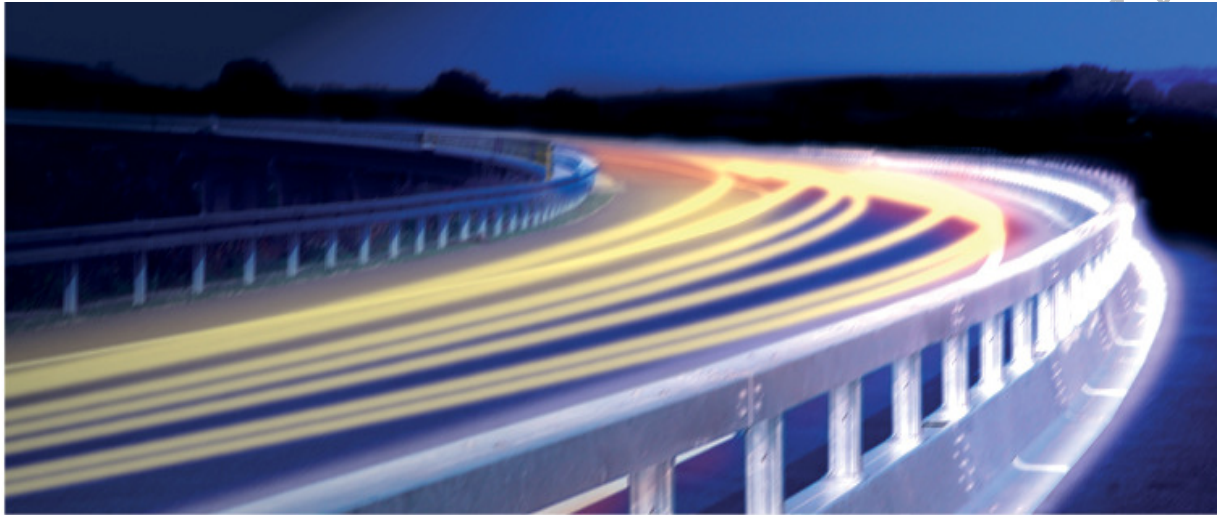


Product Information and Installation Tips for

VARIO GUARD[®]

Impact Resistance Classes T3,N2,H1 and H2 according to EN 1317-2



Mobile Safety for all Types of Roads



General:

There is no statutory requirement to install safety fences, but they must not create additional dangers, if they are employed.

For loading, transport, installation and de-installation, the national safety requirements are to be followed.

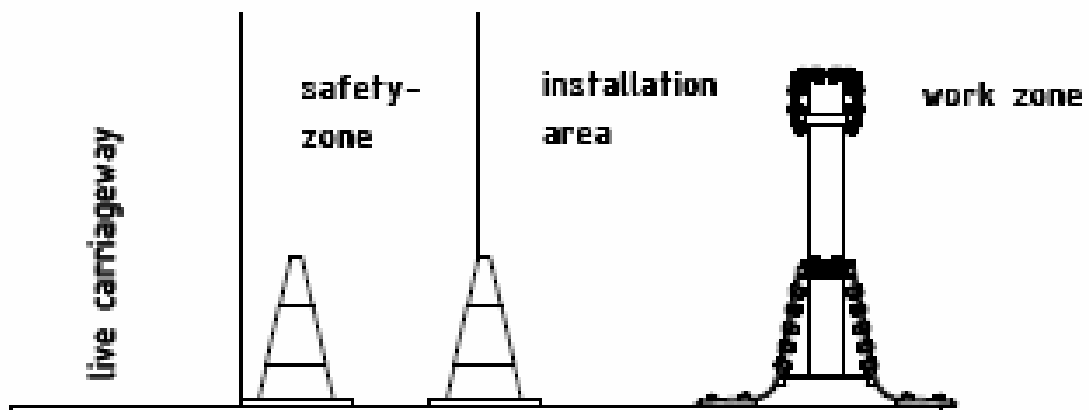
Installation standards:

Only qualified and trained personnel is to work with our products.

Knowledge of all relevant national safety guidelines when working on roads is required.

Working on a live carriageway:

If it is necessary to work on a live carriageway, an **adequate safety zone** is required between the working area and the live traffic lane. Safe installation or de-installation of VARIO-GUARD is not possible without providing such a safety zone. We advise a working area of at least 0,5m between VARIO-GUARD and the safety zone.



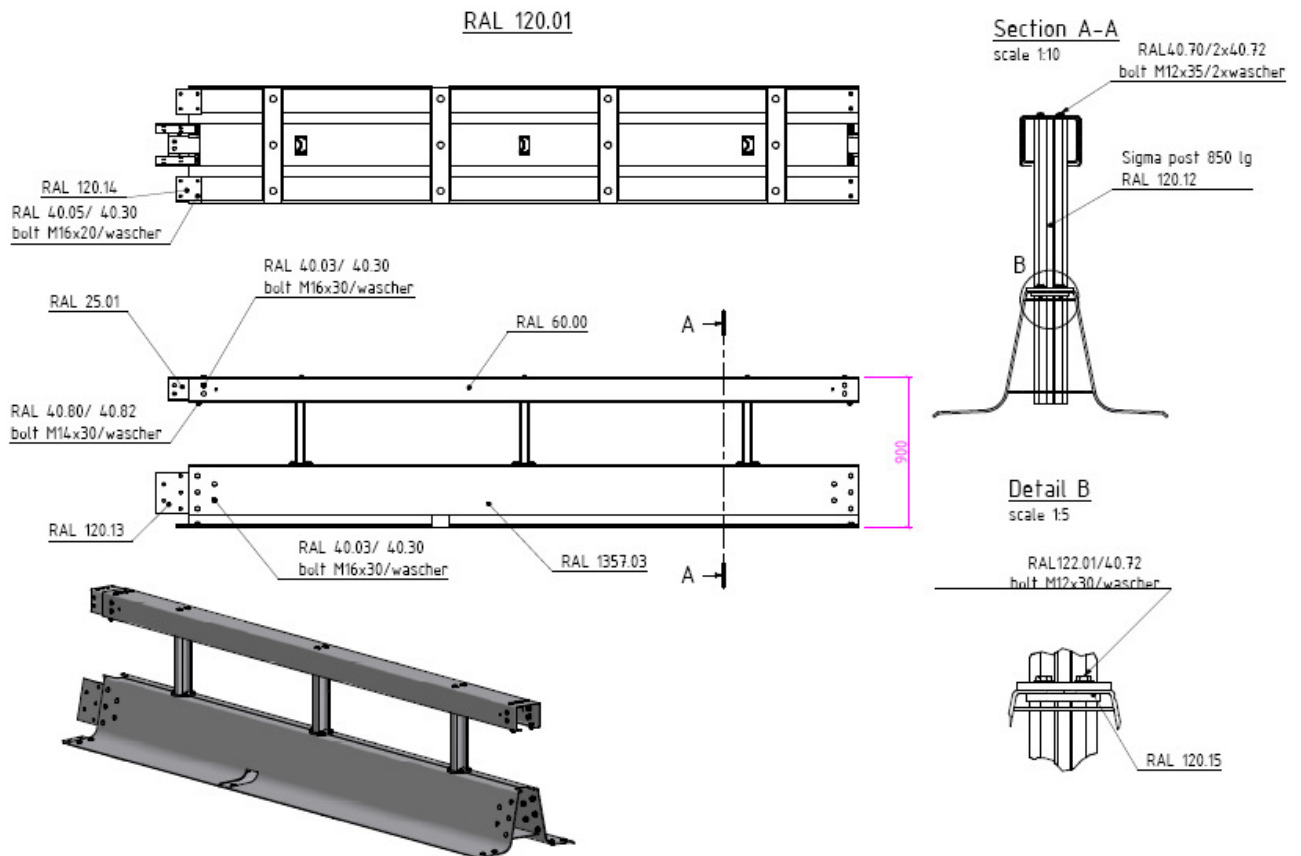
Product Information:

VARIO-GUARD is the mobile steel safety fence to protect and direct the traffic flow in working zones.

VARIO-GUARD consists of individual elements, that are bolted together. A safety fence of unlimited length can be created. The system is quick to install and is usually employed to guide traffic in work zones as temporarily, but can be used as well permanently e.g. as median barrier.

Dimensions:

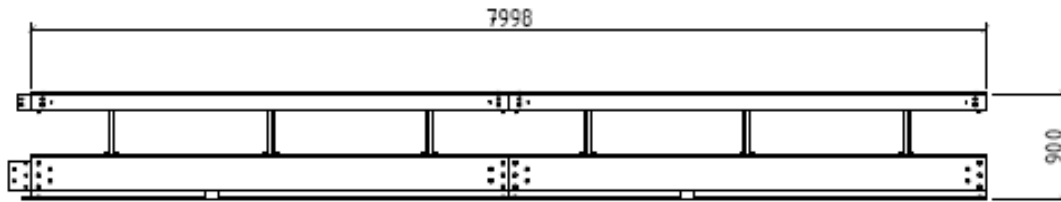
- ◆ Length of Element : 4000mm
- ◆ Height of Element : 900mm
- ◆ Width at Base : 700mm
- ◆ Weight : 400 kg/element



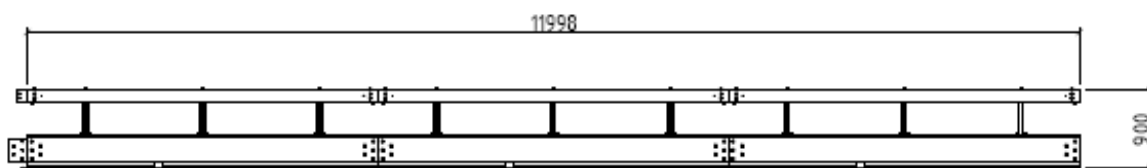
The system was tested according to EN 1317 and has passed the retainment levels T3, N2, H1 and H2.

To achieve a higher assembly rate, the system can be delivered with three pre-assembled elements.

pre-assembled to 8m elements / 800kg



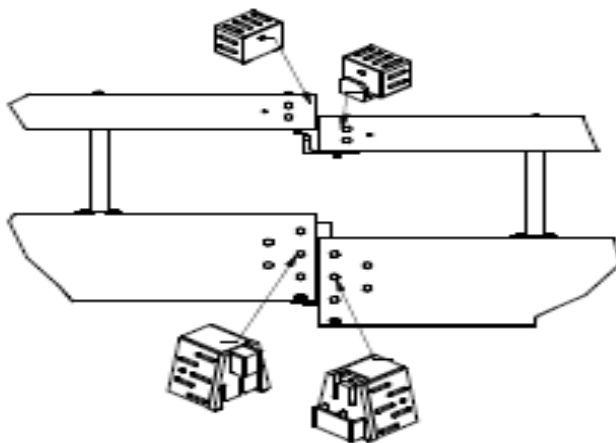
pre-assembled to 12m elements / 1.200kg



The additional use of quick connectors will again increase the assembly rate.

quick connectors every 12m

It is possible to reconfigure as much as 1.000 m/day.



VARIO-GUARD is usually delivered to the work site in pre-assembled 12m elements.

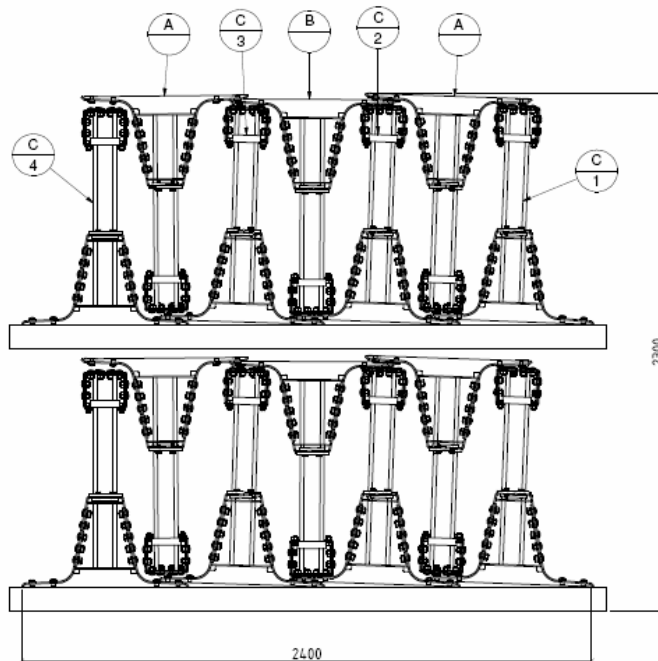
A standard truck can transport 2 bundles of 7 pieces, = 14 pieces of 12m each = 168m.

The weight of this load is 16,8 t.

VARIO-GUARD Delivery of 14 Pieces:

Offloading the top layer:

The offloading sequence follows the order of the symbols A to C4.



After offloading the top layer the beams between the layers must be removed.

Offloading the bottom layer:

Follow the same sequence.

Safety zones for unloading and loading:

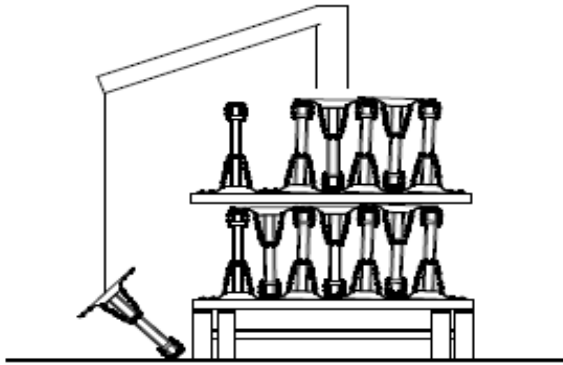
The swinging load must be controlled via correctly positioned guiding ropes. The load must not swing into or over live carriage ways. Adequate safety zones must be considered as part of the planning process. The dimensions of the elements must be considered. Strong wind influences the controllability of the load. Here, no risks are acceptable.

When offloading, the units should be lowered immediately nearly to the ground, when they are free off the lorry, and the extended into the final position.

Turning of inverted units after offloading:

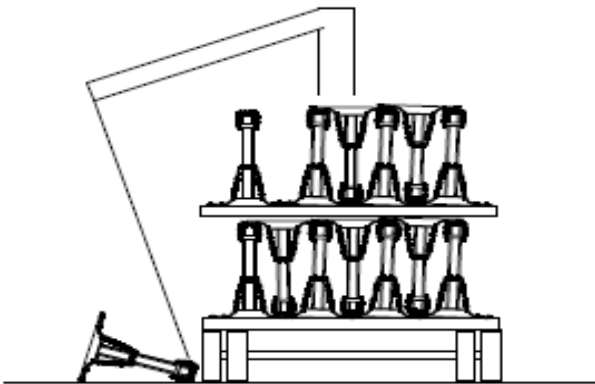
During turning of the top unit, it could kick away from the direction of rotation. To control this movement, timber should be packed directly beside the lorry tyres and the units offloaded onto them.

Then lowering of the unit is continued and at the same time it is pulled away from the tyres to give easy access.

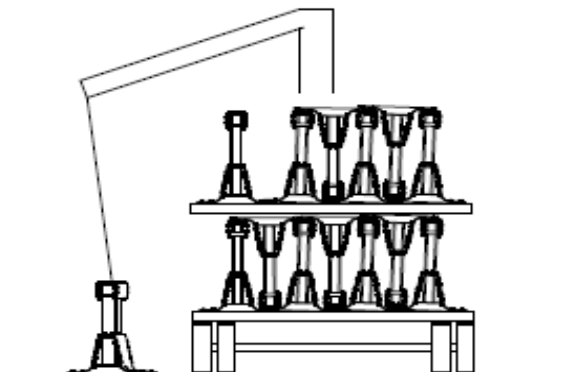


Attaching the sling to turn the unit upright.

When lowered down, the unit will fall down on its side and its top will slide toward the tyres.



Inverting units with a crane.



The whole operation must be controlled by a qualified person.

Lorry mounted cranes:

Operators must be trained and have knowledge of all relevant regulations.

Before using the crane these checks must be made:

- ◆ the crane has the required capacity.
- ◆ the crane is undamaged.
- ◆ there are no cables above the work zone.
- ◆ the lorry is supported.
- ◆ the lorry is adequately level.

Before beginning lifting operations, the operator should:

- ◆ make sure that the slings are adequate for the load.
- ◆ make sure of the weight of the individual loads.
- ◆ make sure that the off loading area is free.
- ◆ make sure that the load can not swing uncontrolled.
- ◆ make sure the slings are protected from any sharp edges.
- ◆ make sure that the load is properly balanced.
- ◆ use only slings in direct contact with the units to protect the galvanisation.

During lifting operations the operator should **NOT**

- ◆ swing the load over other people.
- ◆ allow people to walk under the suspended load.
- ◆ allow the load to swing out of control.
- ◆ exceed the safe working load of the crane.

After Lifting Operations the operator should:

- ◆ make sure, that the slings were not damaged.
- ◆ stow the crane safely for transit.

These short tips are not intended to replace proper training of the operators and personnel dealing with the system. They should only be seen as additional hints for the crew.

Length of the loading slings:

Slings should not be longer than the necessary minimum, to give the right angle between the legs. Placing the hook so that it can be reached will take longer, when slings of excessive length are used.

Offloading on the work site before installation:

When several lorry loads of VARIO-GUARD are needed, the units will probably be offloaded and positioned roughly along the work site, before finally putting them in position. The available space is likely to be limited so that there is the possibility of obstructing the final position.



offloading

put in line

progression of work

If the units are placed as shown above, the installation vehicle can work as close as possible to the row of elements. The ends of the pre-placed units must be absolutely clear of the line of the final position. So the time needed for moving the elements into the final position is reduced, speeding up the installation process.

Personnel required:

(in addition to qualified crane driver / operator)

Slinger	Is on the load to attach slings and guide ropes.
No. 1	Assists when guiding the loads and making connections.
No. 2	Guides the loads and directs crane operator. Makes initial connection to lower connecting plates. Controls righting operations of inverted units.
No. 3	Completes all connections at joints.
No. 4	Completes all connections at joints.

Installation Tools List

One set per person installing the units is needed.

- ◆ Ratchet wrench and sockets : 24mm, 22mm, 20mm.
- ◆ Open jaw / ring spanner : 24mm, 22mm, 20mm.
- ◆ Torque wrench : up to 100Nm
- ◆ Podger bar / spanner
- ◆ If installing resin fixed anchors and attachments, a 30mm socket / spanner is required.
- ◆ Ladder (for safe access to top of load)
- ◆ Adequate ropes (2 pieces not shorter than 400cm)

Personal Protective Equipment:

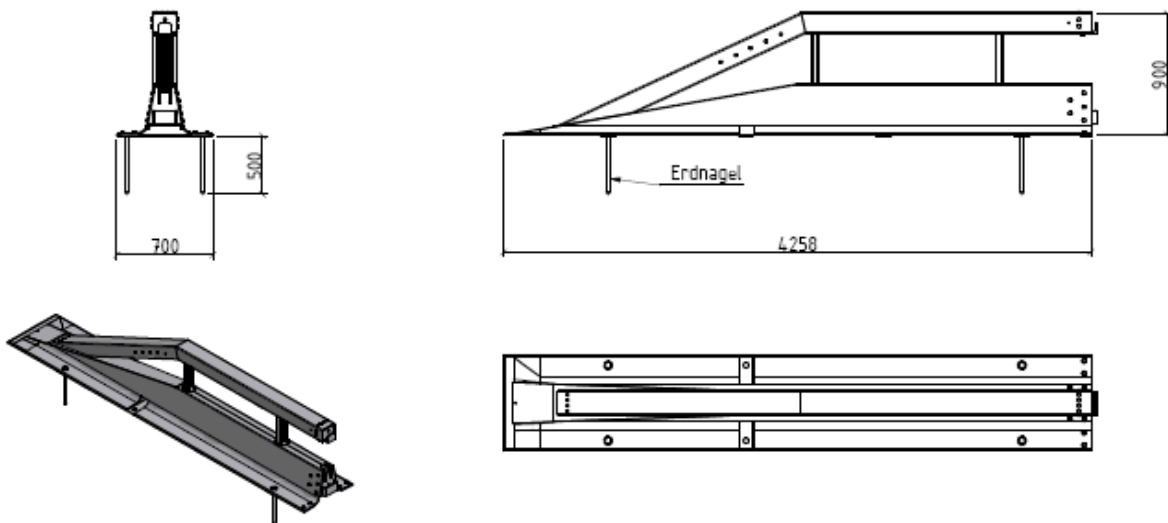
- ◆ Gloves
- ◆ Hardhat
- ◆ Steel toe cap boots
- ◆ reflective clothing

When working on anchors and attachment systems:

- ◆ Goggles
- ◆ Dust mask
- ◆ Ear defenders

Installation of Terminals using Pins:

The line must be anchored by placing four 30mm diameter pins in each slope element at the beginning and the end. The hole accepting the pins must be drilled into the carriageway. The head on each pins stabilises the VARIO-GUARD unit and prevents it from sliding off the pin in case of an impact. Any damaged pin must be replaced before putting the system into service.



Expansion Element:

We also offer expansion elements for use on expansion gaps on bridges or where ever else necessary.

Inspection of the Work Site, before putting the Installation into Service:

- ◆ Every joint must be inspected to ensure the correct placement of the connecting plates.
- ◆ The installation must not be put into service, before completion of the terminals.
- ◆ Any damaged unit must be replaced.
- ◆ when in doubt, ask your supplier.

Repair of the Carriageway after Anchoring the Installation:

After removal of the installation, each pinhole must be filled properly with adequate materials to prevent water from ingressing the carriageway foundation.

These hints are not intended to replace proper training of the assembly crew. They only contain some additional helpful practical hints.

SGGT[®]

Safe German Guardrail Technology
Straßenausstattungen GmbH
Bahnhofstrasse 35-40

D-66564 Ottweiler

Phone +49 68 24 308-0

Fax +49 68 24 308-131

export@sggt.com www.sggt.com