



CLAMPING CONE SET

- tightens the system firmly
- consisting of: hexagonal-/triangular-head screw M12, clamping cone N1, clamping cone N2 with internal thread or N1 with nut M12
- material: stainless steel 1.4301

Optional:

- **with lengthened clamping cone:** additional protection by a padlock in order to prevent unauthorised removal, for hexagonal- or triangular-head screw M12



JUNCTION PIECE
with pre-determined breaking point

- links bollard to the ground shell
- breaks at the pre-determined breaking point when damaged by a vehicle
- can be instantly replaced if damaged
- material: cast iron, galvanised

Optional:

- **with anti-roll device:** the metal rod prevents the rolling away of the bollard
- further options available on our Online-shop



GROUND SHELL

- extremely robust component for long-lasting concrete embedment
- finish 300 mm (standard)
- material: cast iron, galvanised

Optional:

- **500 mm:** for additional stability with unsta-bilised subsoil, cobblestone pavement etc.
- **100 mm:** as special solution in case of small mounting depth, e.g. car parks, bridges etc.



GROUND SHELL COVER

- reduces risk of stumbling
- prevents soiling
- material: cast aluminium or ST37 steel, hot-dip galvanised

COST ADVANTAGES IN CASE OF DAMAGE

- ✓ EUR 28.80 for a replaceable junction piece with pre-determined breaking point
- ✓ max. three minutes working time
- ✓ costs reduced by up to 90%
- ✓ bollards, foundations with floor sleeves and plaster usually remain intact after an impact

MOUNTING ADVANTAGES

- ✓ quick exchange with simple tools on site
- ✓ removable
- ✓ absolutely accurate and wobble-free

SIMPLIFIED STORAGE

1 single ground shell for all products with 3p-Technology

- 👍 ✓ easy stockpiling
- ✓ less storage space
- ✓ lower storage costs

💡 **CONCLUSION:** All ABES bollards, lighting bollards, waste containers, etc. can be mounted alternately on the same ground shell.

THE SMARTER BOLLARD GIVES WAY!

3p-Technology developer: Prof. Michael Schuth, Trier University of Applied Sciences, Mechanical Engineering. European patent number: 0110 5289.1-2303



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* For bollards, lighting bollards, waste containers, benches etc.

ABES – The 3p-Technology
The fastening system
with pre-determined breaking point*



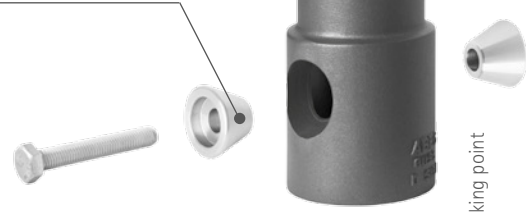
UNRIVALED.
COST-EFFECTIVE.
RELIABLE.

THE SYSTEM



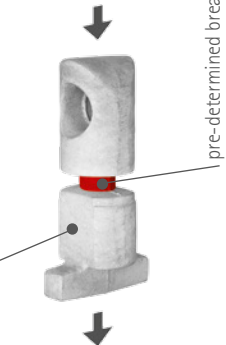
Clamping cone set

- For a firm standing bollard consisting of:
- hexagonal-/triangular-head screw M12
- clamping cone N1
- clamping cone N2 internal thread or with nut M12



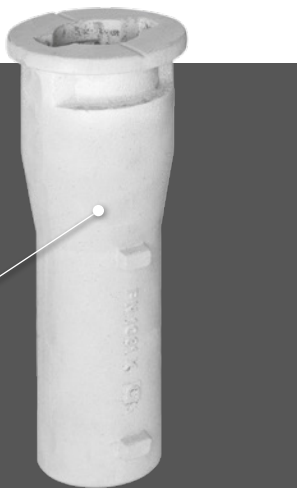
Replaceable junction piece with pre-determined breaking point

- links bollard to the ground shell
- breaks at the pre-determined breaking point when damaged by a vehicle
- can be instantly replaced if damaged



Ground shell

- extremely robust component for long-lasting concrete embedment (300 mm, 500 mm or 100 mm)
- same ground shell for all products with 3p-Technologie



THE FUNCTIONAL PRINCIPLE

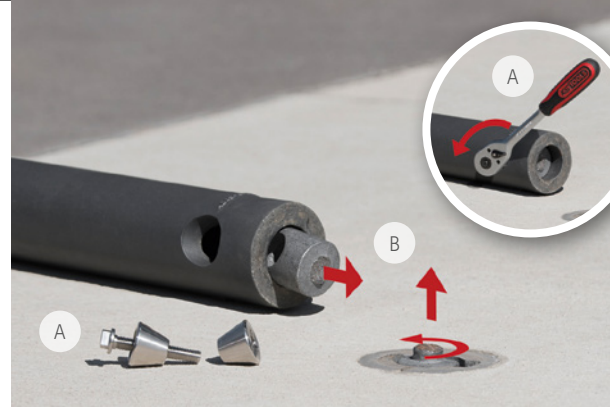


1 DAMAGES BY A VEHICLE



A The replacement junction piece breaks at the pre-determined breaking point (here: standard junction piece without anti-roll device)

2 REMOVE BROKEN JUNCTION PIECE



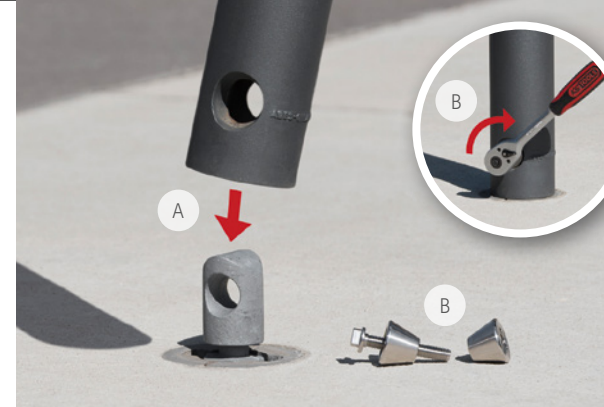
- A Unscrew the clamping cone set in the bollard and remove it
- B Remove the broken junction piece from the bollard and ground shell

3 INSERT NEW JUNCTION PIECE



A Insert a new junction piece in the ground shell and turn it by 90°

4 REASSEMBLE THE BOLLARD



- A Place bollard on junction piece
- B Insert and tighten-up clamping cones

5 DONE



- A Bollard back standing firmly once more
- B When the bollard is removed, the ground shell can be closed with a cover