VILPE for Low-Pitched Roofs

VILPE®
Innovative and Easy

Contents

VILPE®

ALIPAI Low Pressure Air Vents

There is always some moisture in roof structures for various reasons. Moisture is generated by the diffusion of water vapour generated when the building is in use. Moisture within the structure is generated by convection. Some moisture is transferred into the structures from the outdoor air. The moisture in structures after the building is completed is caused by faults in storage or protection of the building materials.

Water content in some building materials:
- concrete: ~80 kg/m^3
- lightweight concrete: 80-180 kg/m^3
- timber: 20 kg/m^3

If the roof is not ventilated, moist air from inside the building rises to the roof and becomes condensed on the internal surface of the felt, causing moisture in the thermal insulation. In winter, the moisture freezes and the thermal insulation loses its insulating properties, resulting in a significant rise in heating costs. In summer, bubbles and cracks appear in the roofing. Excessive moisture promotes the growth of fungi, moulds and micro-organisms.

Alipai ventilates the roof structures and ensures efficient removal of moisture.

With Alipai low pressure air vents, the thermal insulation remains dry, the air quality in the rooms is improved and heating costs become lower.

Production materials

Alipai vents are made from noncorrosive, weatherproof and impact proof, recyclable polypropylene plastic (PP), which is black throughout. The plastic is also UV protected. The material is chemically neutral and endures continuous exposure to temperatures from -30°C to + 80°C, temporarily from -40°C to +120°C.

Alipai

Alipai Low-Pitched/Inclined

Alipai Ridge 27°

Alipai Ridge 14°

Structure and functioning

The functioning of the Alipai low pressure air vent is based on the differential air pressure generated by airflows, i.e. wind. The unique structure of Alipai causes additional draught in the vent pipe, increasing thereby the flow rate. All that is required for efficient ventilation is the unobstructed access of replacement air into the ventilated structure. Alipai stands on a firm, grooved and wide flange. The patented flange shape and a novel type of grooving on both sides of the flange ensure the best possible adhesion to bitumen roofing. The width of the flange is 150 mm. Pipe size Ø 75, 110 or 160 mm is selected on the basis of the ventilation need. Alipai low pressure air vents 'breathe' for the roof structure:

- the vents extract the moist air rising up to the roof before it damages the structures
- the vents prevent bubble formation and roof material peeling
- the vents extract the condensate from the lower waterproofing surface

Applications

Alipai low pressure air vents are available for the low-pitched, inclined and ridge sections of low-pitched roofs.

Alipai Ridge low pressure air vents are intended for the ridges of low-pitched roofs. The angle of the flange makes it possible to install the low pressure air vent to the ridge, ensuring improved ventilation of the roof. The flange is installed, following exactly the shape of the ridge, whereby the installation is tight and durable.

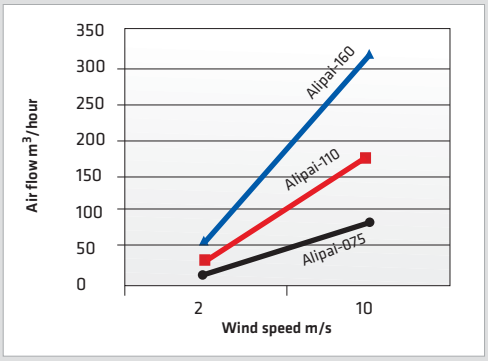
Alipai Insulated low pressure air vent minimises the freezing risk of roof structures in moist and severe winter conditions.

Standard sizes

Product	ø mm	Height
Alipai	ø 75	390 (P = 300)
	ø 110	460 (P = 320)
	ø 160	530 (P = 450)
Alipai Insulated	ø 110	610 (P = 470)
Alipai Ridge 27°	ø 75	480 (P = 380)
	ø 110	450 (P = 310)
	ø 160	500 (P = 430)
Alipai Ridge 14°	ø 110	460 (P = 320)
Alipai Low-Pitched/ Inclined	ø 110	680 (P = 550)
	ø 160	640 (P = 490)
Alipai Lenghtening piece	ø 75	160
	ø 110	120

P=pipe height from roof surface, excl. the cowl (max. height of snow)

Alipai specifications



Installation

• Alipai low pressure air vents are installed on the roof in rows, about 1 unit/75 m^2 (Alipai -75), 100 m2 (Alipai-110) and 150 m^2 (Alipai-160). The low-pressure air vents are installed in every 10 meters at max. The air vents should not be installed at the bottoms of roof valleys. A HEVAC engineering office can make a specific design, especially for the ventilation of extremely wet premises, providing the number of low pressure air vents that are needed, together with their positions.
• If the insulation material contains ventilation grooves, the roof ventilation will be more efficient with Alipai low pressure air vents. Thermal insulation materials with ventilation grooves are installed on the roof so that the grooves are pointing at the ridge. A ventilation groove is also cut under the whole row of low pressure air vents, so that the cut groove will meet the ready ventilation grooves in the thermal insulation.
If any pipes, roof outlets or similar are installed on top of ventilation grooves, bypass grooves should be cut in the thermal insulation to allow the air to flow. On large roofs with diverse sloping, the ventilation grooves for low pressure air vents are positioned on the crests and also in the sloping spouts to achieve more uniform ventilation.
• Cut a hole with the size of the pipe diameter of the Alipai air vent into the hard thermal insulation at the installation point of the air vent.

BITUMEN ROOFINGS:
• The flange of Alipai low pressure air vent is always installed between two bitumen plies (base felt).
• Install the Alipai on top of the base felt, and in case of a single-ply bitumen roofing install under the Alipai air vent flange a separate piece of the roofing that is 300 mm larger than the external dimension of the Alipai air vent.
• Pour hot bitumen (max. temperature 240°C) from a can on top of the base felt, on an area with the size of the Alipai air vent flange. Press the flange of the Alipai air vent evenly into the bitumen, making sure that the hole in the flange would be aligned with the hole cut in the base felt and the insulation. In case of an underlay of tongue-and-groove boards, we recommend fixing the flange of the Alipai air vent to the boards with felt roofing nails in every 10 cm from the outer edge.
• Place the base felt on the flange of the low pressure air vent and fix it by gluing with hot bitumen.
• When installing the top felt, cut it as precisely as possible at the foot of the pipe section of the Alipai air vent, and fix it to the flange of the Alipai air vent by gluing with hot bitumen or heating with gas.
• Secure the joint between the Alipai pipe and the roofing with rubber bitumen glue.

PVC ROOFINGS:
• In case of thermal insulation roofs fix the Alipai air vent on top of the insulation with four Croco fasteners that contain either a screw if fixing to a sheet steel underlay, or a concrete nail/concrete screw if fixing to a concrete underlay. To wooden underlays the Alipai air vent is fixed either with felt nails or screws with a wide head.
• The manufacturers of roofing materials provide ready elements with a hole and sheathing for the installation of low pressure air vents.
• Pull a piece of roofing material with a hole in it over the Alipai air vent, so that the covering material would rise on top of the Alipai air vent pipe by 4 to 5 cm. Fix the piece to the roofing by welding.
• Then pull a sheathing made of the roofing material over the Alipai air vent and secure the joint between the sheathing and the piece, using a glue provided by the manufacturer of the material.
• Fix the sheathing to the upper part of the Alipai air vent pipe, using a tightener.

Roof Outlets

AM and CM roof outlets drain rainwater and melting snow waters from low-pitched roofs which are inclined inwards.

Functioning and structure

AM roof outlets are equipped with filters for full-bore flows. The filter is intended for guiding away rainwater during downpours. The same outlet functions both as a full-bore flow outlet and a traditional roof outlet. The outlet incorporates two screens, and by removing the full-bore flow screen the outlet can be changed into a traditional roof outlet. The efficiency of these two modes of AM roof outlets is proved by the research report LVI 5188 by VTT Technical Research Centre of Finland.

The body of the AM roof outlet contains a stainless steel flange to which a flange made from the roofing material is fixed. The outlet includes a pipe with the length of 350 mm, Ø 50, 75, 110 or 160 mm.

230 V heating cable is provided as optional equipment. The AM roof outlet is used together with a self-regulating heating cable, which ensures the drainage of rainwater and melting snow water.

The body of the AM roof outlet contains a 50 mm wide rigid flange, which rests on the insulation layer. The flange contains fixing holes for anchoring the outlet to the load-bearing structure. The outlet is connected to the roofing, following the instructions of the roofing manufacturer.

CM roof outlet is a traditional roof outlet for bituminous roofings. Flange width is 150 mm and its grooving on both sides ensures the best possible adhesion to the bituminous roofing. The outlet pipe size is Ø 75 or 110 mm. CM roof outlets are completely watertight. Robust flanges ensure durable connection to the bitumen material.

Standard sizes

Item	ø mm	Pipe length, mm from the outfall base
AM-50	**50**	**340**
AM-75	**75**	**340**
AM-90	**90**	**340**
AM-110	**110**	**270**
AM-160	**160**	**345**
Heating cable, 230 V/14 W		
CM-75	**75**	**297**
CM-110	**110**	**143**

Applications

AM roof outlet is suitable for fixing multiple and single-ply bituminous roofings and plastic-based single-ply roofings.
CM roof outlets are recommended for bitumen roofings.

AM roof outlet with bitumen flange

AM roof outlet with PVC flange

CM roof outlet

Production materials

Roof outlets are made from noncorrosive, weatherproof and impact proof, recyclable, throughout coloured and non-heat conductive polypropylene (PP) or polyethylene (PE), which also sustains the contamination loads of industrial environment and traffic. The plastic is also UV protected. The material is chemically neutral and it endures continuous exposure to temperatures from -30°C to + 80°C, temporarily from -40°C to +120°C.

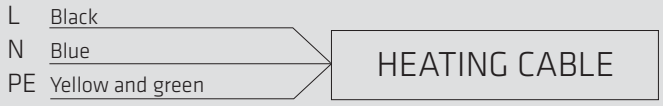
Installation of heating cable

We recommend supplying roof outlets with heating cables, to avoid the formation of ice. The heating of roof outlets is needed especially when the outdoor temperature is around zero and in case of a cold building. The heating cable is intended to operate when the air temperature ranges from -5°C to +5°C. The heating cable is positioned under the outlet, shielded with a protective cap. The heating cable is connected to a thermostat-controlled power supply.

- Remove the protective cap of the cable from the roof outlet.
- Pull the white part of the cable out from the cap through the hole in the cap. The black part of the cable remains inside the cap.
- Make sure that the cable runs at the edges of the cap without covering the screw holes in the cap.
- Put the cap through the outlet pipe.
- Check that the cable is not visible through the screw holes.
- Fix the cap with 4 screws.

Connecting the roof outlet heating cable to the mains

The heating cable is connected to a single-phase grounded supply. The connection may be performed only by a professional electrician. The professional electrician should connect the heating cable (3 x 1.5S) to the mains according to the following scheme:



AC 230 V
Capacity 14.4 W/0.4 m.

Installation of AM roof outlets

- The drains of roof outlets should be joined with an air-tight connection to the layer of the attic floor that functions as the wind barrier. The seal of the HT vapour barrier is suitable for that purpose.

- AM roof outlets are used on low-pitched and inclined roofs. The type of the roof outlet is selected on the basis of the roofing material.

BITUMEN ROOFS:

- AM roof outlets with a bitumen flange are always installed between two bitumen plies (underlay felt). The roof outlet is installed on top of the base felt, or in case of a single-ply bitumen roofing you should install a separate piece of the roofing that is 300 mm larger than the external dimension of the roof outlet.

- We recommend fixing the roof outlet through the lower layer of roofing by means of screws or fasteners through the holes in the polypropylene flange (located at the bottom of the flange).

- Pour hot bitumen (max. temperature 240°C) from a can on top of the base felt, on an area with the size of the roof outlet flange. Press the flange of the roof outlet evenly into the bitumen.

- Place the base felt on the flange of the roof outlet and fix it by gluing with hot bitumen.

- In case of a roof valley, install an additional layer of felt for reinforcement, if necessary. Install the top felt on top of the base felt by gluing with hot bitumen or heating with gas.

- Finish by cleaning the edges of the felt around the ring of the roof outlet, using a carpenter's knife.

PVC ROOFS:

- Fix the AM roof outlet through the holes in the polypropylene flange (located at the bottom of the flange) with four Croco fasteners, which contain either a screw if fixing to a sheet steel or timber underlay, or a concrete nail/concrete screw if fixing to a concrete underlay.

- Fix the flange by welding the roof outlet flange to the roofing material. The roof outlet flange and the roofing should be made from the same material.

Installation of CM roof outlets

Read the section "Installation of Alipai low pressure air vents". The maintenance of all roof outlets includes cleaning the screens of any rubbish and leaves.

Pass-Through Seals for Low-Pitched Felt Roofs

Pass-through seals are suitable for the pass-throughs in bituminous roofs.

Felt seal product range includes round seals with the diameter 0-800 mm.

RHS seals are suitable for sealing square-shaped objects with the size 40-140 mm.

R-Felt seals are retrofitted pass-through seals for round 19-250 mm objects.

Applications

The patented Felt and RHS seals ensure watertight joints in bitumen roofs at the installation points of vent pipes and billboard footing, antennas, flagpoles, etc.

The patented retrofitted R-Felt seals are used for sealing high objects, and objects where the installation of single-part seals is impossible.

Functioning and structure

Temperature variations and winds cause constant movement of the roofing in relation to the objects that is led through the roofing, causing the failure of watertight connections. The seals made from flexible EPDM rubber allow also big movements, while the patented laminated structure of the flange ensure the best possible adhesion with the roofing.

The flange of the seal is sand-blasted, giving the largest possible adhesion area. The patented structure of the flange and special working methods ensure safe fixing to the bitumen and maximum sealing performance. The width of the flange is 150 mm.

Felt seal

RHS seal

R-Felt seal

Production materials
See page 10

Standard sizes (incl. the clamp)

Product	ø mm
Felt seal	NO- 1 ø 12/19/25/38
	NO- 2 ø 50/60
	NO- 3 ø 75/90
	NO- 4 ø 110/125
	NO- 4.5 ø 130/140
	NO- 5 ø 150/175
	NO- 6 ø 200/250
	NO- 7 ø 275/325
	NO- 8 ø 350/400
	SKT -500 ø 490-530
	SKT -600 ø 590-630
	SKT -700 ø 690-730
	SKT -800 ø 790-830
RHS seal	RHS 40x40...70x70
	RHS 80x80...140x140
R-Felt seal	R - Felt 19-90
	R - Felt 110-170
	R - Felt 160-250

Installation of Felt and RHS seals

Felt and RHS seals are installed to the roof always between two bitumen plies (base felts). The best bonding is achieved with hot bitumen.

• Check the diameter of the pipe that is led through the roof. If needed, cut the seal to the right size according to the diameter of the pipe, following the markings (text about diameter on the seal).

• Install the bas felt, and in case of 1-ply bitumen roofing, install under the Felt or RHS seal a separate piece of the bituminous roofing, which is 300 mm larger than the external dimension of the seal. Cut a hole for the leadthrough pipe, making it as small as possible.

• Pour hot bitumen (max. temperature 240°C) from a can on an area with the size of the seal and press the flange of the seal tightly and evenly into the bitumen.

• Place the base felt on the Felt or RHS seal and fix it by gluing with hot bitumen.

• Cut the surface felt as precisely as possible at the foot of the vertical section of the seal, and fix it by gluing with hot bitumen or heating with gas. Secure the joint between the seal and the roofing with rubber bitumen.

• Tighten the upper edge of the seal against the leadthrough pipe by means of a screwed clamp.

Installation of R-Felt seals

1. Check the diameter of the pipe that is led through the roof. If needed, cut the seal to the right size according to the diameter of the pipe, following the markings (text about diameter on the seal).

2. Remove the protection tape from the sealing strip. The seal is joined, starting from the bottom of the vertical part and pressing with force. Next join the flange section, which will remain in the middle of the felt roof. When the flange section is aligned, press the sealing halves together, applying force.

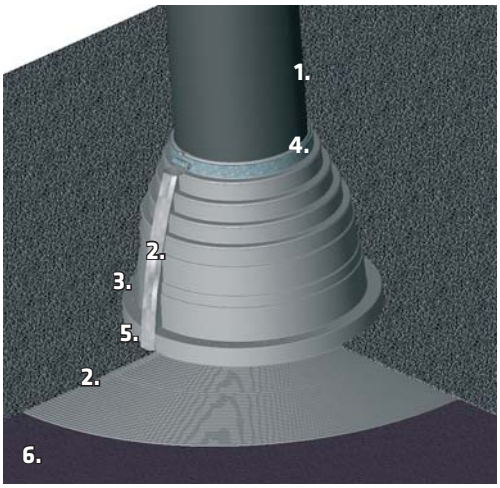
3. The seal should surround the pipe so that the connection surfaces would be completely against one another. The vertical part is joined, starting from the upper edge, so that the sealing surfaces that are against the pipe, would be aligned. When the vertical seam is precisely in position, press the surfaces together, applying force. If the vertical seam is not properly installed, it will be difficult to install the aluminium band.

4. Press the upper edge of the seal against the pipe, using the tightener.

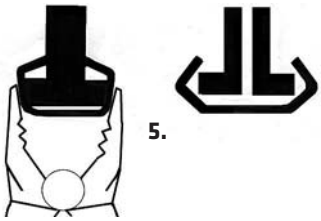
5. Start with the installation of the aluminium band from the bottom edge by pressing it tightly against the seal. The first clip is closed by pinching with pliers. Always check before pinching each clip that the clip remains behind the vertical marking and is not protruding out from the rubber.

6. Fix the flange of the seal by gluing it with hot bitumen between two layers of the roofing. In case of a single-layer roofing, install a separate piece of the bituminous roofing that is 300 mm larger than the external dimension of the seal.

7. The surface roofing is cut as precisely as possible at the foot of the vertical section of the seal. The joint between the seal and the roofing is sealed with bitumen.



R-Felt seal



HT Vapour Seals

Pass-throughs in vapour barriers must be sealed. HT vapour seals prevent condensed water from flowing along the pipe. HT seals are installed in places, where pipes run through the vapour barrier in inclined or low-pitched roofs.

Installation

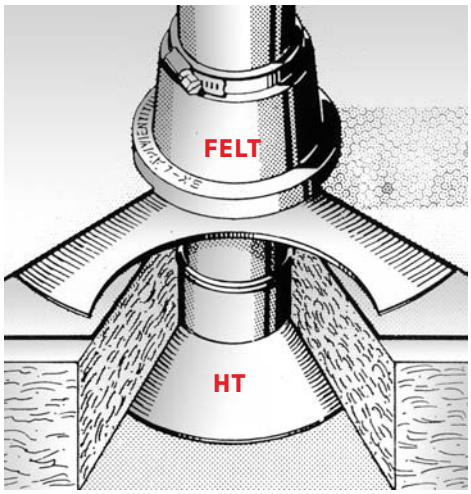
If the vapour barrier is made from bitumen, the HT seal is fixed with bitumen. The flange of the HT seal is fixed to the vapour barrier with a ventilation tape. If the underlay is from profiled sheeting, a board of a hard material is installed on top of the vapour barrier valve prior to the installation of the HT seal, and the flange is fixed to this board.

Since the upper end of the vertical part of the seal is slightly narrower, the seal will be pressed tightly against the pipe.

Production materials

Felt, RHS, R-Felt and HT seals are made from EPDM rubber, which is resistant to weather changes, to the damaging UV and ozone radiation, and to acids and alkali. The seals are manufactured, using fresh natural rubber to further enhance their durability and elasticity. The seals can be used at temperatures from -50°C to +90°C, temporarily also up to +120°C. The standard colour is black.

HT



HT high

Standard sizes

Product	ø mm
HT Vapour Seals	HT -50
	HT -75
	HT -110
	HT -110, 130 mm high
	HT -125
	HT -160

Pass-throughs for Low-Pitched Roof

Felt Pass-through Tall

Felt pass-through tall is used for low-pitched roofs for waterproof installation of VILPE P-series roof accessories. Withdrawal ventilation pipes, roof fans and aerial sleeves are installed on the Felt pass-through tall.

The height of the Felt pass-through tall is 200 mm preventing water penetration into the structures in case of water level rise on the roof. The flange width is 150 mm. Felt pass-through tall is suitable for VILPE P-series ventilation pipes and roof fans with a diameter of 110-160 mm.

XL Felt pass-through tall is used for installation of VILPE P-series XL ventilation pipes and roof fans with a diameter of inner pipe 160-250 mm. Its height is 300 mm and flange width 152 / 154 mm.

Felt pass-through tall

Installation

Felt pass-through tall is installed during felt mounting making it possible to the juncture waterproofing simultaneously. (See page 5, installation of Alipai.) The Felt pass-through tall and XL Felt pass-through tall are designed for installation on roofs with a pitch of less than 1:5 (11.5 degrees). They are made of polypropylene.

Roof fans
A roof fan can take care of the entire exhaust ventilation of a building, or part of it. A roof fan can be connected directly to a cooker hood or exhausting moist air from bathrooms. The VILPE roof fans are proven to be silent and efficient.

Exhaust vents and exhaust ventilation pipes
Exhaust vents and exhaust ventilation pipes efficiently transfer exhaust air out of a building. They can be used to conduct exhaust air from a ventilation machine or cooker hood, for example, out to the roof.

Sewer ventilation pipes
A ventilation pipe is used to ventilate a sewer out to the roof.

Aerial sleeves and pipe sealings
Aerial sleeves and pipe sealings are used for passing pipes, masts or cables tightly through the roof.

Solar Felt Pass-through Tall

The Solar felt pass-through tall is suitable for passing through the roof various small pipes or cables, e.g. solar collector pipes or air conditioner cables. The diameter of the pipe can be max. 100 mm x 60 mm.

Solar felt pass-through tall

Nord Roofs Ltd.
Unit 89, Baldoyle Industrial Estate,
Grange Way, Baldoyle, Dublin, P.O. D 13 KD86
Phone: +353 148 45 199; E-Mail: info@nordroofs.ie

www.nordroofs.ie

Pointer / FRAM 01.2010 1000.