted or chrome surface or be covered with a decorative stainless steel plate.



Skid plates



Lower door styling



Metal endpipes



Side scuff plates

Storage systems and cab components

Preciform is a system supplier regarding storage solutions and interior cab components. In general the projects include technical development, testing, validation, component production and system assembly. Cab components include applications such as cup holders, trays, tables, covers, speaker grills, hatches, sun-visors etc.



Truck interior

Injection moulding

Thermoplastic components are produced in machines with a clamping force from 50mt to 1300mt. All machines are equipped with robotized cells for component handling and assembly. The vibration and ultrasonic welding machines create thin shell-formed and rigid components.



Injection moulding machine



Plastic components

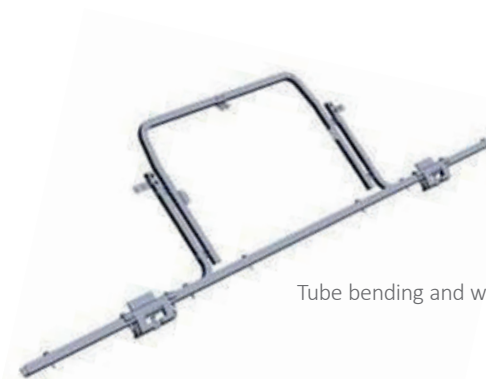
Sheet metal processing

Sheet metal components are made in mechanical and hydraulic presses in a range from 60mt - 500mt press force. The degree of automation depends on the complexity and serial volumes of the final products.

Deep drawing enables thin sheet casings to be produced without welding. The method allows manufacturing of products with an advantageous relation between strength and weight. Sheet metal manufacture is carried out with either progressive or single punch tools. Post-treatment processes for metal components include welding, blasting, grinding, polishing, washing and laser marking.



Metal components



Tube bending and welding

VACUUM-FORMED PLASTIC COMPONENTS

System partner

Andrénplast is a specialist in vacuum-forming of thermoplastic parts that facilitates the design of multi-functional and high quality components used in trucks, buses, cars and many other applications. Components with large areas are particularly well suited for the process.

Cost and design objectives are achieved for example by using multilayer or reinforced materials. Highest requirements regarding complex shapes are achieved together with structural strength at low weight, a high surface quality with small gaps and easy assembly by combining our experience and advanced engineering tools.

As an example we supply to bus manufacturers pillar trims, driver's doors, ceilings, walls for the driver area and instrument panel structures.

Exterior parts for automobiles include liners for all kinds of vehicles, bonnets and roofs for construction vehicles and aerodynamic elements on truck cabs.



Dash board- bus



Aerodynamic front- truck



Front wall- caravan



Housing- lawn mower



Drivers door- bus



Bonnet- construction vehicle

Vacuum-forming

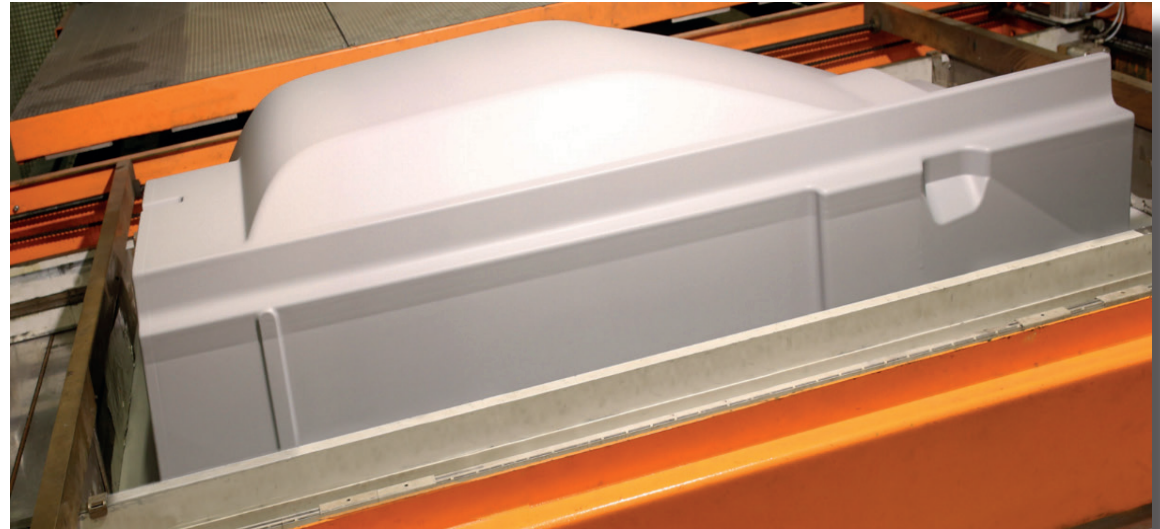
First and foremost vacuum-forming provides significantly lower tooling costs compared to other methods. In addition, this process saves cost thanks to quick tool changes.

The method also gives the end product outstanding finish, high quality and strength. The products receive a high precision and an aesthetic appearance.

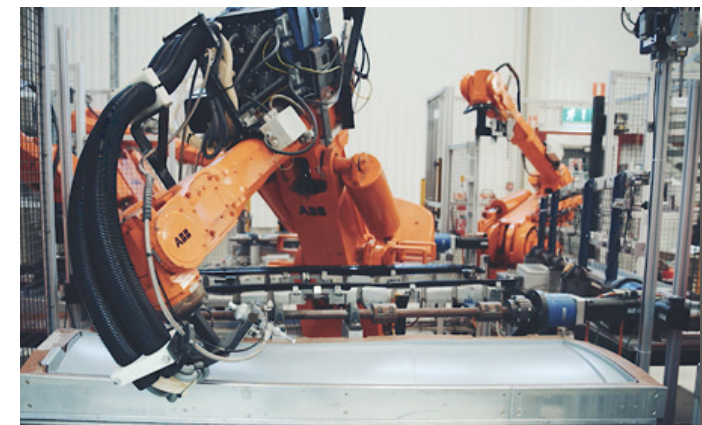
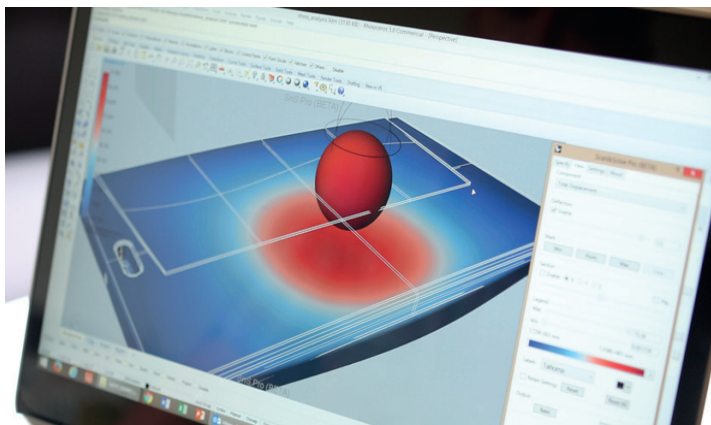
Using pre-coloured or multi-layer materials are just some of the process opportunities. All material used is 100% recyclable which results in a cost efficient and environmentally sustainable process.

A leading position in vacuum-forming has been achieved by an optimum combination of material use, design and manufacturing process.

The innovative technical team takes the product ideas from our customers all the way to the best solution via design, prototyping, validation and industrial production.



Vacuum-formed interior component



Engineering and production capabilities

VACUUM-FORMING FOR LIGHTNING, FURNITURE AND INDUSTRIAL ENGINEERING

Formplast's major production methods consist of vacuum forming, high pressure precision forming, milling and assembly of thermoplastic components. The specialty is to meet demanding product requirements with innovative solutions and high production efficiency, in small to medium series.

Formplast has a broad range of customers across northern Europe and supplies several industries, all with high requirements on styling, design and function.

Formplast is a young member of CalixKlippan AB but is the oldest vacuum-forming operation in Sweden, founded already in 1955.

Functional Industrial Components

The industrial applications supported by Formplast technology covers several industries such as automation, material handling and water management. Common for these applications are that the requirements on precision and function are very high.



Industrial applications and load carriers for health care



Plastic seats and acrylic shades for lightning

Lightning and Furniture Solutions

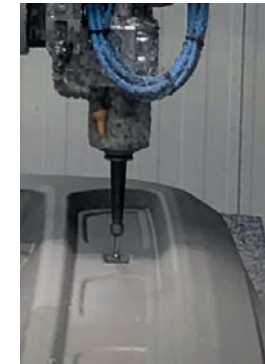
Styling of lamp shades and furniture components in plastic materials offers unlimited possibilities. The processes at Formplast have been refined to meet high design requirements such as sharp edges and even material thicknesses and also high quality requirements.

Precision forming

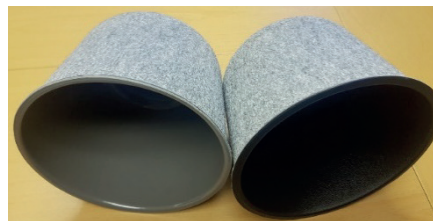
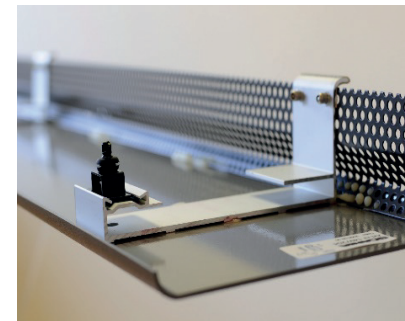
Stand-alone forming with high pressure equipment serves as a unique complement to the standard vacuum-forming technology. With accurate precision and outstanding surface characteristics, the design limits are challenged with pressure forming.



Interior parts and covers



Production with advanced gluing technology



Felt forming

Thermoforming of a variation of polyester felt materials. Either as a stand-alone material, or in combination with thermoformed plastics layers.



Shields for public communication



VACUUM-FORMED TRUNK LINERS AND ROOF BOXES

OEM trunk liners and other storage solutions

Autoform is the leading manufacturer of trunk liners for the European automotive OEM's.

The wide range of materials and machines permit Autoform to meet all market needs.

The trunk liners have a perfect fit and are designed for each vehicle model, all carried out at our development center in Malung, Sweden.

Autoform works closely with the customers and supports with expertise and longtime experience.

The benefit with own tool design and manufacturing gives short lead-times and flexibility for easy adjustments in the changeable market.

The environment as well as sustainability is important. The company has a high level of knowledge in recycable materials and also BIO materials can be implemented in the products.

An innovative step is that Autoform is already certified according to ISCC regulation, which requires that the company and its suppliers are certified regarding BIO materials.

The company has started a collaboration with the Royal Institute of Technology (KTH) in order to develop the next generation of materials for the customers.

Autoform has many different solutions for luggage storage and the trunk liners are only one type. Trunk boxes and tool boxes are other examples. Different material can be used, all according to needs. To be able to support the car industry, Autoform is certified according to IATF 16949, ISO 14001, CCC and ISCC.



Trunk liner



Trunk liner with dividers



Trunk box

Roof boxes

A roof box is the very best way to increase a vehicle's loading capacity. Calix roof boxes, produced by Autoform, are available in various models from short city boxes to long ski boxes, to suit all possible requirements.

All roof boxes from Autoform are developed and manufactured in Sweden and 100 % recyclable materials are used.

The roof boxes are made from durable, temperature and UV resistant ABS plastic and are fitted with side opening from both sides (Dual Opening) and central locking.

The Nordic Loader Premium has a streamlined design that follows the contours of the car and creates the impression of a roof box integrated with the car.

The double shell construction gives a rigid roof box and Nordic Loader is equipped with the patented Safety Nose for maximum load restraint and has a safety net for easy loading and securing of luggage.

The H-serie is a family of roof boxes with various measures and volumes, meeting all customer needs.

You can easily expand your cargo space by using the innovative Urban Loader. It is suitable for transporting of grocery shopping bags, suitcases, child carriages, golf bags, etc on the roof.

The Urban Loader is so slim and stylish in compact position that there is no need to remove it.

When it is expanded you get 500 liters extra cargo space.



Customized roof box



Roof box H22



Urban Loader

VACUUM-FORMED TRUNK LINERS AND FLOOR MATS

Carbox - a brand for car accessories

Since 1908 Carbox has provided preferably the automotive market with innovations and quality products.

Carbox develops and produces car accessories, particularly trunk liners, in large quantities for car manufacturers and also in small batches for the after market sector, mostly in Europe.

In addition to OEMs and individual car owners, typical customers are builders of special vehicles and companies with fleets of service vehicles.



Individual production in detail



Vacuum-forming production for OEMs



Quality control of each shipment



All products and moulds are internally developed

Trunk liners and floor mats for over 1,000 different models of vehicles

All Carbox products are made by materials that are 100 % recyclable.

The products are sustainable and supplied with a 10-year warranty and manufactured in accordance to the latest environmental regulations. New BIO-materials are continuously being scrutinized and gradually introduced into the product range.

Carbox has recently upgraded its mould capability and holds now state-of-the-art milling capacity in this area. Moreover Carbox has since long up-to-date vacuum-forming facilities including adherent processes as milling, gluing, assembly etc.



Precise fitting and stable



Acid-resistant and oil-resistant



Heat-resistant from -40°C to 80°C



Extra high edges up to 46cm



Car floor mats

Carbox Floor for floor protection for driver, front passenger and rear seat passengers.

Carbox Floor Highline for floor protection with edges up to five centimetres high so that dirt will remain on the mat.

A range of products for improved protection and comfort:



Carbox Classic – high edged trunk liner

Protection with edges up to 46 cm preventing liquids and moisture to dirt the interior of the trunk. Ideal for craftsmen.



Carbox Form – low edged trunk liner

Available in black, beige or grey in order to match your vehicle's design and also in long versions for folded-down back seats.



Carbox MultiMat – protects the loading sill

Handy protection of the bumper and trunk sill during loading, made of slip-proof and washable material.

ENGINE HEATING AND POWER SUPPLY

Calix is one of the world's leading companies in electric thermal management and intelligent power handling for automobiles. Since more than 50 years Calix has been a development partner with producers of cars, trucks, buses and off-road vehicles.

Thermal Management

Calix provides innovative electric heating solutions of power-trains, compartments, cabs and batteries for all types of vehicle applications.

Intelligent Power Handling

Calix offers solutions for on board charging of 12, 24 and 48 V batteries and power conversion between 12, 24 and 48 Vdc.

Calix cable system

Calix plug & play cable and connector system is the interface between the different components such as engine and compartment heaters, battery chargers, converters and inverters. This flexible power distribution system is approved for permanent installation in all types of vehicles, even for military and emergency applications.

Traditional or app-based smartphone timers can be added to manage automatic operation of the devices.

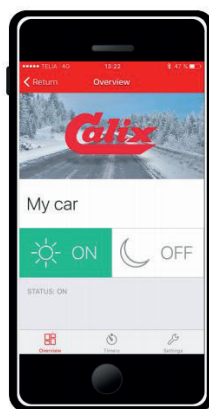


Development, design and production are co-located in the same facilities in Eskilstuna, Sweden, ensuring efficient process and quality control and short lead times.

The R&D laboratory is equipped with a climate chamber, operating between -40 C and +60 C, third-party certified by Intertek. The chamber is designed to enable R&D work on cars, light-duty trucks and cabs for heavy-duty trucks.



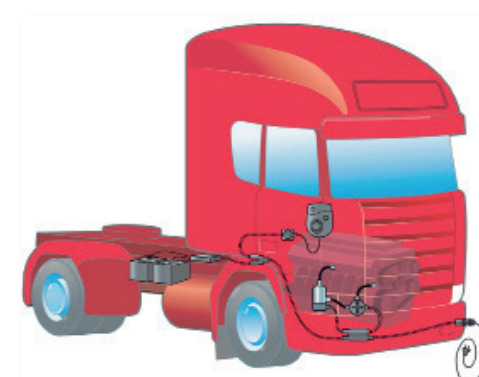
Connecting cable connected to the installed Calix system



App-solution



Calix Dual cables are approved for both EU and North America



System overview- truck

Calix battery chargers

The electrical systems in all vehicles consumes electrical power drawn from the battery even in vehicle off-state. A fixed on-board charger mitigates this drain and assures a proper state-of-charge of the main battery at all conditions. A permanently installed battery charger from Calix is very convenient for the user – just plug it into a wall socket – and guarantees start of the engine. The broad and full range of Calix battery chargers and cable systems meet all legal and quality requirements.

Calix DC/DC converters

DC/DC converters are frequently used to convert and stabilize the input voltage for the attached devices. The Calix converters are highly efficient with minimum heat generation.



Battery Charger, BC 1205



DC/DC converter

Calix heaters

Pre-heating of the engine and the compartment results in a reliable start of the engine and an increased comfort for the driver and passengers. In addition the engine reaches its optimum temperature much faster which significantly reduces engine wear, fuel consumption/CO2 and hazardous emissions such as nitrogen oxides (NOX) and particles.

Calix offers solutions, individually designed, for almost all gasoline and diesel vehicles on the market.

The efficiency of a Li-ion battery in e.g. a hybrid is substantially reduced in cold temperatures, which can be improved by installing Calix pre-heating systems. The range of the vehicle in fully electric mode can be dramatically increased with a proper pre-conditioning of the battery. In pure electric vehicles there is also a need to pre-heat e.g. the passenger compartment. Calix has in close cooperation with leading OEMs developed different types of pre-heating solutions and some are already in serial production.



ESS Heater



Example of different models of engine heaters

SEAT COVERS

Tailor made solutions

There might be a need for a protection of the seats in a vehicle. Dirty working clothes, tools, etc, and high frequency of usage, wear hard on the upholstery. When the original seat cover is under tough conditions, it gets dirty and maybe also tears apart, the padding in the seat may even be destroyed whereby both comfort and value of the vehicle will decrease.

The solution is tailor made seat covers from PeBe, mounted in the vehicle preferably when the vehicle is brand new.

In addition to the protective effect our seat covers frequently improve the interior look of a vehicle!

There are many different types and designs of seat covers in our portfolio.

PeBe develops customer and vehicle specific solutions for the OEMs, all according to the specifications and needs from our customer as regards material, design, function and other requirements.

The solutions permit the side-airbags in the seats to function properly.

Perfect fit

The fit of the cover is extremely important if it is to stand tough conditions for many years. Our protective seat covers have a precise fitting to each seat in the vehicles. Each seat model also needs specific mounting solutions, and there are smart applications to save time and reduce costs.



Without protecting seat cover- damaged original seat

Quality

- Non-stretchy fabrics
- Martindale value against wear up to 196.000
- Flame retardant in accordance with VCS 5031.19
- Certified Oeko-tex standard
- Artificial leather certified Reach



Design and combinations of different fabrics



Interior with seat covers, design Stark

Activity cover - A new concept of tailor made seat covers

Seat protection with quick mounting

Activity covers are developed for the active people that use the vehicle for many different purposes and will keep the seats away from the dirt!



Activity covers provide a good protection against dirt and at the same time gives a high quality feeling that matches the quality level of the vehicle.

Activity covers are measured and designed for each range of seats all adapted to the specific interior line of the vehicle. Great variety of fabrics and materials are available. Mounting time is short and Activity covers are easy to assemble and remove.

Activity covers give no negative impact on the the side airbags.
The Activity covers are compact and easy to store in the vehicle.



Activity cover

- High quality
- One piece
- Tailor made
- Perfect fitting
- No influence on side airbags
- Quick mounting



Tailor made textile floor mats

PeBe designs, produces and markets a wide range of floor mats in textile for commercial vehicles.

Each mat is unique for the cabin and the number of pedals.



WELCOME TO CONTACT US AT THE CALIXKLIPPAN GROUP

Klippan Safety AB | P.O. Box 93 | SE-264 21 Klippan | Sweden | Telephone: +46 435 185 00 | E-mail: info@klippan-safety.se | www.klippan-safety.se

Preciform AB | P.O. Box 5026 | SE-630 05 Eskilstuna | Sweden | Telephone: +46 16 10 80 70 | E-mail: info@preciform.se | www.preciform.se

Andrénplast AB | Kårebogatan 14 | SE-418 78 Göteborg | Sweden | Telephone: +46 31 709 62 70 | E-mail: andren@andrenplast.se | www.andrenplast.se

Formplast AB | Industrigatan 1 | SE-289 42 Broby | Sweden | Telephone: +46 44 476 00 | E-mail: info@formplast.se | www.formplast.se

Autoform AB | P.O. Box 155 | SE-782 24 Malung | Sweden | Telephone: +46 280 59 33 00 | E-mail: info@autoform.se | www.autoform.se

Carbox GmbH & Co. KG | Justus-von-Liebig-Straße 7-9 | D-28832 Achim | Germany | Telephone: +49 4202-96970 | E-mail: info@carbox.de | www.carbox.de

Calix AB | P.O. Box 5026 | SE-630 05 Eskilstuna | Sweden | Telephone: +46 16 10 80 00 | E-mail: info@calix.se | www.calix.se

PeBe AB | Industrigatan 6 | SE-432 67 Veddige | Sweden | Telephone: +46 340 64 66 00 | E-mail: info@pebe.se | www.pebe.se

CalixKlippan