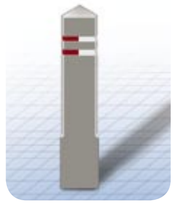
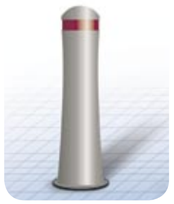
A SERIES OF DESIGNS, EACH WITH THEIR OWN CHARACTERISTICS



DIAMOND

The Diamond model has a timeless design. It is used wherever there is a risk of contact with heavy vehicles and maximum safety required.

The collision force needed in order to bend the bollard to an angle of 45 degrees is approx 250 kg.

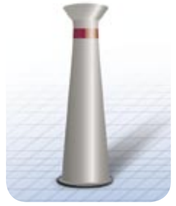


STANDARD

The Standard model is mainly used where large vehicles may come into contact with the bollard. More than 300 kilos are needed to bend the bollard to an angle of 45 degrees. If a vehicle collides with the bollard at high speed the forces involved are much greater.

UNIVERSAL

The Universal model has a simple, functional and timeless design. It is used wherever traffic limitation and maximum traffic safety are required. The collision force needed to bend the bollard to an angle of 45 degrees is 200 kilos.



CLASSIC

The Classic model is designed to be used as an architectural feature in neighbourhoods where the buildings require a more classic design. The collision force needed to bend the bollard to an angle of 45 degrees is 360 kilos.

MODERN

This bollard has been designed to be used in surroundings permitting a modern but still timeless design without requirement of the reflective area.
The Modern bollard is the strongest in the range requiring a collision force of more than 400 kilos to bend the bollard to an angle of 45 degrees.

KONUS

The Konus model is based upon the Universal and was further developed for mounting directly onto a concrete surface, e.g. in a multi-storey car park. Because of the reduced distance between the undercarriage of the vehicle and the top of the bollard model Konus is not quite as resistant to collisions as the Universal.

SIGNAL

The Signal model is based on the Universal. A hole has been bored in the top of the bollard into which a galvanised steel pipe is mounted. At the top of the steel pipe there are 3 x M8 screws making it possible to install and fasten a 48 mm outside diameter pipe.

EXAMPLES OF RO-CYCLES IN USE

Model Standard installed in 1997, at the time of the photograph the bollards were about 5 years old. This gives an impression of the appearance of the bollards as they age.

Model Universal installed with 2 stainless steel bands instead of reflectors. Can be used where there is no need/requirement of reflective area, e.g. pedestrian streets or areas with much light.

Bollards installed in conjunction with environmental obstacles to ensure that the cars cross the obstacle with both wheels whilst two-wheeled vehicles can pass without crossing the obstacle.

Model Konus installed on a production plant in order to protect a certain area and vehicles. As the picture shows, it is not possible to drill a hole, because of the concrete platform – Therefore the model for mounting on the surface is the perfect solution.

The installation does not require any great excavation. As you can see from the picture a 30 x 30 cm hole in the asphalt is sufficient for the foundation.

An attempt at a collision with a Standard model. The lorry wheels began spinning before it was able to run over the bollard completely.

ROULUNDS TECH

Hestehaven 51 · DK-5260 Odense S · Tlf.: +45 65 48 16 00 · Fax: +45 65 48 16 01 · Danmark · www.roulundstech.com

RO-CYCLE BOLLARD

Flexible and maintenance-free. Environmentally friendly. Safer for vulnerable road-users Durable. Easy to install. Cost effective

STATE OF THE ART IN OPTIMUM SECURITY

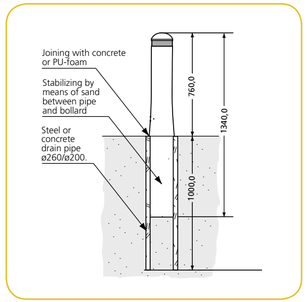
The RO-CYCLE Bollard is manufactured from vulcanised rubber and has the same flexible properties as a tyre. Just imagine what the tyres of a passenger car are exposed to – kerbs, potholes in the road, etc!

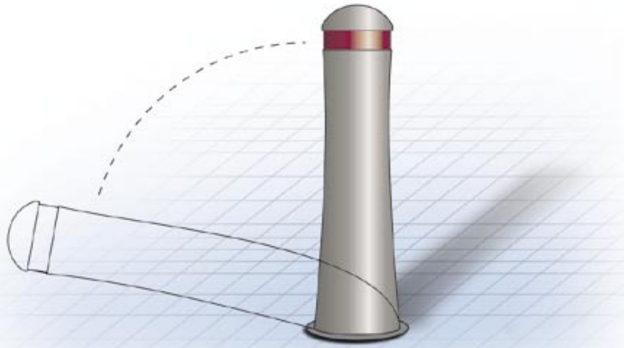
RO-CYCLE bollards can be used as a substitute for other bollard types whether they are manufactured from concrete, granite, steel or wood and bring many advantages.

The RO-CYCLE bollards are flexible – in the event of a collision they will bend to an angle of 90 degrees without being damaged and will return to their upright position once the weight has been removed. This means considerable savings in replacement costs.

As to road safety, the flexibility of RO-CYCLE bollards has great advan-tages for vulnerable road users, such as cyclists, should they become jammed between a car and the bollard.

Thanks to the impact absorbing and flexible properties of the vulcanised rubber a collision at low speed will leave practically no damage to the car, whereas collisions at high or reckless speeds are repaid in a less gentle way due to the weight of the bollard. This makes RO-CYCLE the ideal solution where maximum safety together with minimum replacement costs are desired.





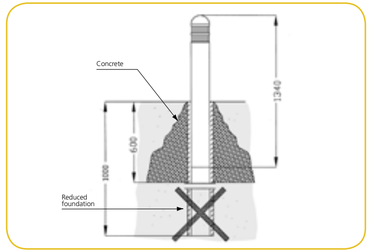
MODEL SIGNAL

The Signal model is based on the Universal provided with a 250mm deep hole in the top. The hole is mounted with an Ø60mm galvanized steel pipe and on the top you find 3 x M8 screws which make it possible to attach a pipe of Ø46mm outer diameter. Alternatively the hole can have a Ø60mm pipe in full length. Furthermore it is possible to mount the Signal with an aluminum pipe provided with short light reflector in various colors.

FOUNDATION

Installation using a pipe foundation is most common and pipes made from steel, concrete or PE can be used.
It is imperative that the foundation has a minimum depth to counter the forces applied at the moment of impact and ensure that the bollard is upright following a collision. The depth of the foundation can be reduced from 1 metre to a minimum of 55 cm where surface conditions allow but only if the impact can be absorbed without the foundation becoming misaligned.

If you choose to reduce the depth of the foundation it is important that extra concrete is cast around the pipe (see drawing) to compensate for the shorter length.
The more concrete around the pipe the higher the impact force can be absorbed without misaligning the pipe.



INSTALLATION INSTRUCTIONS

Specifications

Model	CLASSIC	MODERN	STANDARD	UNIVERSAL	DIAMOND
Weight kgs	39	47	42	25	29
Max. diameter*	187	187	187	138	145
Concrete pipe, outer/inner dimensions*	195	195	195	145	150

*= mm

Installing

Stabilizing by means of sand between pipe and bollard
Joining at the top of the pipe with concrete or PU-foam/glue

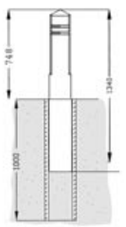
There are several tools, which can be used to bore into the ground.
If it is a question of pure soil it is fairly easy to bore a hole, e.g. 200 mm diameter x 1000 mm deep, using simple tools (see picture).

In asphalt it is necessary to first cut through the asphalt layer before boring or digging. If you use tools comparable to those shown in the picture the hole in the asphalt can be minimized to approximately
200 x 200 mm.

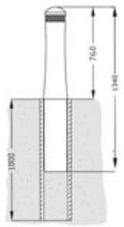
If the bollard is to be installed in tiled paving the foundation can be installed at a depth, for example, 78 cm under the surface allowing the tiles to be laid right up to the bollard itself for the best possible finish.

If you want to install the bollard into a concreted area it may be necessary to rough-bore with a diamond borer before the removing the under laying earth as described earlier.

If you hit wires, pipes or large obstructions it is possible to reduce the depth of the foundation (see the section on foundation).

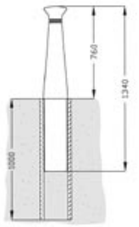


DIAMOND

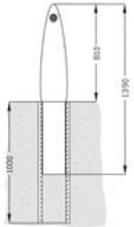


STANDARD

UNIVERSAL



CLASSIC



MODERN