

SMA Crash Cushions and End Terminals

SMA



CE

Industry A.M.S. S.r.I. (Automation Manufacturing Services) designs and develops industrial automation solutions, automotive industrial systems and road safety devices.

In over 40 years of activity INDUSTRY A.M.S. has grown according to the following guidelines:



These features can be identified in all company's products and in particular in the SMA Crash Cushions which distinguish themselves for their high security, incredible strength and wide-ranging suitability.

SMA Crash Cushions are designed to assure the highest level of passive safety. For their particular system of energy absorption, SMA Crash Cushions restrain and attenuate the crash effect on the passengers of the vehicle. Moreover for standard impacts, according to the UNI EN 1317, they prevent passengers from undergoing fatal injuries.





SMA Crash Cushions are all

redirective. They have been successfully tested according to the UNI EN 1317-3 standard and the entire SMA Crash Cushions family is CE Marked. The crash test results have been certificated by the authorized EU Notified Body, CSI, in Milan, Italy. SMA Crash Cushions presents the most complete product range of the market that can be positioned on every kind of junction or in front of an obstacle. SMA Crash Cushions (safety modular absorbers) are totally made of coated steel, they can undergo every kind of climate change and guarantee up to a duration of 20 years.

Foundation notes

- Installation on reinforced concrete basement
- Installation on hot mix asphalt
 Details are reported in our installation
 manual

Industry A.M.S. invites you to visit its website www.smaroadsafety.com and its Youtube Channel user\attenuatoriurtoSMA to get further information about SMA Crash Cushions performances.









Why choosing SMA crash cushions

High safety

Top performances in terms of protection of car occupants.

Reusability (80%) after a standard impact

Thanks to their strength, after a standard impact it is possible to change only the absorbing panels of the SMA crash cushion. Consequently SMA crash cushions are very simple and inexpensive to restore, as you can see from the pictures aside.

The shortest one

The innovative SMA crash cushions are the shortest one among the others available on the market. This increases safety and allows to install them in place where previously it was not possible to do it (tunnels and divergence areas).

No maintenance required

SMA crash cushions require no maintenance because they are totally made of treated steel. They resist to the effects of atmospheric agents or climate change, like precipitations, ice, wind, dust, pollutants. The efficiency of the device is always intact.

Life cycle

SMA crash cushions market costs is the lowest considering their life cycle. They are:

- Totally made of treated steel
- Particularly robust (strong)
- The shortest ones
- Highly reusable in case of impacts
- Easy to be restored on site

For more details visit our site www.smaroadsafety.com and the Youtube channel user\ attenuatoriurtoSMA Recovery of SMA crash cushion 80 km/h after a crash test.

Crash Cushion

Redirective

Successfully tested at level 50 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)





SMA 50 P D4463

SMA 50 P

Redirective

The shortest crash cushion in the world in this level: just 1,6 meters long

The base structure (1), completely in electrowelded galvanized steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central frames (4), connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.





Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt



	SMA 50 P
Width	860 mm
Length	1600 mm
Height	770 mm



Crash Cushion SMA 80P

Redirective

Successfully tested at level 80 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)



2880



SMA 80 P

D5535

SMA 80 P

Redirective

Thanks to its small dimensions SMA 80 P allows to protect particular critical areas. It is the only road safety device in its class which is suitable for bypass and tunnels. Moreover all its parts are completely made of steel according to the UNI EN ISO 13943/2004 (Fire Safety)





SMA 80 P - L

D5536

The base structure (1), completely in electrowelded galvanized steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central frames (4), connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.



Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 80 P	SMA 80 P-L
Width	860 mm	1100 mm
Length	2880 mm	2880 mm
Height	770 mm	770 mm



Crash Cushion SMA 100P

Redirective

Successfully tested at level 100 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)



SMA 100 P

SMA 100P

This device represents the

its reduced dimensions, high stability and great

best features of its class with

Redirective

functionality

D5530





SMA 100 P - L

D5531

The base structure (1), completely in electrowelded galvanized steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central frames (4), connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.





Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 100 P	SMA 100 P-L
Width	860 mm	1100 mm
Length	4720 mm	4720 mm
Height	770 mm	770 mm



Crash Cushion

SMA 110P/TL3

Redirective

Successfully tested at level 110 of EN 1317-3. Successfully tested at level TL3 of NCHRP 350. Easy to install Reusability (up to 80%) No maintenance required High safety

The shortest one

Totally made of steel (Fire Safety Class O)



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6010



SMA 110 P

D5524

SMA 110P/TL3

Redirective

This crash cushion offers unique performance. It has performed further crash tests:

- At 130 kph with a vehicle having mass of 1400 kg;
- At 100 kph with a Pick Up with Anthropomorphic Test Device onboard, according to EuroNCAP standard criteria

SMA 110 P - L

D5525

The base structure (1), completely in electrowelded galvanized steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central frames (4), connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.



Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 110 P	SMA 110 P-L
Width	860 mm	1100 mm
Length	6010 mm	6010 mm
Height	770 mm	770 mm



Crash Cushion SMA 80 Wide

Redirective

Successfully tested at level 80 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)

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SMA 80 Wide

Redirective

Specially suited to protect road junctions in areas with reduced space

The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.







Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 80 W - S	SMA 80 W	SMA 80 W-L
Width	1620 mm	1890 mm	2500 mm
Length	2990 mm	2990 mm	2990 mm
Height	770 mm	770 mm	770 mm





Crash Cushion

SMA 100 Wide

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Redirective

Successfully tested at level 100 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made in Steel (Fire Safety Class O)

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The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.

SMA 100 Wide

Redirective

High safety in wider spaces. It protects junctions and highway exits where the speed limit is 100 km/h



Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 100 W - S	SMA 100 W	SMA 100 W-L
Width	2000 mm	2260 mm	2930 mm
Length	4830 mm	4830 mm	4835 mm
Height	770 mm	770 mm	770 mm





Crash Cushion SMA 110 Wide

Redirective

Successfully tested at level 110 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made in Steel (Fire Safety Class O)





SMA 110 Wide

Redirective

It protects junctions and highway exits where the speed limit is over 100 km/h

The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.





Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available Models

	SMA 110 W -S	SMA 110 W	SMA 110 W-L
Width	2250 mm	2520 mm	3200 mm
Length	6130 mm	6130 mm	6130 mm
Height	770 mm	770 mm	770 mm



Crash Cushion

SMA 80 *Semi* Wide

Redirective

Successfully tested at level 80 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)



2990



SMA 80 SEMI WIDE SLIM RIGHT D5624

LEFT D5625

SMA 80 *SEMI* WIDE

Redirective

Specially suited to protect road junctions in areas with reduced space



SMA 80 SEMI WIDE RIGHT D5622 LEFT D5623



SMA 80 SEMI WIDE LARGE RIGHT D5431 LEFT D5432

The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.



Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available models

	SMA 80 <i>5</i> - W - S	SMA 80 <i>5</i> - W	SMA 80 <i>S</i> - W - L
Width	1230 mm	1500 mm	1900 mm
Length	2990 mm	2990 mm	2990 mm
Height	770 mm	770 mm	770 mm





Crash Cushion

SMA 100 *Semi* Wide

Redirective

Successfully tested at level 100 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)



4830

4830





SMA 100 SEMI WIDE RIGHT D5616 LEFT D5617



SMA 100 SEMI WIDE SLIM RIGHT D5618 LEFT D5619

SMA 100 SEMI WIDE

Redirective

Specially suited to protect road junctions in areas with reduced space

SMA 100 SEMI WIDE LARGE RIGHT D5422 LEFT D5423

The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.







Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available models

		SMA 100 <i>S</i> - W-S	SMA 100 <i>S</i> - W	SMA 100 5 - W- L
	Width	1410 mm	1685 mm	2120 mm
Length	4830 mm	4830 mm	4835 mm	
	Height	770 mm	770 mm	770 mm





Crash Cushion SMA 110 Semi Wide

Redirective

Successfully tested at level 110 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of steel (Fire Safety Class O)



6130



6130 002 100 100 100 100 100



SMA 110 SEMI WIDE SLIM RIGHT D5544 LEFT D5545

SMA 110 *SEMI* WIDE

Redirective

Specially suited to protect road junctions in areas with reduced space

SMA 110 SEMI WIDE RIGHT D5542 LEFT D5543

SMA 110 SEMI WIDE LARGE RIGHT D5416 LEFT D5417

The base structure, completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining panels (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact slide one upon the other driven by an appropriate shift system.

At the same time the central panels (4), composed of additional panels (8) giving the V-shape to the crash cushion, connected to a couple of sliding side panels (7), crash the cells (5) that gradually dissipate the kinetic energy coming from the impact.







Installation with bolts



Precast Concrete Basement



Installation with chemical anchors



Installation on asphalt

Available models

	SMA 110 <i>S</i> - W - S	SMA 110 <i>S</i> - W	SMA 110 5 - W - L
Width	1540 mm	1810 mm	2270 mm
Length	6130 mm	6130 mm	6130 mm
Height	770 mm	770 mm	770 mm





Crash Cushion SMA CITY

Not Redirective

Successfully tested at level 50 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one







SMA CITY

Not redirective

The shortest crash cushion on the market with its length of just 990 mm. Thanks to its dimensions it perfectly fits in with the urban furniture **The base structure (1),** completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact deform.

At the same time the central panels (4), connected to a couple of sliding side panels (7), crash the absorbing cells (5) that gradually dissipate the kinetic energy coming from the impact.



Depending on the place of installation SMA City can be positioned using sticks; concrete foundation; chimical anchors for asphalt

Available Model

	SMA City
Width	750 mm
Length	990 mm
Height	760 mm



Crash Cushion SMA TREE

Redirective

Successfully tested at level 50 of EN 1317-3

Easy to install Reusability (up to 80%) No maintenance required High safety The shortest one

Totally made of Steel (Fire Safety Class O)





SMA Tree

D4719

SMA TREE

Redirective

SMA Tree is the crash cushion designed to protect trees and posts from car impacts. It perfectly matches the urban furniture **The base structure (1),** completely in electro-welded steel, is made of a 5/6 mm thick plate and a monorail guide (2) for the sliding bars (3) linked to retaining frames (4) of the absorbing cells (5). The bumper or frontal panel (6) is the rigid connection among the sliding side panels (7), which after the impact deform.

At the same time the central panels (4), connected to a couple of sliding side panels (7), crash the absorbing cells (5) that gradually dissipate the kinetic energy coming from the impact.



Depending on the place of installation SMA Tree can be positioned using sticks; concrete foundation; chimical anchors for asphalt

Available Model

	SMA Tree
Width	750 mm
Length	3300 mm*
Height	760 mm

* The lateral beam can be adapted to different needs



End Terminal SMA T 1

Redirective

Tested at 50 km/h according to the prEN 1317-7

Easy Installation Simple Restoration No maintenance required Highest level of safety Reduced space

Totally made of steel (Fire Safety Class O)





SMA T1

D5475

SMAT1

Redirective

The End Terminal designed for the protection of obstacles on the roads with a speed limit of 50 km/h SMA T I has been tested according to the prEN 1317-7

The device is made of: (1) Base structure with welded back-stop; (2) railway for the sliding of the elements; (3) tie-rods welded to the collapsible beam; (4) collapsible beam split in modular bays; (5) sliding trolley; (6) installation plates for the posts; (7) posts with welded plate at the top.





SMA T1 is installed through posts both on the soil and on the asphalt.

Available models

	SMA T1
Length	2250 mm
Height from the soil	620 mm
Width	290 mm



End Terminal SMAT2

Redirective

Tested at 80 km/h according to the prEN 1317-7

Easy Installation Simple Restoration No maintenance required Highest level of safety Reduced space

Totally made of steel (Fire Safety Class O)





SMAT2

Redirective

"The" Enery Absorbing Bi-directional and Double sided End Terminal. SMA T 2 has been tested according to the prEN 1317-7 The device is made of: (1) Base structure with welded back-stop; (2) railway for the sliding of the elements; (3) tie-rods welded to the collapsible beam; (4) collapsible beam split in modular bays; (5) lateral plates to connect the bays; (6) sliding trolley; (7) installation plates for the posts; (8) posts with welded plate at the top.

SMA T 2 is installed through posts both on the soil and on the asphalt.

Available models

	SMA T2
Length	3500 mm
Height from the soil	620 mm
Width	290 mm



End Terminal **SMAT4**

Redirective

Tested at 110 km/h according to the prEN 1317-7

Easy Installation Simple Restoration No maintenance required Highest level of safety Reduced space

Totally made of steel (Fire Safety Class O)





SMA T4

SMA T4

Redirective

"The" Energy Absorbing, Bi-directional and Double sided End Terminal. SMA T4 is tested according to prEN 1317-7 and has performed the test TL 3.37 according to NCHRP 350, using a pick-up of 2000 kg at the speed of 100 kph The device is made of: (1) Base structure with welded back-stop; (2) railway for the sliding of the elements; (3) tie-rods welded to the collapsible beam; (4) collapsible beam split in modular bays; (5) lateral plates to connect the bays; (6) sliding trolley; (7) installation plates for the posts; (8) posts with welded plate at the top.

D5151



SMA T 4 is installed through posts both on the soil and on the asphalt

Available models

	SMA T4
Length	5900 mm
Height from the soil	620 mm
Width	290 mm





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