

Siphonic Roof Drainage Association (SRDA)

Technical Advisory Note: Use of “Pre-Primed” Siphonic Drainage Systems

Issued: December 2025

1. Purpose of this Advisory Note

This Technical Advisory Note sets out the Siphonic Roof Drainage Association’s position on the use of “pre-primed” siphonic drainage systems, which are designed to be always full of water. These usually incorporate an *upward-angled (N-bend) connection* at the head of the downpipe to retain water in the horizontal collector pipework.

This configuration is increasingly being proposed as a means of accelerating priming on long collector runs which now must be properly assessed following the publication of BS 8490:2025. The SRDA considers this approach inappropriate as large volumes of water are always being stored at high level in the building.

2. Background

BS 8490:2025 requires siphonic roof drainage systems to be capable of filling and priming within 60 seconds under design rainfall conditions. This requirement ensures predictable operation, stable hydraulic performance, and system reliability across a range of storm events.

On longer systems, priming within 60 seconds may not be achievable without altering the roof zoning or adding additional downpipes. In this case the Standard allows storage in the gutters to be taken into account, however in the 2025 edition, much more robust methods of checking the acceptability of such storage have been included, to ensure storage is within the safe working parameters of the gutters. Some designers have proposed “pre-priming” arrangements whereby water in the collector pipe is deliberately retained upstream of the downpipe using an N-bend configuration.

Although these systems do not incorporate a traditional U-bend trap, they nevertheless retain water continuously and fundamentally alter system behaviour.

3. SRDA Position

The SRDA does **not endorse** the use of “pre-primed” siphonic systems or any design that deliberately retains water in the collector pipework. Such systems **should not be used** in UK construction in the view of the SRDA.

This position is based on the technical issues summarised below.

4. Technical Concerns

4.1 Departure from the Intent of BS 8490:2025

Pre-primed systems are a workaround that attempt to achieve faster priming performance artificially, by reducing the time taken to fill the systems.

In the view of the SRDA they contravene the intent of the standard, which is built on the assumption that siphonic systems:

- **start from empty,**
 - **prime naturally,** and
 - **operate predictably** under design rainfall.
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4.2 Unpredictable Hydraulic Behaviour

Retained water affects the priming sequence and increases sensitivity to:

- Entrained air not being as effectively flushed through the system during priming
 - residual debris and increased siltation risk
 - temperature variation affecting the accuracy of hydraulic calculations, stored water in a building is likely to be warmer than incipient rain, which will affect it's hydraulic characteristics
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4.3 Increased Structural Loading

Collector mains containing retained water impose permanent loads on pipe supports and building structure.

BS 8490 is based on empty pipework in dry conditions; significant deviations from this assumption can invalidate structural design considerations.

4.4 Debris Accumulation and Reduced System Reliability

The N-bend forms a partial or complete trap, which means that the retained water zone:

- slows self-cleansing velocities in lower return period events
- encourages sediment deposition

- could lead to greater biological filming of pipe which would accelerate the degradation of hydraulic performance

All this could mean that long-term reliability is compromised.

4.5 Water Hygiene, Condensation, Odour and Stagnation Risks

Permanently stored water in roof voids can stagnate, creating:

- biofilm growth
- odour migration into occupied areas
- undesirable maintenance conditions
- an enhanced risk of condensation when the more thermally conductive stored water is more effective at transmitting cold external temperatures into the building environment
- there is also a risk that pipework could freeze in very cold weather in an unoccupied and unheated building, which may be a risk for a developer between completion and tenanting

This is incompatible with the low-maintenance nature expected of siphonic system collector pipework.

5. Maintenance and Drain-Down Concerns

The practical and safety implications of maintenance on a pre-primed system are among the SRDA's strongest concerns.

5.1 No Safe Passive Drain-Down

Unlike standard systems, a pre-primed arrangement **cannot drain by gravity**. Significant volumes of water may remain stored at height even after roof outlets are isolated.

5.2 Risk of Uncontrolled Water Release

Unless specific drain systems are provided to drain the system, operatives may be forced to:

- drill relief holes,
- open fittings under uncertain water load, or

- attempt high-level pump-out.

This exposes contractors to risks of uncontrolled discharge, falling water, damage to ceilings, plant, and electrical services.

5.3 Absence of Standardised Isolation Procedures

BS 8490 assumes empty pipework outside rainfall events. Pre-primed systems require bespoke, non-standard procedures that are unlikely to be followed consistently by future FM teams.

5.4 Unsafe Working Conditions

Significant water volumes within suspended high-level pipework necessitate complex method statements, increased labour, specialist equipment, and elevated safety risks.

6. Fundamental Conclusion

A siphonic system that requires artificial “pre-priming” has not been correctly designed for its geometry.

Appropriate design solutions include:

- additional downpipes, and
- subdivision of roof zones

These approaches are consistent with BS 8490 and with established UK practice. Deliberately retaining water in a siphonic system is, in the view of the SRDA, not, and increases risk of water ingress into the building, should a pipe joint fail. With a normal system this is only a risk in extreme rainfall, with a pre-primed system, the risk exists 365 days a year.

7. SRDA Recommendation

The Siphonic Roof Drainage Association recommends that:

- **Pre-primed siphonic systems should not be used.**
- **Where long collector runs prevent compliant priming, the system geometry must be redesigned rather than artificially modified.**

The SRDA will continue to monitor industry practice and issue further guidance where necessary.