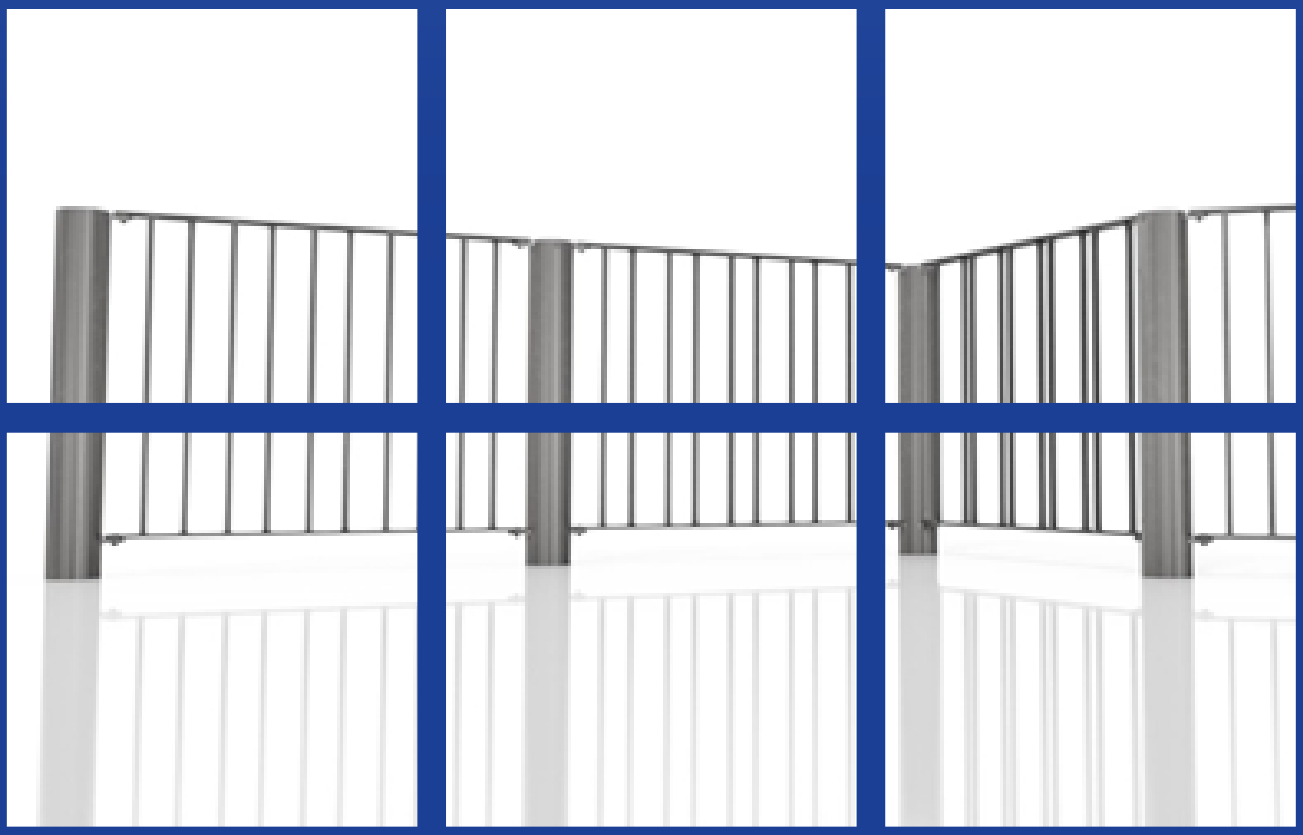
HSM511

Bristorm STOPPER 10 Bollards - Installation Manual

Standards: BSI PAS 170
Speed: 10
Drawing No: PD-PASHVMBS-150, PD-PASHVMBS-152
Vehicle Type: 2500
Penetration: V / 2500 / 16 / 90 : 0.1



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Contents

1. General

1.1 General description

This document is for use with Hill & Smith Ltd – Bristorm Bollards Stopper 10 and must be read in conjunction with the relevant system drawings. Performance rating is detailed within the Product detail drawing, available on the Xtratech.

This document sets out procedures for the installation and inspection of 'new' and 'in service' Bristorm Bollards Stopper 10. Organisations may increase their routine perimeter checking by adopting the measures set out in this document.

Queries concerning the Bristorm Bollards Stopper 10 may be addressed to the contact details in Appendix A. Installation should only be undertaken by suitably qualified competent personnel. All work shall be carried out in line with local health and safety requirements. Particular attention must be paid to services buried within the dig area, and appropriate steps taken to prevent injury.

1.2 Systems Documentation

Our Xtratech site contains our Bristorm drawings / manuals / documents, etc. for viewing / downloading and can be accessed by following link http://xtratech.bristorm.co.uk Please click on 'create an account', input your email address and your chosen password and you will have access to our full product range.

1.3 Health & Safety

The installation, inspection, repair and maintenance of Bristorm Bollards Stopper 10 require personnel to work on the site. It is the installer's responsibility that their personnel ensure that safe working practices as required by law for the site specific contract are adopted and achieved at all times. No operation should cause danger to employer, employee, contractor, sub-contractor or any member of the public. Personal Protection Equipment (PPE) must be used as required.

Hill & Smith Ltd is committed to preventing injury and ill health by operating its business in accordance with the Health and Safety at Work Act 1974 including all applicable regulations made under the Act. Hill & Smith Ltd is committed to ensuring the health, safety and welfare of all its employees and any other person not employed by the Company who may be affected by the way in which we conduct our business, both on and off this Site. Hill & Smith Ltd has an occupational Health & Safety Management System certified to OHSAS 18001 which is applied to all operations within our business operation.

1.4 Durability/Design Warranty

Hill & Smith Ltd Bristorm Bollards Stopper 10 have a typically designed / manufactured serviceable life of not less than 20 years. Steel components are hot dipped galvanised to the requirements of EN ISO 1461 (or when requested to the thicker coating requirements of its National Annexes). Fasteners are hot dip spun galvanised to the requirements of EN ISO 10684. The presence of high levels of winter salts, coastal salts and aggressive atmospheric pollutants can all reduce the life expectancy of the protective coatings of bollard components. Installations in tunnels where corrosive salts are not washed by rainfall have historically retarded the life expectancy of the Bristorm Bollards Stopper 10. Other coating options are available on request.

Hot dipped galvanised coatings with a thickness in excess of the requirements detailed in EN ISO 1461 – Table 3, are available on request. For example, for the Swedish Standard, SS-EN ISO 1461 National Annex, Table NA.1. the coating Zn115 is designated within the item name, e.g. CMXXX-Zn115.

Where accelerated corrosion is deemed to be a concern, it is recommended that suitable periodic inspection maintenance is undertaken to ensure the performance of the Bristorm Bollards Stopper 10 is not compromised. The Product / Design Warranty and Liability assurance given by Hill & Smith Ltd for HVM Bollards will be invalidated if it is shown that components from an unapproved supplier / site have been used in the installation, maintenance or repair of the system and / or that the installation does not conform to Hill & Smith Ltd requirements.

1.5 Technical Data/ Enquiries

Additional technical information not covered within this manual is available on our Xtratech site. Other technical enquiries should be addressed to: BristormTechnical@hill-smith.co.uk

1.6 Quality Assurance

Hill & Smith Ltd has in-house procedures for ensuring full compliance with the Quality Assurance certificate requirements of EN ISO 9001. It is the policy of Hill & Smith Ltd to give customer satisfaction by supplying products and services that are fit for purpose and conform to all aspects of their specification.

1.7 Environmental

Hill & Smith Ltd recognise the need to operate the business in a manner that reflects good environmental management. The company is aware of the environmental impacts of its operations and will balance its business aims with the need to protect both the local community and global environment. Hill & Smith Ltd operates an Environmental Management System to the certification requirements of EN ISO 14001.

1.8 Integrated management system

Hill & Smith Ltd have an integrated common management system which covers the requirements of ISO 9001, ISO 14001 & OHSAS 18001 in one management framework; this Management System is certified to PAS99. The adoption of this PAS standard simplifies the management of multiple system standards and any associated conformity assessment together with introducing some of the newer principles of management systems outlined in ISO standards.

1.9 Recycling / COSHH requirements

System components have a high recyclability. COSHH sheets for system components (where relevant) are available for download from our Bristorm Xtratech site.

1.10 Damaged coatings

Damaged coatings can be repaired by the application of a minimum of 100 micron coat of Zinc rich paints (as specified in EN ISO 1461 – Clause 3.1), to the manufacturers application procedure.

Zinc-rich paints must contain either:

- Between 65% to 69% metallic zinc or
- >92% metallic zinc by weight in dry film

1.11 White Rust

The occurrence of wet storage staining, commonly referred to as white rust, is not detrimental to the performance of the coating as it is predominantly zinc based. If required, the white rust can be removed by lightly wire brushing the area. Once done, the thickness of the coating must be rechecked. If the thickness is insufficient as per EN ISO 1461, the area must be repaired as described in clause I.10

2. Layout Design Guidance for Stopper 10 Bollards

2.1 General

HVM layout designs must be carried out by competent engineers/designers to comply with national, state and/or organizational requirements. It is important to note that this manual contains guidance, which may differ from specific state requirements. In these cases, it is recommended that the most onerous requirement should be followed.

2.2 Terminology

The following is taken from the requirements set out in the International Workshop Agreement IWA14-1:2013. For other National standards please refer to the relevant documents for guidance.

VSB	Barrier used to prevent potentially hostile vehicular access to a site, which depending on its type include as part of its design a foundation and/or operating equipment.
Passive VSB	VSB that after installation and deployment is static.
VSB Foundation	Foundation into which the VSB is installed and tested
HVM	Hostile Vehicle Mitigation.
Integral VSB Foundation	VSB foundation that is a structural component of the VSB.
Test Vehicle	Commercially available vehicle and load bed (for N1, N2 and N3 vehicles), the vehicle having an unmodified chassis and unmodified frontal structure, used in an impact test to evaluate the performance of a VSB
Day Cab	Driver compartment of N1, N2 or N3 vehicle that does not include overnight facilities.
Vehicle Datum Point	For N1, N2 and N3 day cab vehicles: reference line intersecting the load bed and the headboard.
VSB Datum Line	Vertical line taken pre-impact, from the ground to the furthest protrusion of the face of the VSB structure designed to withstand the impact*. *Varies from standard to standard
Impact Speed	Speed of the freely moving test vehicle before reaching the initial contact point
Vehicle Penetration Distance	Maximum perpendicular distance between the VSB Datum line and either the vehicle datum point or the furthest part of the load bed, achieved either dynamically or statically whichever is the greater*. *Varies from standard to standard
Major Debris	Piece of VSB, vehicle or ballast with a mass of ≥ 25 kg that becomes totally detached during the vehicle-VSB impact
Run	Overall length of the VSB with no physical break between End Anchors. *Terminology used by Hill & Smith Ltd – Bristorm (Not taken from IWA14-1:2013)

2.3 VBS Set-Back from the Infrastructure or the Asset

Considerations must be given to the performance rating, major debris distance and in-situ assets in order to determine the set back of the VSB. For other National standards, please refer to the relevant documents for guidance.

2.4 Integration with other adjacent HVM

Hill & Smith Ltd - Bristorm Bollards Stopper 10 can be installed adjacent to third party HVM system. However, extra care must be given in order to check if:

- The foundations don't clash
- The clearance between adjacent HVM doesn't exceed 1200mm
- The performance of the Bristorm HVM fence is not effected
- etc.

**List non exhaustive*

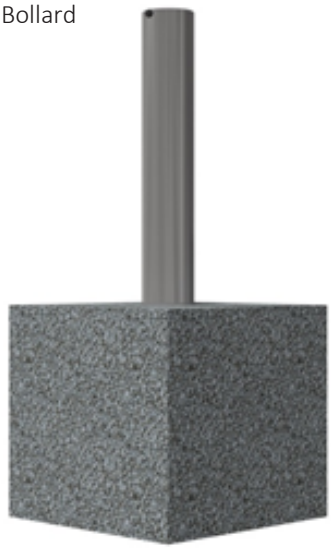
For advice/guidance contact Bristorm technical:
BristormTechnical@hill-smith.co.uk

2.5 Arrangements

Installation tolerances are specified on the Product detail drawings available on the Xtratech.

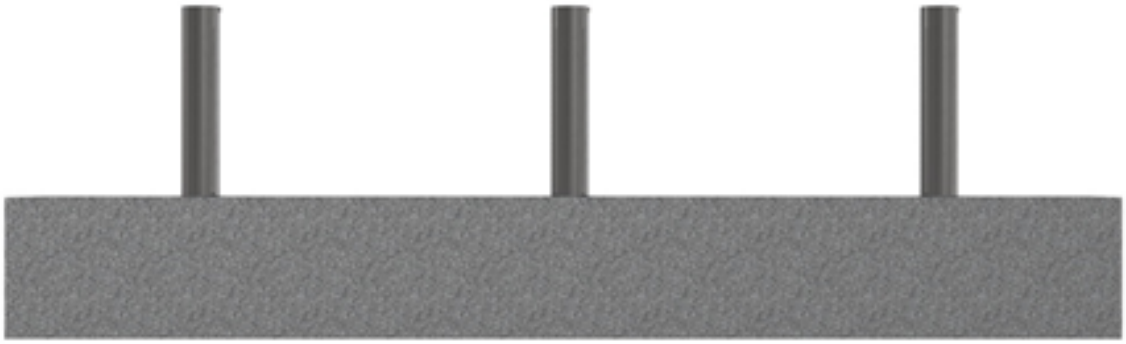
a) *Single Arrangements*

The Bristorm Bollards Stopper 10 was tested as a single Bollard only.



b) Special Arrangements

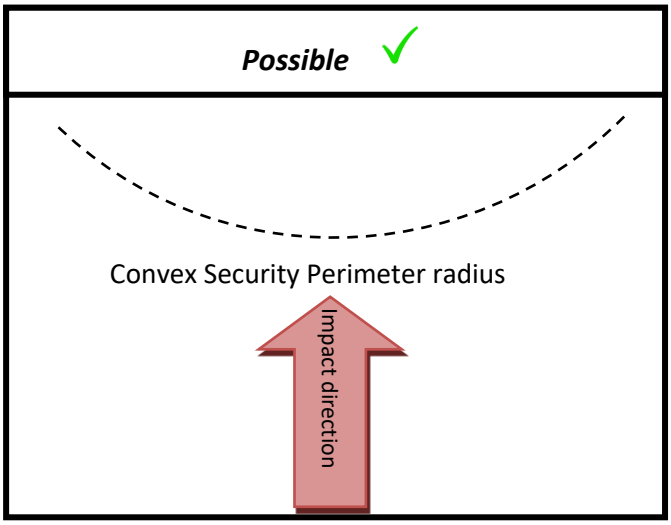
The Bristorm Bollards Stopper 10 has no maximum length for their runs as long as they are installed as per the relevant Product Detail Drawing.

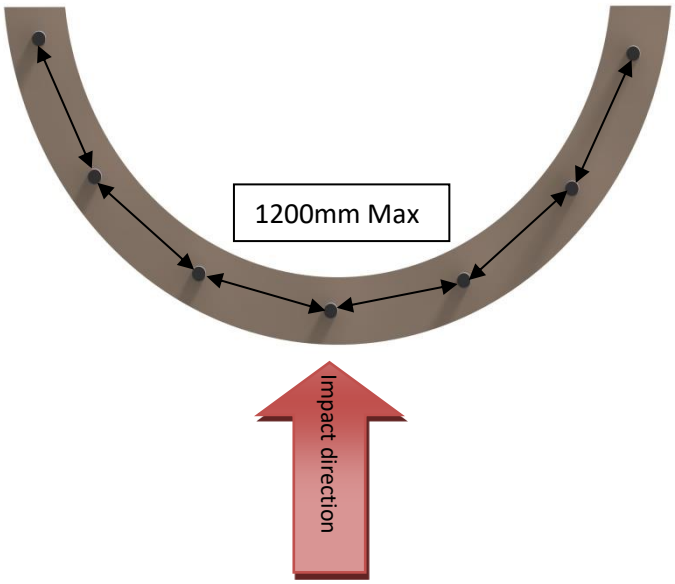


c) Curves

a) Convex

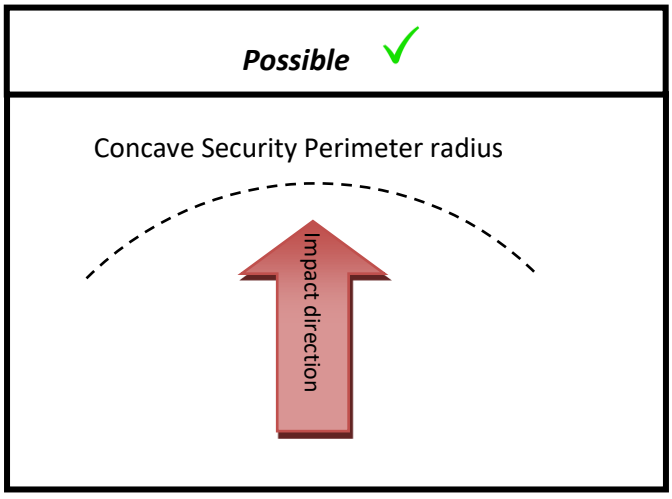
Bristorm Bollards Stopper 10 can be installed on a convex curve. The same rules apply as to a Straight Run. Care should be taken to ensure Max Distance between bollards is maintained.

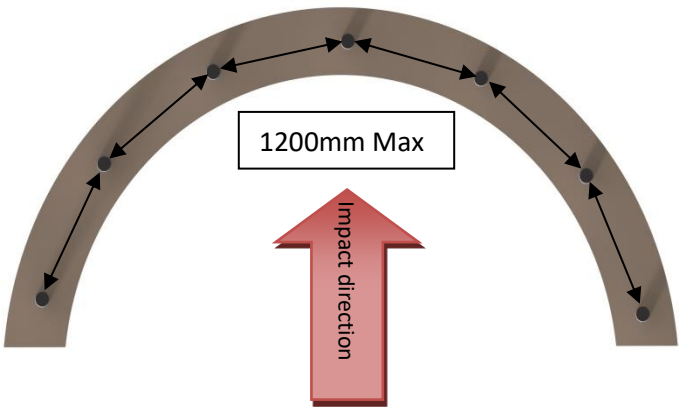




b) Concave

Bristorm Bollards Stopper 10 can be installed on a concave curve. The same rules apply as to a Straight Run. Care should be taken to ensure Max Distance between bollards is maintained.

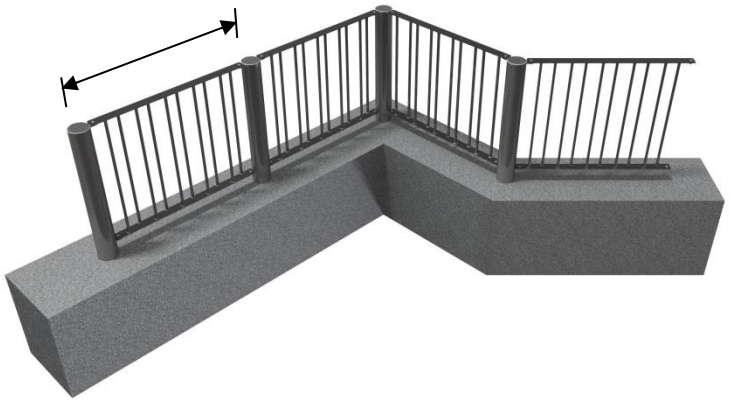




c) Pedestrian Guardrail

Bristorm Bollards Stopper 10 can be installed in conjunction with Class 4D Guardrail Panel Infill's. Panels can be installed in straight runs, faceted or angled runs using various post options. Posts & Panels must be installed to the relevant Product Detail Drawing. Angular Range: 55°- 305° in 5° increments.

1330mm Max C/C of Bollards



2.6 Slopes

If the slope exceeds 2.5°, the VSB must be installed Perpendicular to the ground.

2.7 Initial Marking Out (All Bollards)

a) Mark bollard datum points. The bollard datum point is defined as the centre of the Bollards.

2.8 Bollard Installation

a) Peg anchor foundation perimeter line around bollard datum point(s).

b) Excavate for bollard foundation and dispose of arising's.

c) Position the Bollards in order to check embedment and level.

d) Add the Pedestrian Guardrail using the appropriate fasteners (If using Pedestrian Guardrail).

- Additional brackets or timbers may be required to hold in place the assembly (by others).
-When assembling at this stage DO NOT shear the nuts on the Pedestrian Guardrail Fixings.

e) Pour concrete, then vibrate and smooth to promote water runoff. For concrete grade requirements see appendix F.

Note: - the position of the Bollards may move during the pouring of the concrete. Take time to reposition components as necessary and ensure the gap between bollards doesn`t exceed 1200mm.

f) Finish to required level and cure. Ensure any exposed steelwork is protected using a suitable zinc based coating.

g) Shear all security nuts used to secure the Pedestrian Guardrail.

3. Maintenance Procedures

3.1 General

Before any work or inspections are undertaken, ensure that the health and safety procedures required by the appropriate authority are in place.

Whilst the Bristorm Bollards Stopper 10 is essentially maintenance free, this section sets out procedures for the Inspection of 'new' and 'in service' Bristorm Bollards Stopper 10, to ensure performance of the bollards is maintained.

Organisations may increase their routine perimeter checking by adopting the measures set out in this document whereby a more efficient and responsive service can be provided to ensure the quick availability of spare parts whenever situations call for rapid action .

Enquiries concerning the Bristorm Bollards Stopper 10 must be addressed to Bristorm. See contact details in Appendix A. Although maintenance free, if the routine inspection raises any maintenance /repair issues, Bristorm should be contacted for further assistance. BristormTechnical@hill-smith.co.uk.

3.2 Inspection Programme

a) Personnel

All inspection personnel should be responsible and competent for the task. They should have undergone suitable training and be conversant with inspection requirements for the Bristorm Bollards Stopper 10.

See contact details in Appendix A.

b) Inspection Period

Inspection schedule varies depending on local environment. A detailed inspection should be carried out every 12 months using the Detailed Inspection Form for Bristorm Bollards Stopper 10 from Appendix B. However, if the local conditions are severe (dry, sandy, corrosive, humid, etc.) the inspection should be carried out every 6 months using the same form.

3.3 Actions Following an Impact with a Bristorm Stopper 10 Bollard

Bristorm should be informed immediately if the Bristorm Bollards Stopper 10 is subjected to any impact. See contact details in Appendix A.

No repairs should be carried out before an inspection has taken place and a report issued.

For further information on any of our products please call Oztime on 02 4577 5292.

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