BENEFIT FROM 20 YEARS OF COOPERATION WITH FORMULA 1

ALPINA – YOUR PROFESSIONAL SAFETY PARTNER

PUBLIC TRAFFIC SAFETY

ALPINA – YOUR PROFESSIONAL SAFETY PARTNER

Professional Quality at Factory Prices

Look inside: www.alpina.at
Benefit from 20 years of cooperation with Formula 1!

**ALPINA Crash Cushions – Quality “Made in Austria”**

The ALPINA F1-50 crash cushion have originally been developed and designed for Formula 1. After 20 years of successful use, development and experience in Formula 1, from 1997 the modified models of the crash cushion are used on Austria’s roads. Today ALPINA crash cushions are used in Poland, Czech Republic, Slovakia, Slovenia, Portugal and Switzerland.

All types of the ALPINA crash cushions have been successfully tested in accordance with Part 3 of the European standard EN 1317-3 approval, therefore they have been granted by the Federal Ministry for Transport, Innovation and Technology.

**Insist on maximum safety**

ALPINA SAFETY SYSTEMS GmbH works since decades in safety for speed sports and road-traffic. As supplier of motorcycle Championships (Moto-GP, WSBK, endurance World-Championship), Formula-1-Championship, Ski-World-Championships, Ski-World-Cups and Olympic Wintergames we are responsible for safety matters all around the world and as supplier of energy absorbers for Road-Traffic we care for safety on the streets and highways too.

All our products are tested and checked thoroughly and we attach highest importance to accuracy in production, beginning with selection of best raw materials up to our ISO-certified quality management. The Alpina products are developed in close cooperation with International Sports Authorities (FIA, FIM, FIS) and with national and international Traffic Authorities to be able to offer the desired safety level at reasonable prices.

**Alpina services for organizers of motorsports events**

Your safety and the safety of the people you are responsible for is very important to us. Since more than 15 years ALPINA has been delivering safety material to protect motorcycle racers in case of crashes and even the Formula 1 series rely on ALPINA safety experts and ALPINA products.

Our intention is to support you with high-quality products, years of experience, practical Knowhow and personal commitment to reach best possible safety level on your roads – our safety experts have proven in the past that the combination of practical experience, broad-depth technical Knowhow, innovative spirit and high level of commitment pays several times for the organizers of Motorsports events.

**Extra-value by Extra Know-how**

For decades we have been engaged internationally in satisfying our customers’ needs in different businesses as Safety for Motorsports and Skiruns, Safety for Events and Safety for Road-Traffic.
Quick Installation

For Road Airbag installation no special foundations are required. Other systems require a concrete slab, anchors or especially prepared basement. Because the ALPINA ROAD AIRBAG absorbs the impact energy there will be no force transmission into the underground – an inestimable advantage for tunnel entries and bridges. Quick installation means up to two hours, which makes up to 10 installations per day possible.

A-Level-Safety

All ALPINA ROAD AIRBAGS reach A-Level in impact severity, which is confirmed by extensive crash tests. Other systems operate at B-Level.

Reduced Costs

High cost savings due to reusability after impacts. The Functionality is not affected in 80% of accidents.

Perfect Connectivity

Harmonious and easy connection to existing restraint systems. With a concrete junction element the ALPINA ROAD AIRBAG is connected to the standard concrete guard rails or existing concrete safety barriers.

High Speed Experience

High value experience through our 20-year collaboration with Formula 1. Through years of research and development cooperation with the Formula 1 our experience is a unique factor.

ALPINA ROAD AIRBAGS
save you time and money:

- No traffic impairment during installation and replacement
- No impairment of traffic flow after accidents
- Reusability after impact, stands up to 3 impacts without replacement
- Short delivery times and prompt servicing
- Suitable for all climatic conditions - weatherproof and UV resistant
- Easy disposal - no hazardous waste
- Relevance for national economy - cutting down rehabilitation costs for victims of accidents
- ALPINA offers solution skills for special problems, e.g. slanted roads
- Years of experience gained by memberships in state-run advisory committees
NON REDIRECTIVE ALPINA ROAD AIRBAGS

HOW IT WORKS:

The ALPINA crash cushion (Road airbag) consists of a permanently elastic material, which builds 3 or 5 air chambers (depending on type). At impact, the air is compressed. The air flows through throttling valves between the chambers and escapes through drain valves. This absorbs the impact energy and minimizes the rebound.

The ALPINA Road-Airbag goes back to its original shape a few seconds after impact and can take the next one. It is also partially functional in a damaged state and can be easily repaired by craftsmen in case of slight damage.

Due to the low rebound only a small duration of the acceleration at a low level (impact force) is achieved, whereby the risk of injury decreases seriously.

All the ingredients are substantially and tightly linked so that no parts can break loose from an impact.

Due to the homogeneous surfaces of the ALPINA Road-Airbag the risk of injuries to motorcyclists is significantly lower than with alternative products. The risk of injury can be further reduced by attaching the optional motorcycle driver protection.

The ALPINA Road-Airbag is fixed in accordance with installation instructions using rustproof-adhesive anchors in the area of impact region on the roadway.

If required, due to the low weight of the ALPINA Road-Airbag, it can be moved by manpower after releasing the anchorage.
SELECTING THE “RIGHT” IMPACT ABSORBER
DEPENDING ON EXPECTED IMPACT SPEEDS

Due to the locally allowed speed, the performance level required of the impact absorber can be determined. A distinction is made between the levels 50, 80 and 100. It should be noted that the performance levels are not the same as the locally allowed or expected velocities.

Based on the local conditions has to be decided which system is to be used. When a “redirecting” of the impacting vehicle is not wanted (e.g. oncoming traffic areas, tunnel portals or general) and a passing of the impact energy into the ground because of possible structural problems should/has to be avoided (e.g. bridge area), then we recommend a Non redirective crash cushion system with the appropriate performance level and geometry.

The impact severity of the crash cushion (Level A or B) that results from the tests according to EN 1317-3, may also come as a selection criteria for the application. In a note to EN 1317-3 the following is emphasized: “The impact severity class A provides for the passengers of errant vehicles an increased level of security. Therefore generally products of Level A are prescribed.”

Selection of performance level in accordance with RVS 05.02.31

<table>
<thead>
<tr>
<th>speed limit for cars [km/h]</th>
<th>performance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal risk</td>
<td>high risk</td>
</tr>
<tr>
<td>≦ 80</td>
<td>50</td>
</tr>
<tr>
<td>≦ 100</td>
<td>50</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>80</td>
</tr>
</tbody>
</table>

Types of impact absorbers

ALPINA F1-50
Performance Level 50

ALPINA T800-50
Performance Level 50

ALPINA T1000-80
Performance Level 80

Types of impact absorbers

ALPINA F1-50
Performance Level 50

ALPINA T800-50
Performance Level 50

ALPINA T1000-80
Performance Level 80
The Alpina Impact Absorber F1-50 (frontal impact barrier) is especially used for wide obstacles, and in places where little space is available in longitudinal direction (e.g., tunnel mouths, tunnel niches, etc.). This model also does not need – as all ALPINA crash cushions – to be connected with the foundation.

The Alpina F1-50 Road-Airbag was originally developed for use in Formula 1. By minor structural changes, it was possible to use the F1-50 for use on public roads. In the tests, according to EN 1317-3, the limits are far below, despite the short version, which highlights the particular suitability of the impact damper.

To protect particularly endangered places, it is possible to combine several F1-50 Road airbags in a package (behind and behind each other).

For the assembly no special foundations are required. The installation is made on an asphalt or concrete surface with a thickness of about 22 cm.

**Technical data ALPINA F1-50**
- Performance Level 50
- Impact severity class: B
- Length (depth): 1580 mm
- Width front: 2340 mm
- Width back: 2340 mm
- Height: 1000 mm
- Weight appr.: 180 kg
- Behaviour in fire: B2 of ÖN B 3800
- Energy Absorption: typically 650 kJ per module
- Measured Energy Absorption: typically 80% to 90%
- Standard Colour: grey
- Impact surface white with reflecting direction-arrow symbol

**Installation and Fixing**

The preparation of the F1-50 is combined with a special concrete-retaining system.

After the concrete elements were established, the F1-50 is brought into position and strapped. Based on the low weight the ALPINA impact absorber can - after releasing the binding pieces - be moved with sole manpower.

**Application purposes**
- static obstacles (tunnel mouth, tunnel niche)
- construction site safety measures
- impact absorber on construction site safety vehicles
In connection with concrete deflecting walls the crash cushion T 800-50 is especially useful for the validation of overhead direction signs and also serve as lane dividers at tops of traffic island toes. Using connective devices even a connection to guard rails can be made. This model also does not need – as all ALPINA crash cushions – to be connected with the foundation. With hundreds of installations the ALPINA T800-50 is Austria’s most used impact absorber.

With a length of 2.55 m no other product offers the same safety level as the T800-50 Road-Airbag.

Through the use of concrete-transition element H92 and standard concrete guard rails the T800-50 is conclusively connected to existing restraint systems such as guard rails or concrete barriers.

For the assembly no special foundations are required. The installation is made on an asphalt or concrete surface with a thickness of about 22 cm.

**Technical data ALPINA T800-50**

- Level 50
- Impact severity class: A
- Length (depth): 2550 mm
- Width front (depth): 1200 mm
- Width back (depth): 1400 mm
- Height front: 880 mm
- Height back: 920 mm
- Lateral overlapping cases: 300 mm
- Weight appr.: 120 kg
- Behaviour in fire: B2 of ÖN B 3800
- Energy Absorption: typically 750 kJ per module
- Measured Energy Absorption: typically 80% to 90%
- Standard Colour: grey
- Impact surface white with reflecting direction-arrow symbol
- Fixing on carriageway: rustproof adhesive tape
- Fixing on bridge: seal-checked rustproof bridge bolts

**Application purposes**

- lane dividers at tops of traffic island toes
- Highway entrances and exits
- static obstacles as overhead direction signs or bridge piers

**Installation and Fixing**

The crash cushion is fixed directly on the carriageway by imbedded fixing bolts (rustproof) and rustproof bridge bolts. The impact absorber is brought into position in front of the concrete connective elements. The lateral overlapping cases are plugged in the concrete element.
The ALPINA T1000-80

FACTS & PURPOSES

In connection with concrete deflecting walls the crash cushion T1000-80 is especially useful for the validation of overhead direction signs and also serve as lane dividers at tops of traffic island toes. Using connective devices even a connection to guard rails can be made. This model also does not need – as all ALPINA crash cushions – to be connected with the foundation.

With a length of 4.25 meters the T1000-80 offers an enlarged safety potential. Through the use of concrete-transition element H92 and standard concrete guard rails the T1000-80 is conclusively connected to existing restraint systems such as guard rails or concrete barriers.

For the assembly no special foundations are required. The installation is made on an asphalt or concrete surface with a thickness of about 22 cm.

Technical data ALPINA T1000-80

- Performance Level: 80
- Impact severity class: A
- Length (depth): 4250 mm
- Width front (depth): 1200 mm
- Width back (depth): 1400 mm
- Height front: 880 mm
- Height back: 920 mm
- Lateral overlapping cases: 300 mm
- Weight appr.: 160 kg
- Behaviour in fire: B2 of ÖN B 3800
- Energy Absorption:
  - typically 750 kJ per module
- Measured Energy Absorption:
  - typically 80% to 90%
- Measured energy absorption:
  - typically 80% to 90%
- Standard Colour: grey
- Impact surface white with reflecting direction-arrow symbol
- Fixing on carriageway: rustproof adhesive tape
- Fixing on bridge: seal-checked rustproof bridge bolts

Application purposes

- Road dividers separating at Island peak
- Highway entrance and departures
- Fixed obstacles such as e.g. Overhead signs or bridge piers

Installation and Fixing

The crash cushion is fixed directly on the carriageway by imbedded fixing bolts (rustproof) and rustproof bridge bolts. The impact absorber is brought into position in front of the concrete connective elements. The lateral overlapping cases are plugged in the concrete element.
Protect employees!
Reduce costs.

Truck – Mounted – Attenuator for Light Trucks.

Unique impact protection for light trucks up to 3.5 t
The world’s first TÜV-approved employee protection system for light trucks

Maximum protection for employees working in the primary road network
The crash cushion reduces the consequences of a collision significantly. Due to the significant impact, it secures the slowdown into the hedging vehicle and in front of the road network as well as the workers colliding motorists. Safe for use on roads without hard shoulders too.

TÜV-tested design with Formula 1 know-how
We tested the entire functional system - including all attachments mounted on a light truck according to the strict NCHRP 350 - MASH (2009) criteria. For the first time the load in the light truck with a crash-test dummy in the driver’s cabin and found sensationally low values were measured.

Outstanding crash test performance
Test scores prove it: Twice as safe as standard requirements. Cab is in the safe area, even in accidents involving heavy trucks and high-speed impact. In all tests the hedging vehicle was undamaged by Pillows and was immediately ready for exchange.

Cost savings in operation
Trailer or pre-warner can be carried further. In a crash, the vehicle remains intact. No idle time after the accident by pillows into exchange for 20 minutes. No long lasting repairs after collision damages.

No vehicle modification needed
Fast and easy installation in 2 hours through tailor-made components with fixed wired system. Low weight = 350 kg, of which cushion = 105 kg. Replacement cushions in 20 minutes.
THE ALPINA MOBILE ROAD AIRBAG SYSTEM
TRUCK – MOUNTED – ATTENUATOR FOR LIGHT TRUCKS

The ALPINA MOBILE ROAD AIRBAG is the new life-saver for previously unprotectable trucks up to 3.5 t. Its TÜV-tested design is based on decades of racing sports experience and know-how.

It significantly reduces costs for vehicles & personnel, because it is easy and quickly installed and makes the usage of trailers possible.

Equipped with a Ready-Wired Bolt-on System it can be used on many different types of vehicles without modification.

Technical data:
ALPINA MOBILE ROAD AIRBAG
- Weight ready for mounting, including hydraulics: 350 kg
- Weight of cushion without mounting plate: 105 kg
- The dimensions may vary slightly depending on the vehicle model.
- The ground clearance of the crash cushion should be set between 250 and 300 mm.
- TÜV Crash-Test according to NCHRP – MASH (2009)

Installation and Fixing
Quick and easy bolt-on System!
- No vehicle modification necessary
- Tailor-made parts
- Ready wired system
- Ready to use in 2 hours
- Replace cushion in 20 minutes

Application purposes
- Fast installation with custom-fitting components – without vehicle modification
- Cost-saving operation – Trailer or pre-warning can still be carried
- Protects your vehicle and built up investments (e.g. display panels)
- A crash does not damage your vehicle – cushion replacement takes only 20 minutes
- Finally, no more outage and downtime by repairing collision damages
- World’s first TÜV-certified employee protection system for light trucks (pickup)
Maximum Safety for your employees

Road maintenance vehicles with a maximum gross weight up to 3.5 t (flatbed), are often used at work in the primary road network for cost reasons. Because of the small mass of these light trucks the workers in these vehicles are inadequately protected. Therefore the Alpina TMA-LIGHT was developed specifically for these vehicles. With our proven airbag technology and the new tailor-made carrier construction we have managed to minimize the weight of the TMA-Light, that TÜV-tested system is the first one to be mounted on any flatbed truck.

Lifesaving for staff in and beyond the light truck and for colliding road users

The crash cushion reduces the consequences of an accident essentially. By reducing the shock considerably it secures the road workers inside (and beyond) the maintenance vehicle significantly but also the impacting road users.

TÜV-tested complete system

The complete functional system including all accessories mounted on a light truck was tested according to the strict criteria of NCHRP 350 – MASH (2009). It was also the first time the forces inside the light were seized and sensationaly low levels were measured – „Made for the small ones – performance like the big ones.”

Impressive Crash Test performance

- Test scores prove it:
  Twice as safe as standard requirements!
- Driver cabin is safe area, even in cases of heavy trucks and high impact speeds – people can get off uninjured!
- In all tests the maintenance vehicle remained undamaged – and instantly usable after a 20 min. cushion replacement.

Safe maintenance work now also on roads without hard shoulder

Such systems as a „saving cushion“ have lessened thousands of accidents around the world and saved lives. First time also available for light trucks (flatbed) which makes roadside parking possible.

That adds up!

Coupling device of the drawing vehicle remains usable so you can save costs for personnel and vehicles.
ALPINA ROAD AIRBAGS
SAVE YOU TIME AND MONEY:

ALPINA SAFETY SYSTEMS HAVE REDUCED ACCIDENT CONSEQUENCES AND THEREFORE BEEN LIFE-SAVERS FOR SEVERAL THOUSAND TIMES WORLDWIDE.

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ALPINA ROAD
AIRBAG

QUICK INSTALLATION
A-LEVEL-SAFETY
REDUCED COSTS
PERFECT CONNECTIVITY
SPECIAL SOLUTIONS AVAILABLE

ALPINA SAFETY SYSTEMS GmbH
A-9552 Steindorf · Lindenstraße 4
Austria · Europe
E-Mail: office@alpina.at
Net: www.alpina.at
Tel. ++43-4243-2480-0
Fax ++43-4243-2480-5

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