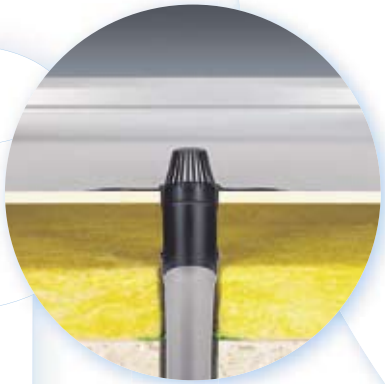
Flavent® flat roofing

KLÖBER
Professional roofing accessories



Contents

Overview of Klober

History

Klober was founded in 1960 in Schwelm, Germany. The philosophy of the company was to manufacture ventilation pipes on an industrial scale which could be installed on any roof – no matter what the pitch. During the seventies, the product range grew to include safety and support products as well as walkway systems and roof windows. By the start of the 1990's Klober entered the market with vapour permeable membranes which strongly influenced the way roofs were constructed.

The development of a ridge and hip solution also changed the installation methods within the whole industry. In 1997, Klober completed its offer for permeable underlays with the introduction of vapour control layers.

Its first overseas venture took place in 1985 when Klober established itself in the UK. Since then the company has continued to strengthen its position as a leading player in the European market by opening more subsidiaries in Austria, France, Italy, Poland and Belgium. Finally, in order to improve direct contact with its clients, Klober has recently set up sales organisations in Slovakia and the Czech Republic.

Technical support

Klober offers technical advice and design support on how best to incorporate its products into specific building types or particular forms and techniques of construction, whether for refurbishment or new-build projects. The service includes:

- Telephone helpline +44 (0)1509 500671/675
- CPD approved seminars
- Computerised U-value calculations
- Condensation risk analyses
- Site visits by technical staff
- Copies of relevant test reports and certification
- Product samples
- Technical literature
- Help and advice on roof detailing and on meeting the requirements of Building Regulations

Klober is a leading manufacturer of high-quality universal roofing ventilation and accessory products.

With offices in 9 countries and sales worldwide, Klober is truly an international company.

Its strategy is to supply the market with universal products, making specifying, ordering and installing both easy and fast.

Its product range is unrivalled and covers the following areas:

- Roofing underlays, wall membranes, vapour control layers and tapes
- Dry fix, eaves and valleys
- Prismax® daylight roofing
- Trapac® snow and safety
- Venduct® tile and slate vents
- Flavent® flat roofing

Klober is dedicated to building long-term relationships with its customers and partners, working together to understand market requirements to help design and develop new, fit-for purpose products whilst continuing to improve its existing range.

Quality

Klober uses performance and wind tunnel testing to ensure that its products are fully fit for purpose. Fire, abrasion, weather tightness and tear tests are just a few of the areas which are used to ensure safety, longevity and durability. Strict quality measures are in place throughout the entire lifecycle of a product - from the initial development of a prototype to the full production roll-out. Later, during the main production run, quality checks are carried out on a daily basis. As a result, Klober continues to improve the quality of its products and production methods.

Environment

Looking after the environment is not just a phrase for Klober. Even at the first stage of sourcing raw materials, Klober considers the impact on the environment. Valuable raw materials are conserved and as such the environment is protected.

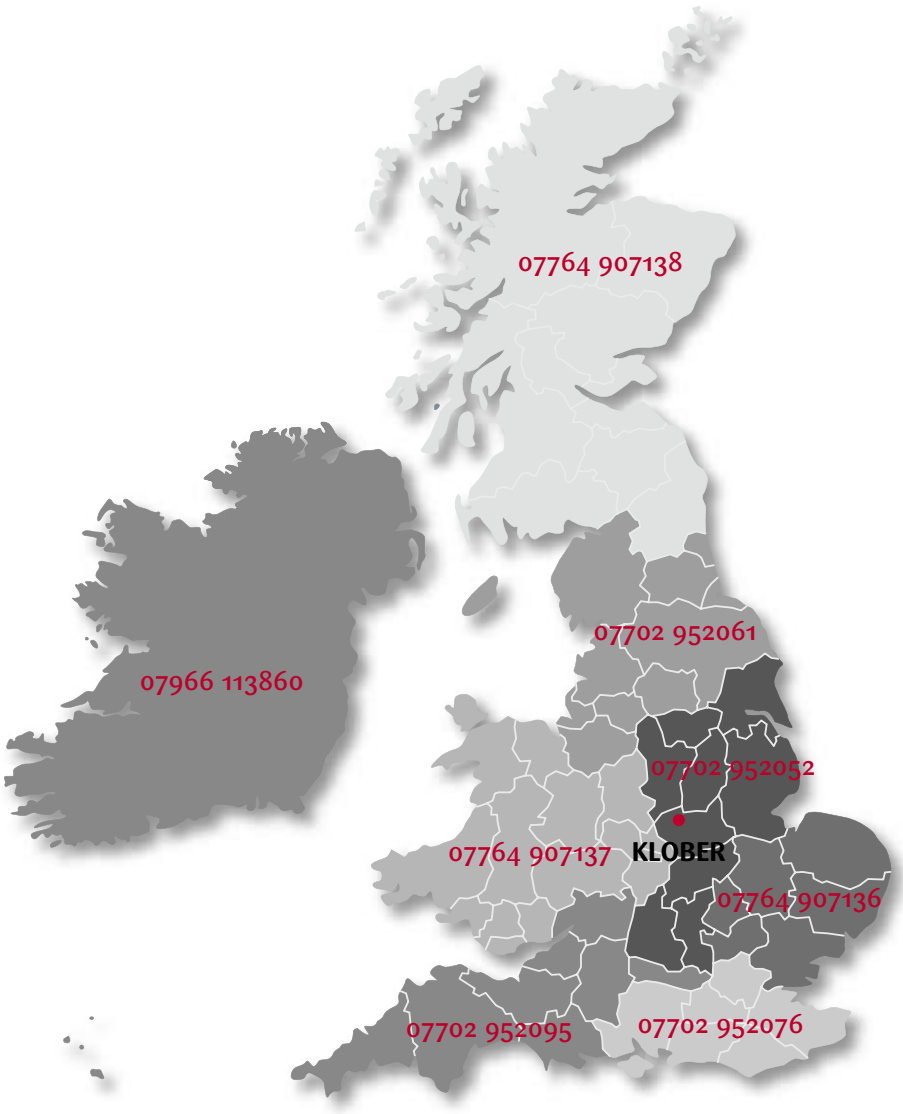
Klober's Permo® air-open and vapour-permeable underlays, for example, are a pure polyolefin product that can easily be recycled and can even be categorised as a normal household waste.

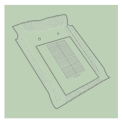
Certification

All of Klober's products conform to the relevant Building Regulations and British Standards and, where appropriate, are BBA, BRE, IAB and CE certified.

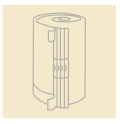
FM95146

Contact details & product range



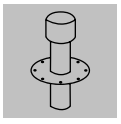


Venduct®
tile & slate vents



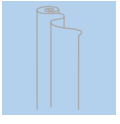
Dry fix roofing,
eaves & valleys

Trapac®
snow & safety



Flavent®
flat roofing

Prismax®
daylight roofing



Underlays,
wall membranes &
adhesive tapes

KLÖBER

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For information on Klober products, how to find your nearest stockist, literature downloads, training days, useful industry links, regulations and Klober's product certifications visit: www.klober.co.uk

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See map opposite

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Guarantee

All products supplied by Klober Ltd are covered by a 10 year guarantee against manufacturing defect. Products are not covered for colour stability, poor workmanship or incorrect installation.

All products should be installed as per our literature/fixing instructions and/or guidelines set out in BS5534, BS5250 and our BBA/BRE/IAB certificates.

Ventilated Cold Roof

Introduction

The Klober range of flat roof ventilators and rainwater outlets has several advantages for specifiers, contractors and merchants:

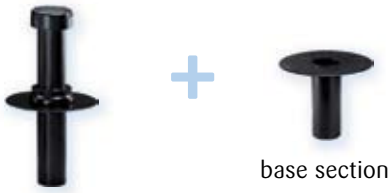
- Simple design with fewer component parts
- Modular design enables parts to be combined
- The amount of stock needed to be kept by contractors and merchants is reduced
- Pipes can be cut to accommodate varying roof thicknesses and extensions are available for deeper roof constructions

Example of how the modular design can allow components to be interchanged to suit different applications

Breather vent for ventilated flat roofs

base section of a breather vent

Mechanical extract and soil vent pipe for ventilated flat roofs

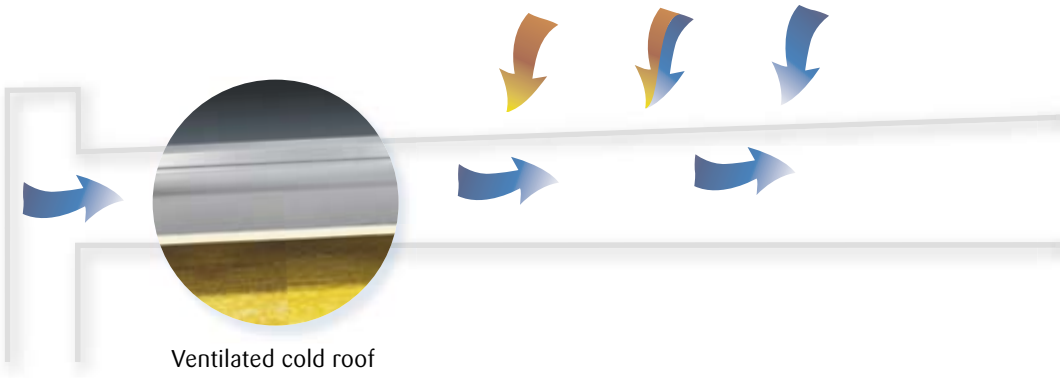


base section

Rainwater outlet for ventilated flat roofs

base section

leaf filter



Ventilated cold roof

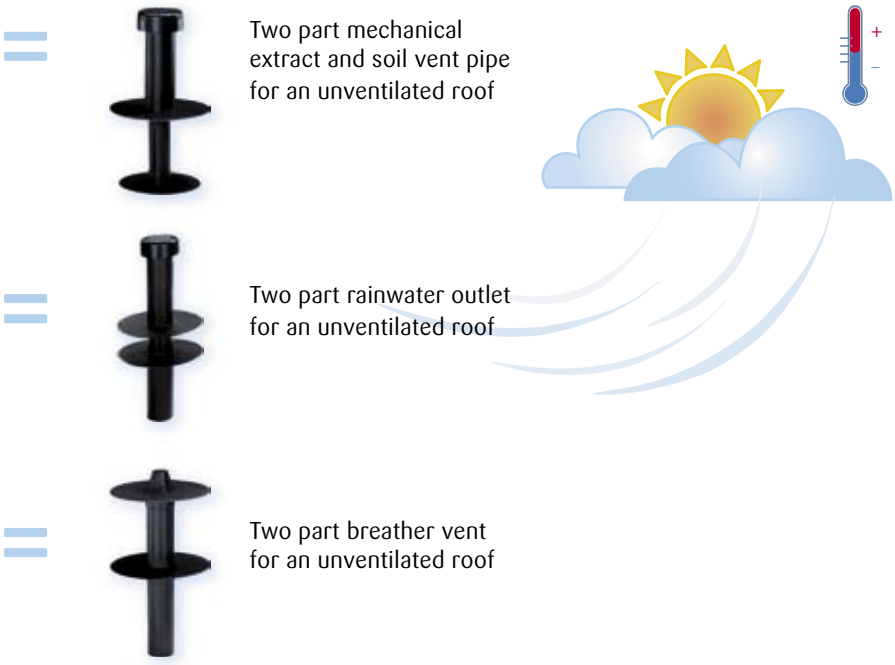
Individual component parts

The units are available preassembled, however you can order individual component parts from Klober stockists to create your own units for:

- Breather vents
- Renovation vents
- Flat roofing vents
- Rainwater outlets

Note: While only a basic technical knowledge is required to assemble the units correctly, Klober recommends ordering the units pre-assembled.

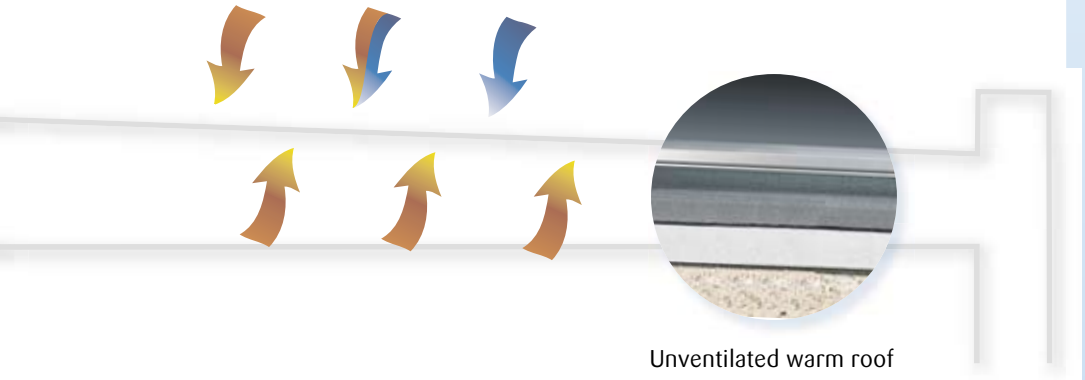
Unventilated Warm Roof



Two part mechanical extract and soil vent pipe for an unventilated roof

Two part rainwater outlet for an unventilated roof

Two part breather vent for an unventilated roof



Unventilated warm roof

For all weather conditions

All Klober vents and outlets are made from high impact PVC and are resistant to the effects of frost and UV rays. The material is dimensionally stable through temperature variation, will not become brittle and is colourfast. Klober vents have been designed to continue to operate effectively under driving rain and snow.

Modular design

Klober flat roof vents and outlets have a modular design and come preassembled. They are suitable for ventilated or unventilated flat roofs and can accommodate varying roof thicknesses.

By professionals for professionals

Klober provides a comprehensive technical advice service for installers through their brochures and technical helpdesk. All projects should consider individual circumstances, local conditions, Local Authority guidelines and meeting the current Building Regulations.

Types of connectors

Available as a two-piece unit for unventilated flat roofs

Combined with the right base section, unventilated insulated roofs can be sealed securely into the vapour barrier.

The following gives six connection examples using a two-piece 100mm diameter pipe:

0. Upper section: high impact PVC
   Lower base section: high impact PVC
1. Upper section: bitumen
   Lower base section: high impact PVC
2. Upper section: screw-in connection
   Lower base section: high impact PVC
3. Upper section: high impact PVC
   Lower base section: bitumen
4. Upper section: bitumen
   Lower base section: bitumen
5. Upper section: screw-in connection
   Lower base section: bitumen

Application

Two-piece units need to be joined with a PVC adhesive (Tangit® or similar) with a gap of not less than 0.6mm to ensure that no moisture or foul smells infiltrate into the roof structure.

Extension pieces can be used to accommodate thicker insulation.

In the case of green roofs, vents must project a minimum of 150mm from the top of any vegetation.

If using a slide-in sleeve for 100mm diameter pipes, ensure it is fixed securely with PVC adhesive (Tangit® or similar).

Standards

DIN 18195-9

Single-piece products

Single-piece units, for ventilated flat roofs, can be combined with base sections to create two-piece units suitable for unventilated flat roofs.

Klober's flat roof vents and outlets can be connected to the roof membrane using the following flanges:

PVC flange:

For connections to PVC and liquid applied membranes.

Bitumen flange:

For connections to bitumen based felts. This solution has a strong 5mm polymer-bitumen flashing that provides a fast, secure waterproof seal.

Screw-in connection:

For high-polymer plastic membranes. The screw in connection allows a fast and waterproof connection of DN100 and DN125 vents to many different types of plastic roof membranes. Screw in connections must be positioned above the lining, e.g. gravel filling, vegetation layer.

Installation

Projection of vents above roof level

The height of the vent should be measured from the top of the finished roof covering, e.g. roof membrane, gravel topping or in the case of green roofs the top of the vegetation layer.

- In areas prone to large amounts of snow a higher vent projection may be necessary
- Standard vents can be extended using the Klober extension pipes.

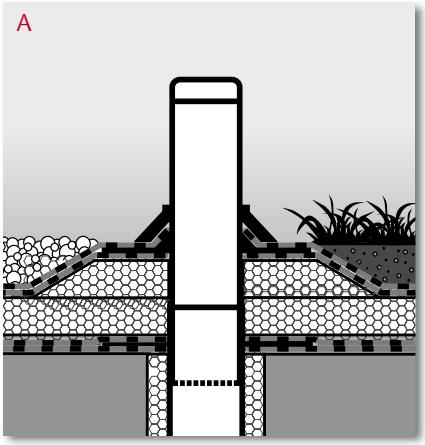
Positioning of the screw-in connection

Screw-in connectors must be positioned above the lining, e.g. gravel filling, vegetation layer. See diagram A

Installation instructions

- Klober recommend that flange connections should be made from the same material as the roof membrane. If different materials are used, they must be compatible with each other
- The flange must be free of dust, oil and moisture which could cause poor bonding to the roof membrane
- Ensure there is proper provision for movement in all fixings and seals
- A minimum distance of 0.3m should be left between other roof outlets, wall abutments, movement joints or roof edges in order to give adequate access for installation and maintenance
- If components are fitted with connecting flanges that are not part of the original Klober PVC, bitumen or screw-in connections, they must be made fully waterproof to the top of the unit

A



Connection

Material	PVC flashing flange	Bitumen flashing flange	Screw-in connection only in DN100 and DN125
Bitumen	Y*	Y	
CR (polychloroprene Indian rubber)			Y
CSM (chlorosulfonated polyethylene)			Y
ECB (ethyl copolymer bitumen)			Y
EPDM (ethyl propylene India rubber)			Y
EH VAE (ethyl vinyl acetate copolymer)			Y
FPO (free polyolefins)			Y
IIR (isoprene isobutylene India rubber)			Y
NBR (nitrile butadiene India rubber)			Y
PE (polyethylene)			Y
PEC (chlorinated polyethylene)			Y
PIB (polyisobutylene)			Y
PVC (polyvinylchloride)	Y		Y

* The hard PVC flange must be abraded with a wire brush. A bitumen undercoat should not be used.

Pipe Sizes

Pipe sizes
Klober flat roof vents and outlet pipes are available in the following standard diameters:
DN 70
DN 100
DN 125

Diameters: 100/97, 100/70, 100/50
Klober adaptor pipes can be used to connect standard DN diameter pipes to existing non standard pipework. This is especially useful on refurbishment projects.

Product codes

Adaptor 100/97 mm	KE 8050
Adaptor 100/50 mm	KE 8051
Adaptor 100/70 mm	KE 8052

Larger diameters
Larger diameters can be achieved simply by combining several different diameter vent pipes. This applies to breather vents and mechanical extract terminals only.

Note: it is not possible to connect mechanical extract terminals with soil vents pipes.

Ø ventilation performance in mm	Surface area in mm²	Klober vent DN 70	Klober vent DN 100	Klober vent DN 125
1200	11300	3	2	1
1300	13300	3	2	1
1400	15400	4	2	1
1500	17700	5	2	2
1600	20200	5	3	2
1700	22700	6	3	2
1800	25400	7	3	2
1900	28400	7	4	3
2000	31400	8	4	3
2100	34600	9	4	3
2200	38000	10	5	3
2300	41500	11	5	4
2400	45200	12	6	4
2500	49100	13	6	4
2600	53100	14	7	5
2700	57300	15	7	5
2800	61600	16	8	5
2900	66100	17	8	6
3000	70700	18	9	6

Note: For each calculation these figures have been rounded up.

Extensions and connectors

Upper pipe extensions for Klober flat roof vents

- The pipe extension can be shortened and the vent can be taken apart manually and joined using PVC adhesive (Tangit® or similar)

DN 70 KF6806:

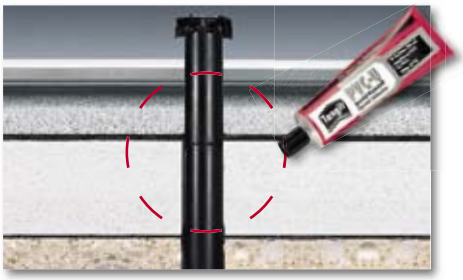
- Extension (up to 243mm)
- Extension is required for roof thicknesses over 40mm

DN 100 KF6807:

- Extension (up to 276mm)
- Extension is required for roof thicknesses over 130mm
- Klober recommend using the slide-in sleeve as a connector

DN 125 KF6808:

- Extension (up to 270mm)
- Extension is required for additional roof thicknesses over 110mm



Insulation layer extension for two-piece Klober flat roof vents

- Pipe extensions can be shortened

DN 70 KF6806:

- Extension is required when insulation layer is thicker than 194mm (up to 243mm)
- Vents can be taken apart manually and joined using PVC adhesive (Tangit® or similar)

DN 100 KE 8006:

- Extension is required when insulation layer is thicker than 275mm (up to 95mm) Screw-in type extension

DN 125 KF6808:

- Extension is required when insulation layer is thicker than 235mm (up to 270mm) Vents can be taken apart manually and joined using PVC adhesive (Tangit® or similar)

Insulation layer extension for two-piece Klober flat roof rainwater outlets

- By removing the flange you can use the pipe as an extension piece
- The pipe extensions themselves can be shortened
- The extensions are joined using PVC adhesive (Tangit® or similar)

DN 70 KF 6500:

- Extensions are necessary when the thickness of the insulation exceeds 215mm

DN 100 KF 6510:

- Extensions are necessary when the thickness of the insulation exceeds 264mm

DN 125 KF 6520:

- Extensions are necessary when the thickness of the insulation exceeds 264mm

Breather vent extension pipes for green roof structures

There should be a minimum distance of 150mm between the top of the vent and the top of any vegetation. Pipe extensions are bonded together with PVC adhesive (Tangit® or similar).

Insulation extension

Used for extending two-piece rainwater outlets or mechanical extract and soil vent pipes when there is a very thick insulation layer.

Please note that Klober's flat roofing vents and outlets are designed to accommodate standard insulation thicknesses, however extensions are available for deeper roof constructions.

Extensions are bonded together with PVC adhesive (Tangit® or similar).

Breather Vents

Product features & benefits
- Prevents cracking of roof membrane
- Allows moisture to be vented from the roof
- Does not effect the thermal performance of the roof insulation
- Watertight, strong and durable
- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Roof/loft vents
- Optimum air circulation according to DIN 4108
- Fast assembly due to individual flange connections
- Perfect connection to all roof types
- Particularly secure against water ingress

Material
High impact PVC

Colour
Black

Dimensions
DN 70, 100, 125
Available in special diameters for renovation

Packaging
In cartons or space-saving wire cages

Product codes
Please refer to the table opposite

Regulations and certifications
DIN 4108

Related products
- Pipe extensions
- Tangit® PVC adhesive

Single or two-piece vents

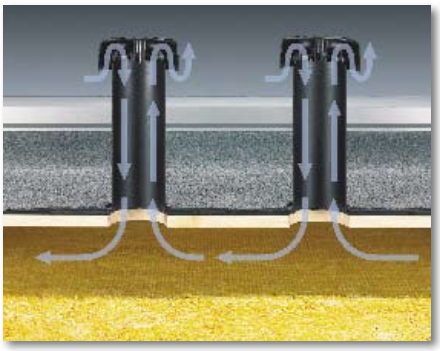
Single piece breather vent for unventilated warm roofs

Use as a breather vents
Breather vents are used to allow moisture to escape from unventilated warm roofs. Moisture can get trapped within the roof during construction or from water penetrating the roof membrane. If ventilation of this trapped moisture is not provided, heat from the sun can cause gases to expand, which in turn can cause blistering and tearing of the roof membrane.

Warm unventilated roof

Installation
Because of the way some flat roofs are constructed, moisture is not always able to flow freely from one section of the roof to another. For this reason a greater number of vents is preferable over a smaller number of large diameter vents. This ensures trapped moisture can escape from every section of the roof. As a rule of thumb a DN70, DN100 or DN125 vent should be used every 25m². When installing a two-piece vent the lower base section should be filled with insulation in order to avoid condensation and cold bridging through structural slabs.

Use as a roof/loft vent
When used as a roof/loft vent, ensure that air circulates above the insulation in two-ply unventilated flat roofs according to DIN 4108. If a loft space has a wall or structure that impedes cross ventilation, roof vents will be required for air circulation within the space.



Cold ventilated roof

Installation
The number of vents required for cross ventilation should be calculated in accordance with DIN 4108. The ventilation should be spaced equally across the roof. A vapour barrier should also be used with this structure.

Special applications for breather vents

Refurbishment and renovation of vents

Old or damaged vents can be easily replaced without the need for expensive removal and replacement of the roof membrane.

Installation

To replace old or damaged vents, simply remove or cut the old weather cap and replace it with a Klober vent which is one size larger than the existing vent pipe. The gap between the new Klober vent and the existing vent pipe should be filled using a sealant material such as Pasto®.

Use as roof drying vents

Moisture that has infiltrated a roof structure can be removed through a Klober vent using a water suction device. This is a quick, easy and economical alternative to removing the roof structure and replacing the damaged roof elements.

Installation

A hydrometer or a thermal camera can be used to establish where the water has accumulated and a DN100 or DN125 breather vent is then installed at these locations. The insulation under the vent is then removed and the water is sucked out. When all the water has been removed the vent is refilled with insulation and the vent cap replaced.

Overview of breather vents	DN70 limited extension	DN100 limited extension	DN100 extendable	DN125 extendable
Hard-PVC flange	KF6000	KF6010	KF6020	KF6030
Bitumen flange	KF6001	KF6011	KF6021	KF6031
Screw-in connection		KF6012	KF6022	KF6032
Lower base section PVC flange		KF6100		
Lower base section bitumen flange		KF6101		

Use in refurbishment and renovation of old vents

- Old pipes can stay in the roof
- Replacing the new vent saves time and money
- Connections inside of the building will not be damaged when dismantling old vents

Drying out the roof

- The considerable expense of removing and replacing the old roof is avoided
- Simple and efficient way of drying wet insulation

Material

High impact PVC

Colour

Black

Characteristics

- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Dimensions

DN 70, 100, 125
Available in special diameters for renovation

Packaging

In cartons or space-saving wire cages

Product codes

Please refer to table

Related products

- Pipe extensions
- Tangit® PVC adhesive
- Pasto®

Regulations and certifications

DIN 4108

Mechanical Extract and Soil Vent Pipes

Product features & benefits
- Unique design allows optimum ventilation
- Fast installation due to individual flange connections
- Secure, watertight connection to all roof types
- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Area of application
Klober's mechanical extract and soil vent terminals allow optimum air flow for motor and static ventilation in kitchens and bathrooms.

Material
High impact PVC

Colour
Black

Dimensions
DN 70, 100, 125
Available in special diameters for soil pipes without socket connections for DN 100

Packaging
In cartons or space-saving wire cages

Product codes
Please refer to the table opposite

Regulations and certifications
DIN 4108

Related products
- Pipe extensions
- Tangit® PVC adhesive

Installation for ventilated cold flat roofs
The correct size socket connection must be used to avoid foul odours and moisture passing into the roof space. In order to achieve a professional connection to the roof membrane the correct kind of flange must be used.

Installation for unventilated warm flat roofs
A two-piece system is used for unventilated flat roofs. In this example the upper section of the vent is joined to the lower base section using PVC adhesive (Tangit® or similar). In this way any insulation thickness can be accommodated.

Room Vents
Single and two-piece roof vents give efficient and reliable extract to rooms such as kitchens and bathrooms.

Soil Vents
Soil vent pipes prevent back siphonage occurring and reduces the likelihood of blockages in waste pipes.

Special applications for ventilating, mechanical extract and soil vent pipes

Refurbishment/renovation vents

When refurbishing or renovating vents for pipes without a 100 mm diameter socket saw off the old pipe above the roof membrane and join the new vent using a sealing compound or PVC adhesive (Tangit® or similar).

Inspection vents

Pipe cleaning can be carried out easily from roof level. This is important to retain a free flow of air and to ensure that air quality is maintained.

Overview of breather vents	DN70 limited extension	DN100 limited extension	DN100 extendable	DN125 extendable
Hard-PVC flange	KF6040	KF6050	KF6060	KF6070
Bitumen flange	KF6041	KF6051	KF6061	KF6071
Screw-in connection		KF6052	KF6062	KF6072
Lower base section PVC flange	KF6500	KF6510		KF6520
Lower base section bitumen flange	KF6501	KF6511		KF6521

Product features & benefits

- Can be inserted into existing DN 100 pipes
- Fast installation due to individual flange connections
- Secure, watertight connection to all roof types
- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Material

High impact PVC

Colour

Black

Dimensions

DN 70, 100, 125
Available in special diameters for soil pipes without socket connections for DN 100

Packaging

In cartons or space-saving wire cages

Product codes

Please refer to table

Regulations and certifications

DIN 4108

Related products

- Pipe extensions
- Tangit® PVC adhesive

Rainwater Outlets

Product features & benefits
- Can be inserted into existing pipes Slim lower base sections for narrow ceiling ducts
- Fast installation due to individual flange connections
- Adjustable height
- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Area of application
Single-piece flat roof rainwater outlets are suitable for ventilated flat roofs and two-piece flat roof rainwater outlets are suitable for unventilated flat roofs.

Material
High impact PVC and bitumen connection

Colour
Black

Dimensions
DN 70, 100, 125
Available in special diameters for renovation

Packaging
In cartons or space-saving wire cages

Product codes
Please refer to table opposite

Regulations and certifications
DIN EN 1253

Related products
- Pipe extensions
- Tangit® PVC adhesive
- Leaf filter

Two-piece and single-piece rainwater outlet

Flat Roof rainwater outlets
Klober rainwater outlets are available with shatterproof leaf filters. They are available as a single piece unit, used for ventilated flat roofs, or they can be combined with an adjustable height base section for use with unventilated flat roofs.

Ventilated cold roof

Unventilated warm roof

Installation
- Rainwater outlets and emergency overflows should be fixed to the substructure of the roof
- Flanges should be below the roof membranes finished level to ensure that water does not puddle around the outlet
- Rainwater outlet flanges should be compatible with the roof membrane to ensure a watertight seal is made (see table for types of connections)
- A two-piece outlet must be used to connect to the vapour barrier in a ventilated roof
- The position and number of outlet pipes should be calculated using current regulations and best practice to ensure that surface water can drain away effectively
- It is recommended that roofs with interior drainage must have one at least one emergency overflow or several exterior downpipes
- Rainwater outlets should be freely accessible for maintenance

Special applications for lower base sections

Lower base section for soil vents

Vent pipes for unventilated warm roof can be made in to a two-part assembly and joined to a vapour barrier using a lower base section.

Overview flat roof outlets/ lower base sections	DN70	DN100	DN125
Leaf filter (order separately)	KF6819	KF6826	KF6827
Hard-PVC flange	KF6500	KF6510	KF6520
Bitumen flange	KF6501	KF6511	KF6521
Lower base section PVC flange	KF6500	KF6510	KF6520
Lower base section bitumen flange	KF6501	KF6511	KF6521

Product features & benefits

- Simple design with fewer component parts
- Modular design enables parts to be combined
- The amount of stock needed to be kept by suppliers is reduced
- Slim lower base sections for narrow ceiling ducts
- Fast installation due to individual flange connections
- Fire rating B2
- Resistant to temperatures -40°/+80°C (no direct flame contact)
- Flow temperature max. +40°C

Area of application

When combined with a flat roof vent the rainwater outlet is used as the lower base unit.

Material

High impact PVC and bitumen connection

Colour

Black

Dimensions

DN 70, 100, 125

Packaging

In cartons or space-saving wire cages

Product codes

Please refer to table

Regulations and certifications

DIN EN 1253

Related products

- Tangit® PVC adhesive

KLÖBER

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