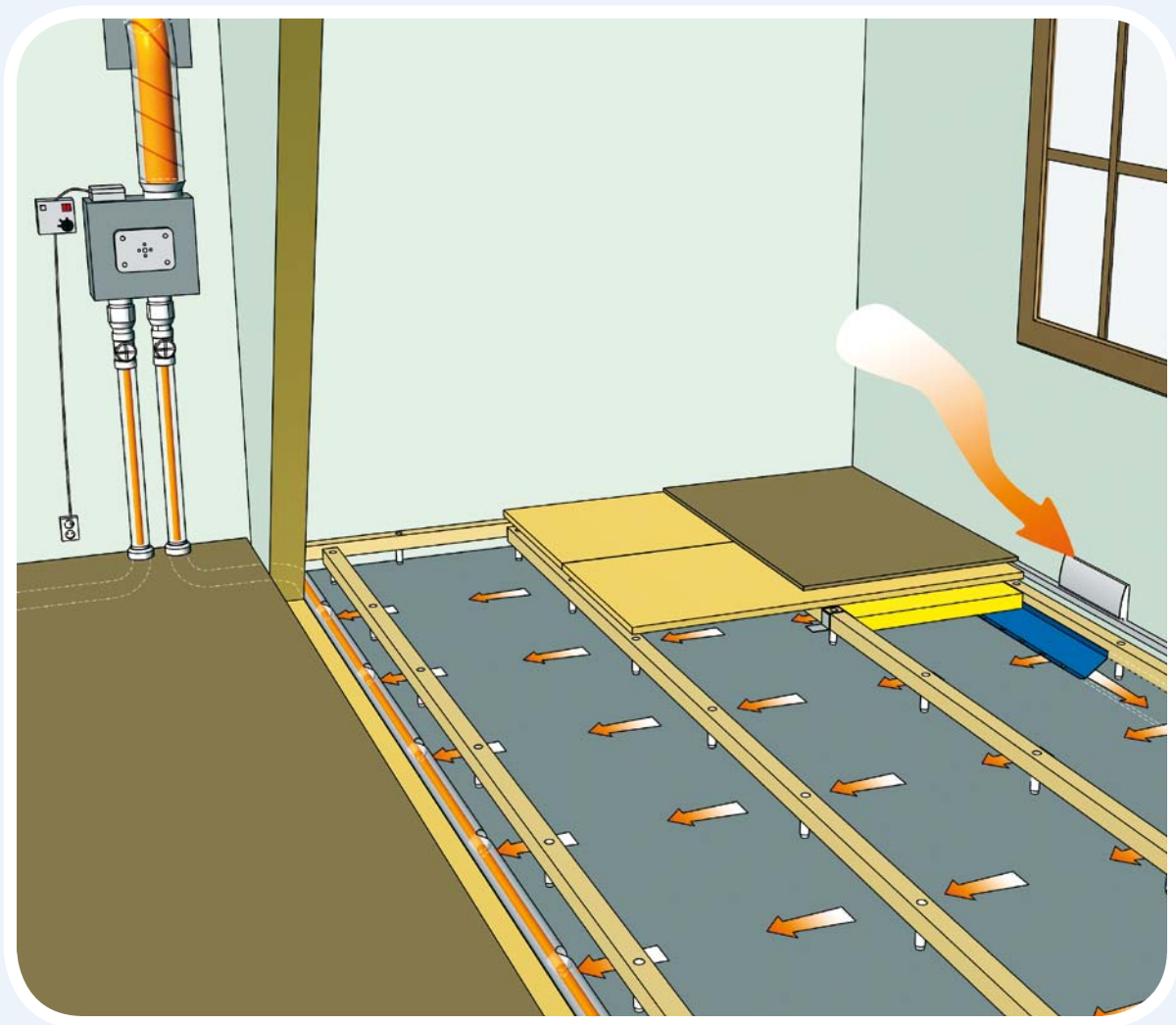


Simple • Safe • Flexible

Binder II BSAB 83 H5 BSAB 96 HSD



There's only one joist that counts



Ventilation

Floor ventilation

The complete floor joist system for ...

- Sick buildings
- Uneven surfaces
- Strict sound insulation requirements
- Floors for installations
- Floors with damping properties



Nivell System can be used in ...

- Homes
- Schools and daycare centres
- Offices
- Industrial facilities
- Public buildings
- Activity halls etc.



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Ventilation

Nivell System

Stricter environmental requirements

In recent years, Sweden's parliament has used the Environmental Code to stiffen the requirements imposed in respect of the environment. A good indoor environment is one of the areas to have been put in the spotlight.

Satisfying the requirements

There are many existing systems and traditional technical solutions that find it difficult to satisfy new requirements and laws. In other cases modifications or replacements are required. Nivell System meets the demands of the Environmental Code and in order to meet possible future requirements, the company runs a continuous development programme. Nivell System has been specially developed for floors on uneven surfaces, floors with damp and odour problems and floors that are subject to a noise reduction requirement.

Human health

The Environmental Code uses the term "detriment to human health". This covers everything from purely medical irregularities to phenomena that are not directly hazardous to health such as lasting odours.

The "precautionary principle" and rules of consideration

The so-called precautionary principle applies to human health. It means that if there is a risk it should be avoided. In implementing these precautions, what are popularly known as the rules of consideration apply.

In this context, one of the important rules governing professional activities is the "best possible technology" principle. Professional activities is here taken to include all property ownership over and above that for the owner's residential purposes. Other rules of consideration are the product selection or replacement principle, the economy principle, the ecocycle principles and the reasonableness assessment.

Best possible technology

The best possible technology principle, which relates both to the technology employed and also to the design of an installation, raises further requirements that have to be satisfied. Additionally, the technology must be capable of implementation – it must not be experimental. In other words, it has to be available.

**Nivell System satisfies
all these requirements**

Areas of application

- **Environmental rehabilitation** of floors affected by damp, mould, emissions or radon.
- **Noise reduction** floors that satisfy the strictest sound insulation requirements.
- **"Installation floors"** for pipe and cable runs, etc.
- **Sportsfloors**, gymnastics, games, activities, i.e. floors where impact absorption is important.
- **Industrial floors** subject to strict requirements as regards evenness and load-bearing capacity.
- **New builds** for rapid drying of construction moisture.
- **Combinations**, Nivell standard floors or acoustic flooring in combination with Nivell floor ventilation are efficient and popular solutions when converting, for example, old industrial properties with contaminated subfloors into homes and offices. Furthermore, the space below the joists is excellent for installations (water and electricity services, etc.). The combination of Nivell acoustic flooring and Nivell floor ventilation is also a rational choice in new builds with a high moisture content in the subfloor. This also applies to buildings with prefabricated HDF subfloors.

The entire system is type approved, certificates I255/97 and 0469/01

*i.e. = tested in accordance with the rules of the National Board of Housing, Building and Planning. (www.boverket.se)
(Certification does not cover PP joists. These are made from recycled material and are consequently difficult to define.)*

Screws, wooden joists and other Nivell System components have all been comprehensively tested, as have floor construction, ventilation and noise reduction. The type approval covers the entire system. This provides us with a competitive edge and the user with security.

Airtightness	BBR	6:255
General moisture	BBR	6:51
Moisture safety	BBR	6:53
Durability	BKR	2:13
Shape stability	BKR	2:121
Load-bearing capacity	BKR	3:41
Noise reduction properties	BBR	7

Type approval certificates I255/97, 0469/01

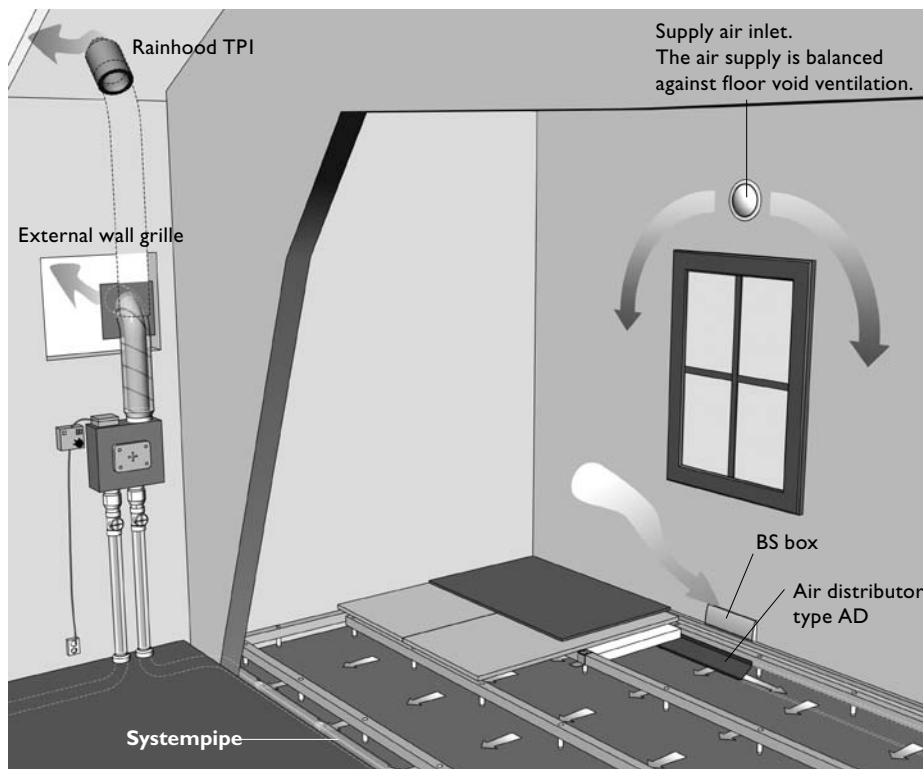
BBR = the building regulations of the National Board of Housing, Building and Planning.
BKR = the design regulations of the National Board of Housing, Building and Planning.

Nivell Training/Information

Every week, training is given at a selection of the country's Nivell distributors. The courses go through the laying of joists, factors to bear in mind, ventilation of floor voids, noise reduction of subfloors, certain rules of thumb, etc. The number of Nivell trained people is constantly growing. Contact your nearest distributor if you would like to attend one of the courses.

Nivell System reserves the right to change specifications and designs without warning. Reservation is also made in respect of possible printing errors.

System description



Nivell System 300/150
For areas up to 250 m²



Nivell System 100
For areas up to 100 m²



Nivell System 70
To be installed on an external wall, for areas up to 70 m²



Nivell System 50
For areas up to 50 m²



Alarm kit
Fits all Nivell System fans.

Type approved floor ventilation

Nivell System type approved floor ventilation is a well proven ventilation system for Nivell System floors. The system establishes a controlled air flow and negative pressure in the floor void. It comprises an extractor fan, channelling for air distribution and a box that filters the supply air.

Warm, dry, dust-free indoor air is used to ventilate the floor void. The premises must consequently be heated (min. 17° C) and have a normal moisture load. The floor inlet should not be installed in wetrooms. The ventilation system eliminates moisture that forces its way up (diffuses) through the concrete ground slab. However, there must clearly not be standing water due to blocked drains or leaking pipes. System operation is monitored by measuring flow, pressure, temperature and relative humidity. System tuning and the setting up of operation monitoring must be carried out by a qualified person.

Full functionality is dependent on ensuring the correct conditions and that the subfloor has been installed as

per the construction instructions. The floor and adjacent construction elements must be airtight. Cracks, lead-throughs, etc. must be sealed. Note that type approval and guarantees are dependent on the exclusive use of Nivell services and original products.

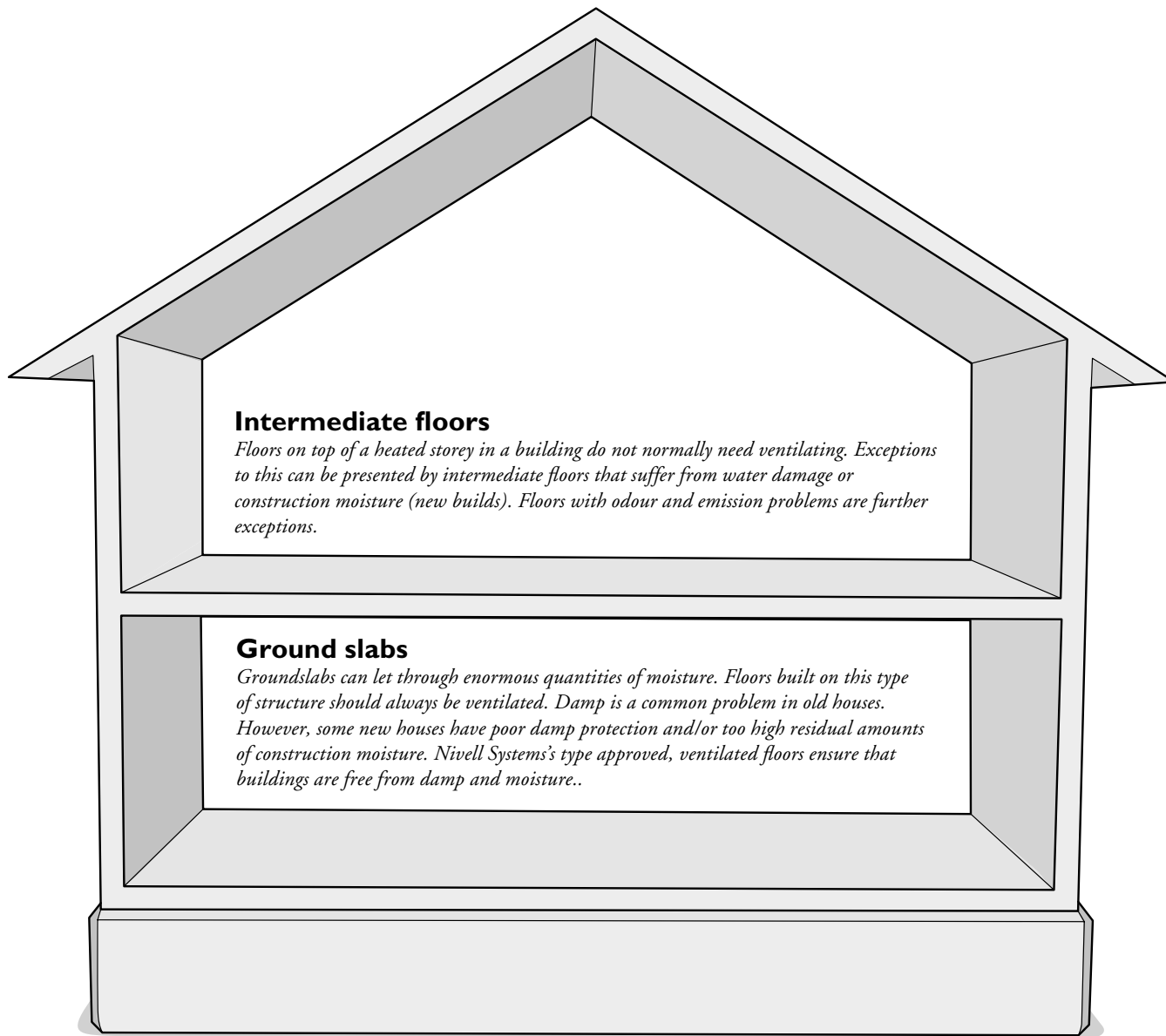
If the existing room ventilation sets up significant negative pressure in the premises, the floor ventilation system becomes even more sensitive to lack of airtightness. Thus, it may be necessary to rebalance room ventilation to compensate for deficiencies in floor sealing. To ensure reliable and stable operation, take things slowly, plan, read through this brochure and study the Nivell System “Construction” brochure which deals with the installation of the floor joist system.

Support, tel +46 500 – 46 98 76

When is floor ventilation necessary?

Ventilation

Floors that are affected by or that risk being exposed to damp, moisture migration, old residual odours or emissions should always be ventilated.



Floor ventilation ...

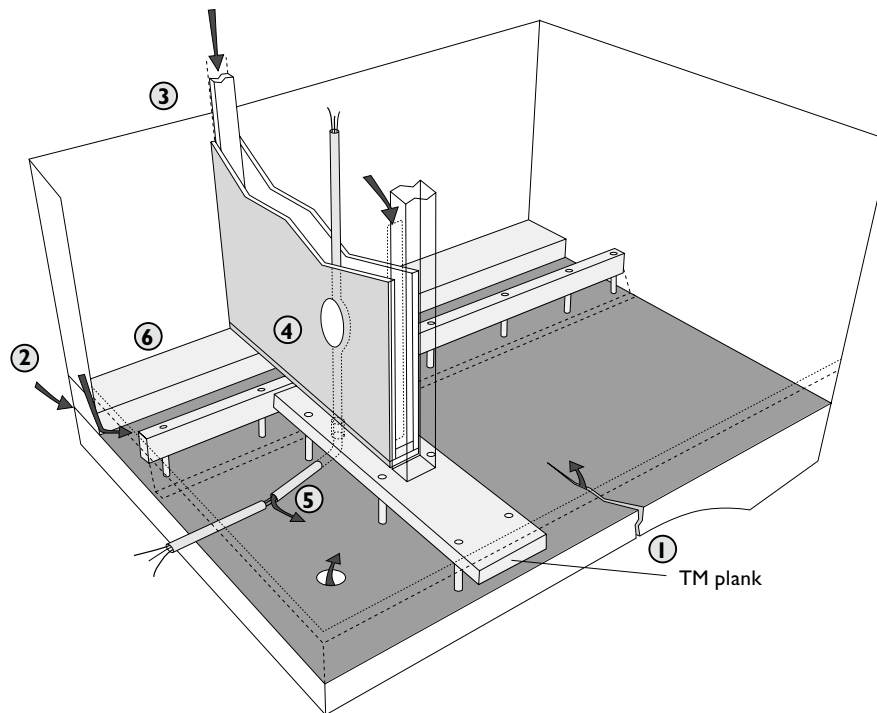
... with noise reduction

Nivell system acoustic flooring gives an impact sound improvement of 21-28 dB (depending on surrounding conditions). Noise reduction using Nivell System can result in considerable environmental improvements when renovating floors during the rebuilding of old properties or the conversion of attics, etc. Environmental benefits can also be gained in new builds. Nivell System acoustic flooring can be advantageously combined with floor ventilation (see the "Acoustics" brochure).

... in new builds

In new builds, Nivell System can be combined with floor ventilation – a reliable and time-saving design that also saves money and improves the indoor environment. The floor ventilation eliminates construction moisture .

Common leakage points



Functional requirements

The key functional requirements in floor ventilation are an evenly distributed air flow and stable negative pressure throughout the entire floor void.

A "sealed box"

To ensure satisfactory functionality, the floor and adjacent construction elements must be as airtight as possible. The goal is a "sealed box". As all projects are different, planning must include consideration of how the different elements are to be sealed and which methods are to be used. For example, the choice of jointing mastics is important in connection with adhesion, aging resistance (durability) and the ability to take up movement.

Concrete ground slabs and sills

① Even if they are small, cracks in concrete ground slabs can allow significant leakage. Air from the ground ② has a high moisture content and is also cold. Consequently, sealing of the ground slab is critical. Leakage between sills and concrete floors (as also between wall panels and sills) can easily cause problems. This air can similarly be very cold and damp. Use Nivell System sealing mastic or Nivell's sealing strip. If the subfloor is uneven, level it locally where the AD strip is to be fastened to the subfloor.

Intermediate walls

③ The unions between intermediate walls and external walls/door frames and door linings must be thoroughly sealed at the floor. This prevents leakage from the intermediate walls down into the floor.

④ The joint between plasterboarding and sills at the bottom of intermediate walls can leak along its entire length (there are often small gaps along the bottom of the plasterboard). Using the TM plank with Nivell System expanding sealing strip reduces the risk of air leakage at intermediate walls. The TM plank should also be used under door openings.

Lead-throughs

⑤ All pipe lead-throughs can be a source of leaks and must be examined. Defective plastic conduits, pipe lead-throughs and pipe channels are common sources of leaks. Old water, heating and sanitation pipes left in the ground slab from removed installations must be sealed permanently. Nivell's sealing strip can be used to advantage around pipe lead-throughs.

Floor decking

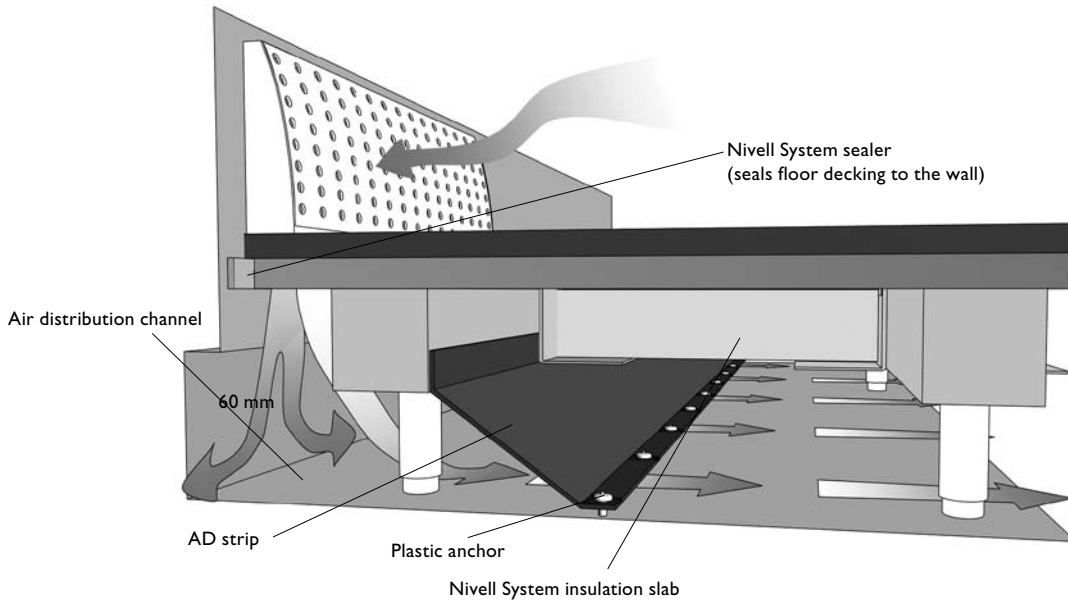
⑥ When installing floor decking, all unions with walls (as well as any joints constructed to take up movement) are to be sealed. Remember to use an elastic joint that can take up decking movement.

Poor functionality

Badly executed seals can result in a ventilated floor that only partly achieves its goals. In some cases, it may not achieve them at all. The negative pressure in the floor void becomes unstable and easily affected by room ventilation. Similarly, the air flow is not evenly distributed and there is thus the risk of poor drying of parts of the floor structure. When the floor has been laid, it is too late to remedy poor seals below the decking. Exercise great care right from the start!

The AD strip

Distributing the air flow



Air distribution below the floor

The AD strip creates a supply air “channel” and, via the gap that is formed between the strip and the subfloor, distributes air throughout the floor void.

Installation

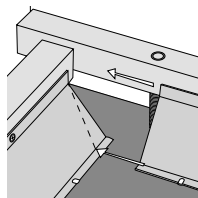
The AD strip is to be installed at the lower edge of the “framing joist” (see the “Construction” brochure) running along the wall where the floor inlet is to be sited. “Framing joists” are placed 60 mm from walls. Where the floor inlet has to be moved out from the wall (e.g. because of radiator pipes behind the inlet), the gap between the “framing joist” and wall must be increased correspondingly.

In such cases, the floor inlet is to be installed on a distance block on the wall. Using screws or strong staples, fit the AD strip to the joist.

Next, fit the strip to the concrete subfloor using the supplied spacer bolts and plastic anchors (drill Ø 6mm).

The concrete surface under the AD strip must be sufficiently even to create an approximately 3 mm gap along the entire strip.

It may be necessary to use filler to even out irregularities.



Mitring

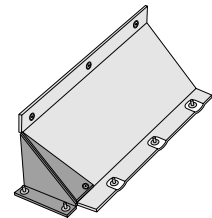
It may be necessary to mitre AD strips where they are to go round corners.. Measure carefully and cut the ends of the strips so that they form a neat mitre. Seal the joint with Nivell’s sealing strip.

Joining

AD strips are to be joined by overlapping them at least 20 mm and sealing the joint with Nivell’s sealing strip.

End terminations

The air supply channel formed by the AD strip must be sealed at the ends. If the strip terminates at a wall that seals tightly to the subfloor, offer the strip up to the wall and use Nivell sealing strip to form a joint with the wall. If there is no wall against which to form a seal, cut off part of a strip to make an end cap. If necessary, fit one at each end of the channel.



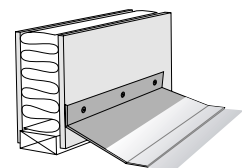
High construction heights

When using Nivell long screws for high construction heights, it may be necessary to use a plywood panel to extend the profile. For further details, contact our support service on +46 500 46 98 76.

Cells and “limit” structures

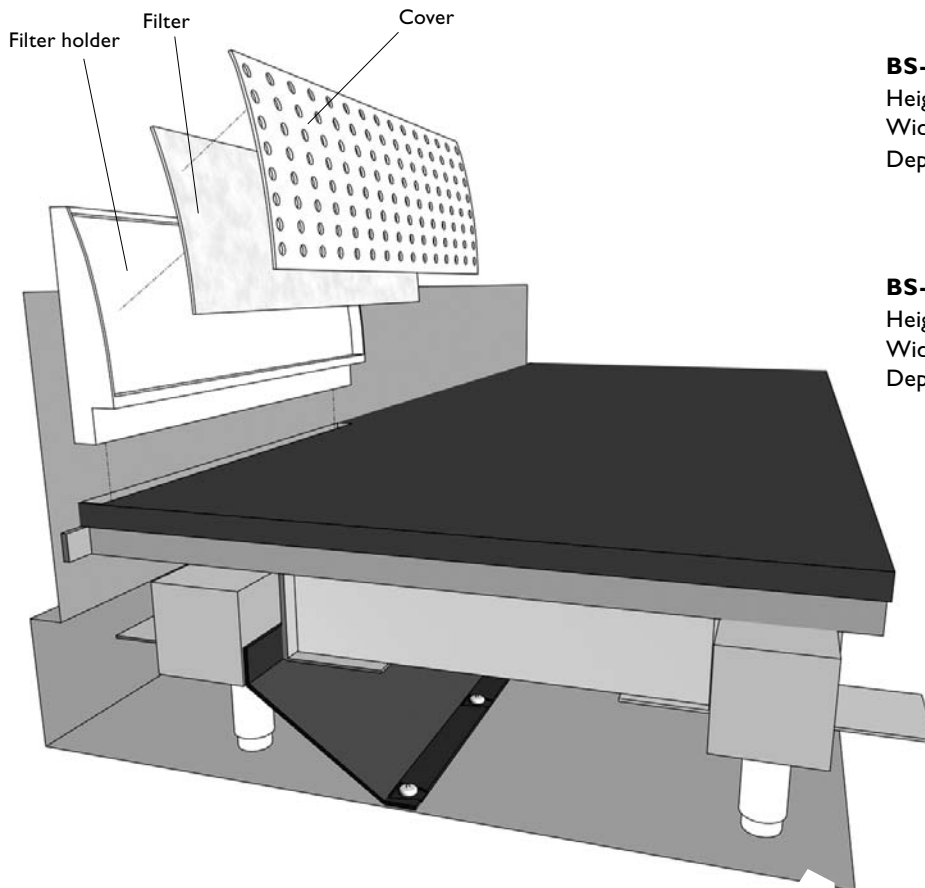
AD strips can be used to divide floor voids into cells or to form a seal against “limit” structures that have not otherwise been sealed.

In these cases, to seal the gap and create an airtight “boundary”, use the Nivell sealing strip.



Floor inlet

Controlled and filtered supply air



BS-02 article number: 049102

Height: 100 mm
Width: 285 mm
Depth: 25 mm



BS-05 article number: 049105

Height: 230 mm
Width: 135 mm
Depth: 60 mm



BS-10 article number: 049110

Height: 230 mm
Width: 275 mm
Depth: 60 mm



Full control and reliability

The filter in the Nivell floor inlet is easy to replace. It ensures that dust is not sucked down into the floor void. Check the filter at regular intervals. The air flow through the floor inlet and the negative pressure can be measured using a micro-manometer together with a thin hose that runs to a measurement point in the floor void. The hose is drawn up through the floor inlet. These measurement possibilities mean that Nivell System floor ventilation is reliable and fully controllable. Contact our technical support service on +46 0500 – 46 98 76 for more information.

Installation

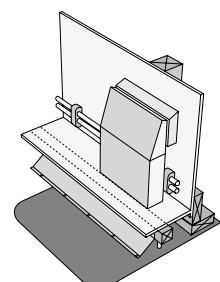
Mark out where holes have to be cut. Drill and saw out a hole in the floor decking. Vacuum the area and then, using the supplied gasket (models BS-05 and BS-10), install the filter holder in the floor. If necessary, seal with a soft mastic. The gasket is self-adhesive on one side. This side should be fitted against the floor. Screw the filter holder first to the floor and then to the wall. Check whether the

cover fits. If necessary, adjust how the holder is screwed to the wall. There must be no play in the cover. It must sit with a certain “spring-tension” against the wall. If the floor inlet is to be sited near to an adjacent wall, first check that the supplied Allen key can get at the cover’s installation screws.

Where skirting is to be installed, the cover’s screws should be loosened so that the cover can spring out to its free width. So that there are no problems with removing the cover during future maintenance, leave play of a few millimetres to the skirting .

Piped services on walls

If the siting of the floor inlet clashes with wall-mounted pipes, a distance block can be used to bring the inlet out from the wall (the pipes pass behind the floor inlet). Note that, in such cases, the underlying floor joist and AD strip must also be moved out a corresponding amount.



Planning and procedures

Planning/design

The ventilation system is designed to maintain optimum air flow and negative pressure throughout the floor void. Planning is to be set out on plan views (paper or CAD) that show: any ventilation cells*, fan placement and fan details, the location of ducting and where the AD strip is to be fitted; and, the type and siting of floor inlets. Depending on the quality and extent of sealing, the efficiency of floor ventilation is more or less dependent on the correct balancing of room ventilation so that the static negative pressure in the premises is not too great. In certain cases, to compensate for the amount of air sucked into the floor void, make-up air (extra supply air) must be fed into the premises.

The effectiveness of a correctly installed floor is guaranteed where the preparatory work has also been properly executed. So that the air “takes the right paths”, it is important that the floor void is airtight. External wall sills, unions between floor decking and walls, pipe lead-throughs, defective sealing with intermediate walls, etc. must all be carefully sealed. Refer to page 7.

All buildings are different. This brochure gives guidance on where air leakage can occur, but it cannot cover all the possibilities. Pay careful attention to the building’s construction. It is important to understand the principles behind correct floor ventilation. If questions arise, contact Nivell System technical support on tel +46 500 – 46 98 76.

* Seals are to be used to divide large floors up into “air cells”. These make it easier to control the ventilation process.

Procedure





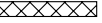


– who does what in contracts with installation guarantee and type approval

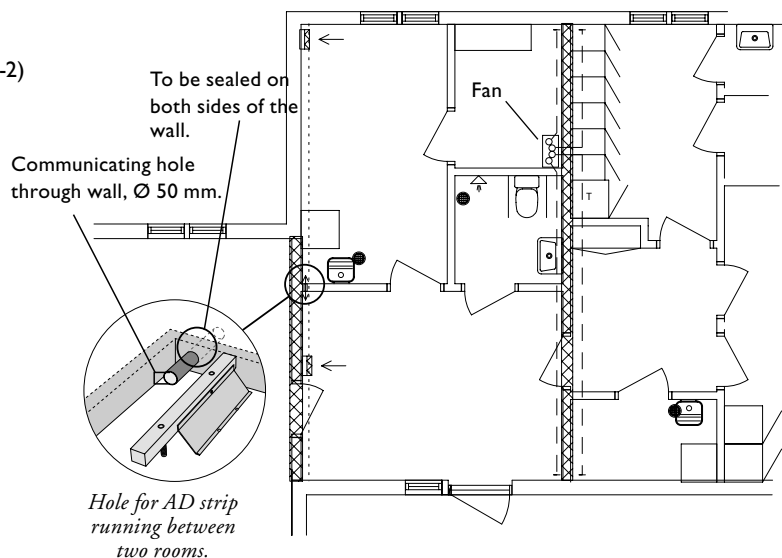
1. **The customer submits drawings** and other details (e.g. floor height, existing ventilation systems, etc.) to the planner/designer.
2. **The floor ventilation is then planned/designed** by Nivell System’s personnel or Nivell System trained and approved planners/designers.
3. **Installation is carried out by Nivell System** or Nivell System trained and approved contractors. Floor and ventilation installation is coordinated.
4. **The building contractor installs the subfloor**, seals all the joints and then, as per instructions, joints and fits the air distribution strips and sealing strips. The building contractor works in accordance with Nivell System’s plans. Monitoring is as per an inspection plan drawn up by Nivell System.
5. **The floor decking and floor inlet are then fitted.** After the floor has been laid the building contractor starts up the fan.
6. **Nivell System personnel**, or Nivell System trained and approved contractors inspect and adjust the ventilation system.
7. **Use and maintenance documents**, adjustment records and record drawings are drawn up by Nivell System and handed over to the customer, to be forwarded to the user/maintenance personnel/property owner.

Where Nivell System products have been prescribed, our support service can be contacted on tel +46 500 – 46 98 76

Example drawing

- NFG** Extractor fan ALIG NFG 300/150 (NFG150-2)
- YGI** External wall grille
- THI** Rainhood
- SL** Collector box
- SP** Damper
- ME** Measuring nipple
- GP** Pressure relay
- SLP** Pressure relay signal lamp
- F1** Exit channelling, not insulated
- F2** Exit channelling, insulated
- P** End cap

-  ← Type BS-I0 floor inlet.
-  AD strip. See circular inset diagram.
-  PRT. Airtight plastic pipe.
-  PRH. Plastic pipe with holes as per drawings.
-  Sealing between concrete ground slab and underside of floor construction.
-  Exhaust air hole, Ø 20 mm.
-  Communicating hole Ø 50 mm, at bottom of wall.



The above example shows what is to be carried out by the floor contractor (e.g. installation of AD strip, making of holes, etcetera). There must be good coordination between the floor contractor and the ventilation contractor. For further information and support, contact our nearest area office.

Exhaust channelling in the floor void

Plan the installation

Plan pipe runs as per the drawing. Select suitable places for fans and rainhoods or external wall grilles. Site external wall grilles or wall fans slightly away from objects such as windows, patios, air inlets or similar where noise and odours may be unwelcome. Remember that facades and eaves can be damaged by condensation forming from the exhaust air. Use rainhoods in these cases. Holes made through walls shall slope gently downwards to the outside so that any condensation does not run back into the fan. Ensure that the installation does not clash with other services. Pay particular attention to water and electricity services!

Pipe runs with holes

To satisfy the requirements relating to even air flow and even air speed over the concrete subfloor, a well tested hole system is used.

The holes in the pipe (PRH in the drawing on page 10) are spaced at different distances. The c/c distances between the holes are determined by the planned air speed and pressure in the channel. Consequently, they vary from case to case. It is extremely important that the holes are made as per Nivell System's plans/instructions for the particular order/project.

Hole diameter is 20 mm in 52 mm piping and 16 mm in 40 mm piping. Hole spacing is as per the illustrations below. The constants C1, C2 (or K1, K2) etc. are given in the separately attached hole plan or on the drawing. Use a knife to scrape away burrs around the holes. Pipes are to be joined together using the supplied glue.

Tips!

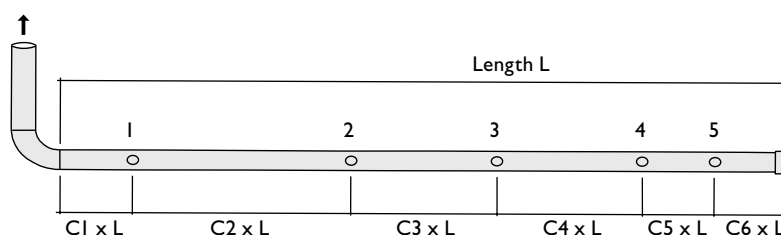
To check that the pipe system fits as planned, assemble it before commencing any gluing. The suction holes drilled in the piping shall face towards the room's/building's opposite wall where the supply air enters from the floor inlet. The holes shall be directed obliquely downwards. If the subfloor is uneven (height differences over 40 mm) drainage holes (Ø 6 mm) are to be drilled in the bottoms of pipes where they dip. This is because there is some risk of condensation forming in the pipe during disruptions in operation.

Use the supplied galvanised hole straps to secure the pipe system at suitable points. To reduce the risk of freezing, pipes alongside external walls should be extended at least 20 cm from external walls.

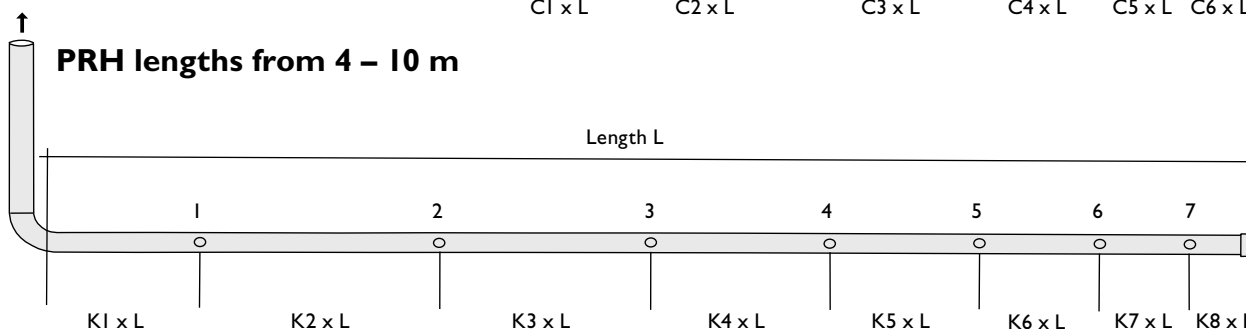
No floor void obstructions

Existing heating pipes, plastic conduits and all other obstructions to the air flow shall be held clear of the subfloor using, for example, plastic wedges. This is so that the flow has a clean sweep of the floor. Remember that the air gap in the floor must be at least 10 mm (5 mm for Nivell System low profile floors) and that any material on concrete ground slabs must be inorganic and unaffected by moisture. Ensure that the holes in the exhaust air pipe are not blocked by insulation or similar.

PRH lengths up to approx. 4 m

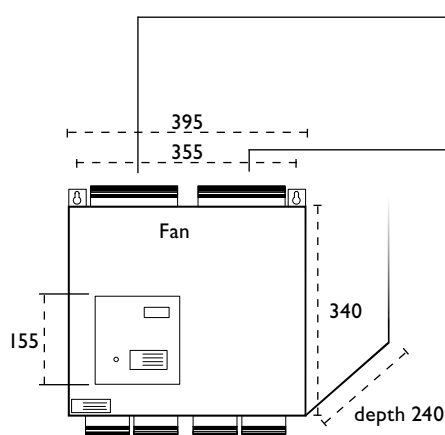


PRH lengths from 4 – 10 m



Fan system 300/150

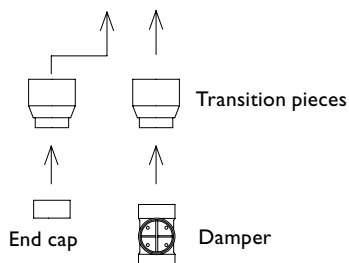
Nivell System 300/150 (art. no. 114466)



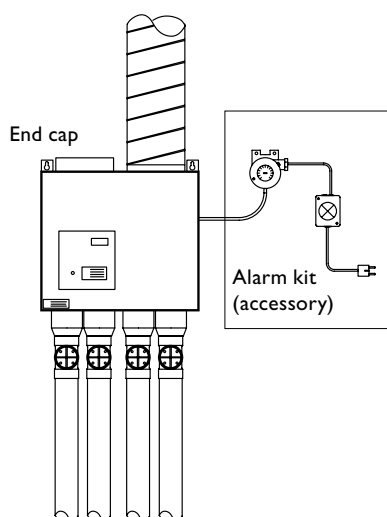
Top suction sleeve coupling, can be connected to the exhaust air system in the WC, bathroom, laundry room, etc. Ø 125.

Connection to the exit air duct, Ø 125.

One to four floor ducts can be connected to fan NFG 150-3. These are to be labelled A, B, C and D on drawings and when marking. If the suction sleeve coupling is not used, seal it with an end cap.



Exit duct up to rainhood or external wall grille. To be insulated in cold spaces (condensation prevention).



Remember! Air from the floor void may contain odours or have a high radon content. Exit duct joints that are not airtight shall be sealed with the supplied duct tape. Sound levels at external wall grilles can be lowered by inserting a silencer in the duct.

Included components:

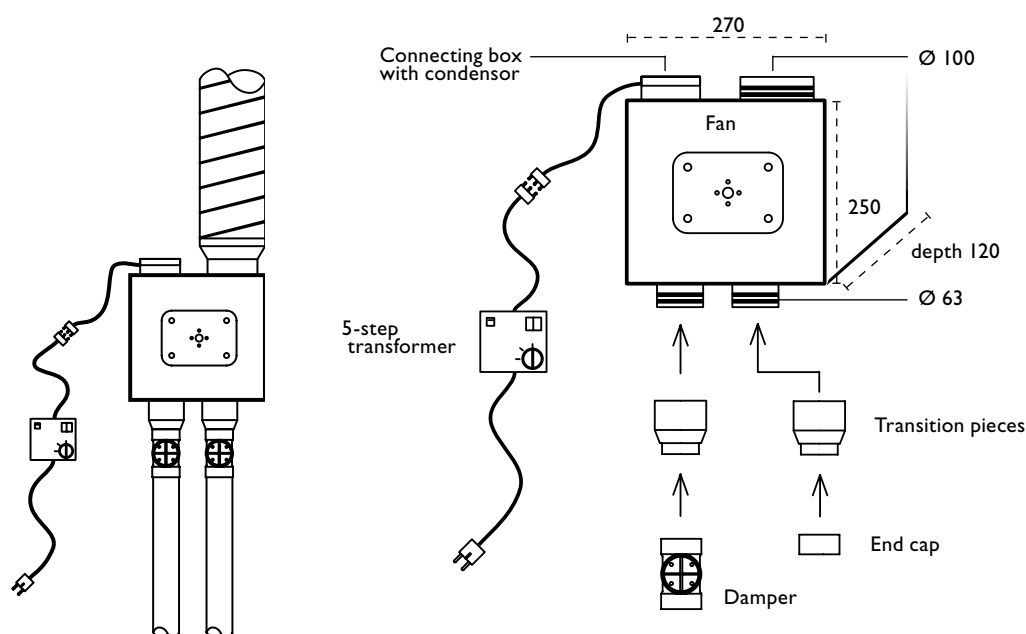
Number	Name
1	Fan Nivell NFG 150-3 with integral transformer.
1	End cap, top suction sleeve coupling
1	Transition piece 125-100
1	End cap (if suction sleeve coupling is not used)
4	Dampers
4	Transition pieces
20	Drill screws
1	Hole plan for floor pipe
Hole plan for floor pipes, guarantee form and installation instructions.	

Installation

1. **Mount the fan on a wall.** The fan generates noise. Siting in bedrooms, relaxation rooms and similar is unsuitable. The fan can be mounted on vibration dampers. In public facilities, it should be built into a lockable cabinet.
2. **If exit air is to be led out via a rainhood,** skip points 3 and 4, (refer instead to the installation instructions accompanying the rainhood).
3. **Make the holes for the exit duct to pass through the external wall.**
4. **Fit the external wall grille and then the duct through the wall.** Lead the ducting up to the fan's exhaust and connect. The point where the duct passes through the external wall shall be insulated (to prevent condensation) and sealed.
5. **Fit the dampers and transition pieces** to the fan's suction sleeve couplings (number as per drawing). An end cap shall be used to block any suction sleeve coupling that is not used.
6. **Fit the end cap on the fan's top suction sleeve coupling** if this is not going to be used. The fan's top suction sleeve coupling can be used for connection to the exhaust ventilation of, for example, bathrooms and WCs. In such cases, the duct must be equipped with a damper. Contact our technical support on +46 500 – 46 98 76 for more information.
7. **Fans and ducts sited in cold spaces** shall be heat insulated, exit ducts shall be insulated to prevent condensation.
8. **Connect the fan to an earthed wall socket (230V, 10A),** or have a qualified electrician wire the fan directly in via a safety switch (circuit breaker).
9. **Test-run the fan.**
10. **Once the floor is finished,** the fan is to be started and left running at full speed and with all dampers open until the final adjustments are made.
11. **Once the floor is finished,** and the floor inlet or ventilated skirting is installed, it is important to have the system adjusted and its operation checked. This should be done by trained personnel. For further details, contact Prästängen Sverige AB.

Fan system 100

Nivell System 100 (art. no. 114499)



Included components:

Number	Name
1	Fan Nivell NFG 100
1	5-step transformer (cable included)
1	End cap (if suction sleeve coupling is not used)
2	Damper
2	Transition pieces
10	Drill screws
1	Hole plan for floor pipe

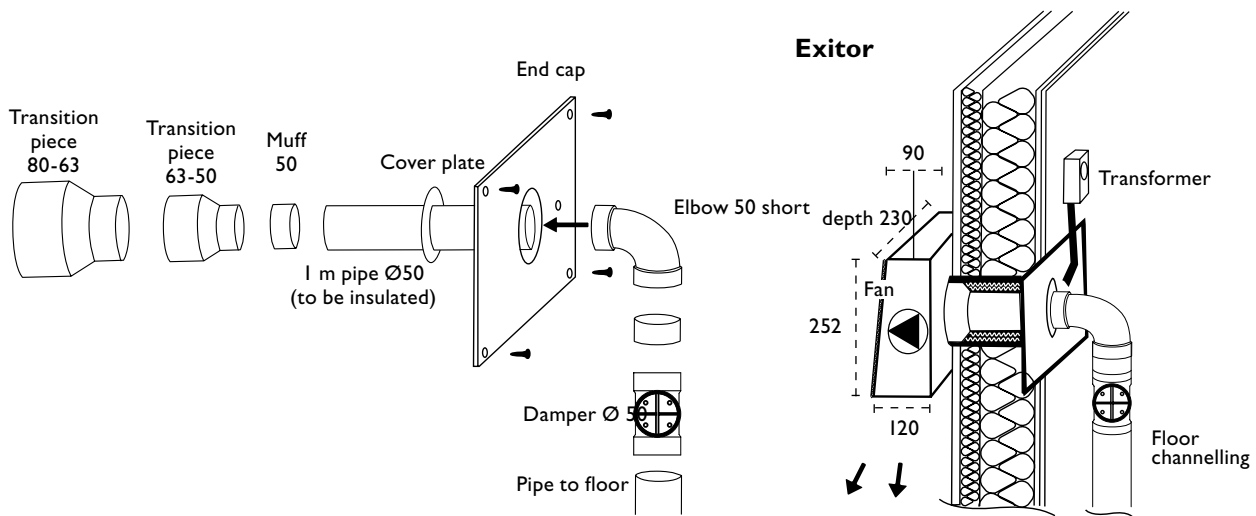
Remember! Air from the floor void may contain odours or have a high radon content. Exit duct joints that are not airtight shall be sealed with the supplied duct tape. Sound levels at external wall grilles can be lowered by inserting a silencer in the duct.

Installation

1. **Mount the fan on a wall.** Siting in bedrooms, relaxation rooms and similar is unsuitable. The fan can be mounted on vibration dampers. In public facilities, it should be built into a lockable cabinet.
2. **If exit air is to be led out via a rainhood,** skip points 3 and 4, (refer instead to the installation instructions accompanying the rainhood).
3. **Make the holes for the exit duct to pass through the external wall.**
4. **Fit the external wall grille and then the duct through the wall.** Lead the ducting up to the fan's exhaust and connect. The point where the duct passes through the external wall shall be insulated (to prevent condensation) and sealed.
5. **Fit the dampers and transition pieces** to the fan's suction sleeve couplings (number as per drawing). An end cap shall be used to block any suction sleeve coupling that is not used.
6. **Fans and ducts sited in cold spaces** shall be heat insulated, exit ducts shall be insulated to prevent condensation.
7. **Connect the fan to an earthed wall socket (230V, 10A),** or have a qualified electrician wire the fan directly in via a safety switch (circuit breaker).
8. **Test-run the fan.**
9. **Once the floor is finished,** the fan is to be started and left running at full speed and with all dampers open until the final adjustments are made.
10. **Once the floor is finished,** and the floor inlet is installed, it is important to have the system adjusted and its operation checked. This should be done by trained personnel. Contact Prästängen Sverige AB for further details.

Fan system 70

Nivell System 70 (art. no. 114477)



Included components:

Number	Name
1	Fan Nivell NFG 70, (black wall fan for outdoor mounting)
1	5-step transformer (cable incl.)
1	1 m plastic pipe, Ø 50 mm
1	Transition piece 63-50
1	Transition piece 80-63 (M/N)
1	Insulation sleeving 63 mm
1	Damper
1	Elbow 52, short
1	Cover plate, 50 mm
1	Muff 50 mm
1	Cover plate 210x210 Ø100
6	Screws for fan and transformer installation
6	Anchors
10	Drill screws
Hole plan for floor pipes, guarantee form and installation instructions.	

Installation

1. Make a hole of approx. 90 mm in diameter through the external wall at the point where the fan is to be installed, so that there is also room for the electricity cable.
2. Install the transition pieces on the fan's suction sleeve coupling.
3. Install pipes and insulation sleeving for the wall bushing.
4. From the outside, feed the pipe through the hole and screw the fan onto the external wall. The fan's cover is removable. The electric cable (supplied in a flexible plastic conduit) can also be readily fed through the wall or a separate hole made for this.
5. Fit the cover plate to the end of the piping projecting into the building.
6. Screw the cover plate to the wall. Ensure that the lead-through is sealed.
7. Use the 90 degree elbow to fit the floor ducting to the fan.
8. Test-run the fan.
9. Once the floor is finished, the fan is to be started and left running at full speed and with all dampers open until the final adjustments are made.

Table for setting fan speed (system 70)

The required air flow in the floor void depends on, amongst other things, the floor area to be ventilated. In normal cases, the following table can be used to set the transformer to the correct fan speed. Nonetheless, we always recommend that the system is adjusted/checked by an expert.

Ventilated floor area	Transformer setting
0 – 20 m ²	1
20 – 50 m ²	2
50 – 70 m ²	3
70 – 85 m ²	4
85 – 100 m ²	5

The table applies only to Nivell System 70, standard format, with a floor ducting kit comprising of 14 m floor ducting, 4 90-degree elbows and 2 45-degree elbows. Use ventilation smoke (e.g. Regin RFA) to check the downdraught (negative pressure) at the floor inlet.

Fan system 50

Nivell System 50 (art. no. 114456)

Fan unit 50 "complete"
(art. no. 114456)
including components:

Number	Name
1	Nivell System fan 50
1	Exit air kit 50
8	Plastic pipes 50x1000
2	45-degree elbows
2	90-degree elbows
7	Muffs
1	Cap
3	AD strips, 2 m
2	BS02 floor inlets
1	Pack of glue
1	Suspension strapping, 2 m
1	External wall grill
0.5 m	Plastic ducting 100 Ø
1	Sealing strip for joints
1	90-degree elbow 100 Ø
1	Muff 100 Ø

Fan 50 (art. no. 114455)
Included components:

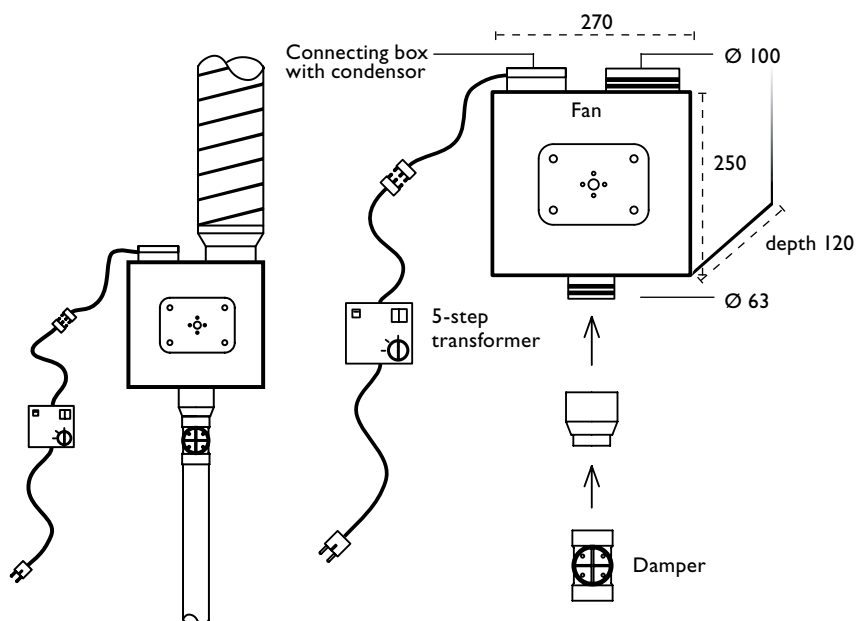
Number	Name
1	Fan Nivell NFG50
1	5-step transformer (cable included)
1	Transition piece
1	Damper
1	Guarantee form
1	"Ventilation" Brochure
1	Installation instructions

Remember!

The fan generates noise. Siting in bedrooms, relaxation rooms and similar is unsuitable. In public facilities, the fan should be built into a lockable cabinet.

Air from the floor may contain odours or have a high radon content. The exhaust should not be close to openable windows or air inlets.

The noise level at the external wall grill can be reduced with a sound insulation channel.



Installation

1. **Mount the fan on a wall.** Siting in bedrooms, relaxation rooms and similar is unsuitable. The fan can be mounted on vibration dampers. In public facilities, it should be built into a lockable cabinet.
2. **If exit air is to be led out via a rainhood,** skip points 3 and 4, (refer instead to the installation instructions accompanying the rainhood).
3. **Make the holes for the exit duct to pass through the external wall.** (approx. 110 or 130-150 mm depending on exit air unit).
4. **Fit the external wall grille and then the duct through the wall.** Lead the ducting up to the fan's exhaust and connect. The point where the duct passes through the external wall shall be insulated (to prevent condensation) and sealed.
5. **Fit the dampers and transition pieces** to the fan's suction sleeve coupling.
6. **Fans and ducts sited in cold spaces** shall be heat insulated, exit ducts shall be insulated to prevent condensation.
7. **Connect the fan to an earthed wall socket (230V, 10A),** or have a qualified electrician wire the fan directly in via a safety switch (circuit breaker).
8. **Test-run the fan.**
9. **Once the floor is finished,** the fan is to be started and left running at full speed and with all dampers open until the final adjustments are made.
10. **Once the floor is finished,** and the floor inlet is installed, it is important to have the system adjusted and its operation checked. This should be done by trained personnel. Contact Prästängen Sverige AB for further details.

See overleaf for an installation example »

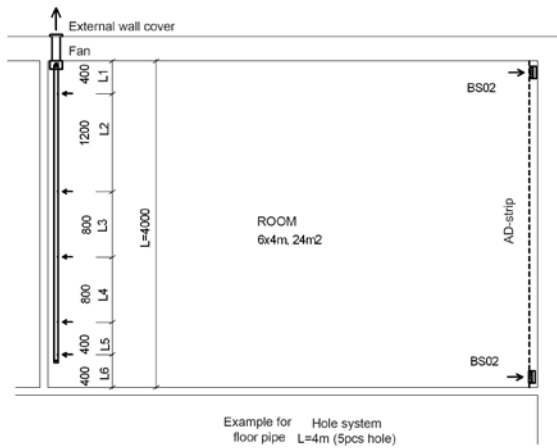
Example of installation in a room of 24m² using "Nivell System 50 complete" (art. no. I14456)

The exhaust air pipe to the fan must be located along one side of the room and the floor inlet/AD strip along the facing side. This produces an evenly distributed flow of air from side to side of the room. Refer to page 11.

Drill holes (Ø20mm) in the duct as per the table below. Refer to page 11. Don't forget the cap in the end of the duct.

The gap between the floor inlet must not exceed 6 m and the gap from the end of the AD strip to the floor inlet must not exceed 3 m.

The table to the right can be used for approximate setting of the fan's transformer (air flow). Negative pressure at the floor inlet



can be checked using "ventilation smoke". However, we do recommend that the system is adjusted and its operation checked by trained personnel. For further details, contact Prästängens Sverige AB.

Ventilated floor area	Damper position	Transformer position
0–15 m ²	0 degrees	1–2
15–25 m ²	0 degrees	2
25–35 m ²	0 degrees	3
35–50 m ²	0 degrees	4

L Approximate chain of measurements for holes in floor ducting (mm)

Length (m)	L1	L2	L3	L4	L5	L6	L7	L8
2	200	600	400	400	200	200		
2,5	250	750	500	500	250	250		
3	300	900	600	600	300	300		
3,5	350	1050	700	700	350	350		
4	400	1200	800	800	400	400		
4,5	563	900	788	675	563	450	338	225
5	625	1000	875	750	625	500	375	250
5,5	688	1100	963	825	688	550	413	275
6	750	1200	1050	900	750	600	450	300
6,5	813	1300	1138	975	813	650	488	325
7	875	1400	1225	1050	875	700	525	350
7,5	938	1500	1313	1125	938	750	563	375
8	1000	1600	1400	1200	1000	800	600	400

Alarm system

Exit air kit (art. no. I14433)

Installation

Fit the hose connection nipple to the bottom of the fan's side/face (drill a Ø 6 mm hole and secure the nipple with a spot of silicone/soft mastic). (This applies to Nivell System 50 and 100. Nivell System 150 already has a nipple at the bottom of the fan housing. For Nivell System 70 (wall fan), the connection nipple is to be fitted somewhere on the exhaust air duct.)

Mount the pressostat next to the fan. Connect the hose to the pressostat's minus (-) side and the fan's connection nipple. Remove the safety cap from the pressostat's positive (+) outlet.

Fit the alarm/on lamp where desired and have a qualified electrician connect it, via the pressostat (which functions as a safety switch), to a 230 V supply. Note that the alarm function must not be connected to the same fuse as the fan. If it were, no alarm would be given when fuse protection was tripped.

The alarm kit can also be connected to an existing alarm system for other services (e.g. to a small computer control centre). For further details, contact our technical support on +46 500 46 98 76.

Alarm panel with filter relay AM 90 (art. no. I14438)

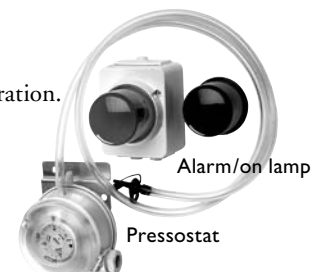
Includes a timer for filter replacement. An LED flashes when it is time to replace the filter. After filter replacement, press the reset button. The alarm time can be reset for 2, 4 or 6 months.

Function relay

The fan is equipped with a pressostat (to be ordered separately – art. no.: 210090) that can have its outlet connected to the AM 90. An LED flashes when there is a failure. The function relay can be connected as a common relay for several fans. Contains a relay output (24 V, 0.5 A) that allows connection to alarm systems, small computer control centres, etc.

Panel

- Green LED – normal fan operation.
- Flashing red LED – disruption in fan operation.
- Flashing yellow LED, time for filter replacement.

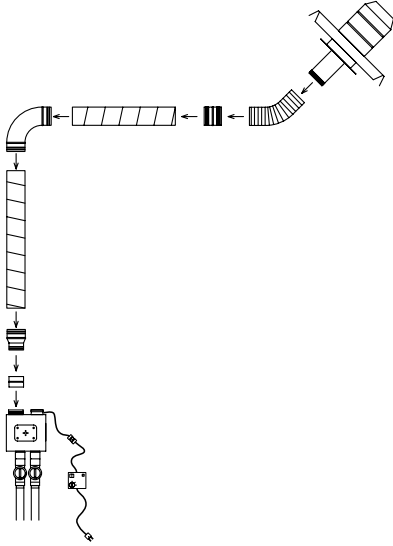


Included components:

Number	Name
I	Lamp housing (red lamp glass, bulb included)
I	Exit air kit (art. no. I14433)
I	Green lamp glass
I	Pressostat (hose and nipple included)

Exit air kit

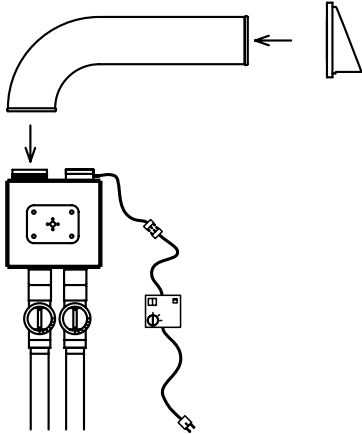
Nivell System exit air kit type T, Roof (art. no. I14410)



Included components:

Number	Name
1	Black rainhood for "double-wave" roof tiles
0.4m	Flexible ducting
4	Nipples, 125 Ø
3	Plastic ducting, 1 m, 125 Ø
1	90-degree elbow, 125 Ø
1	Transition piece 160-125
1	Muff 100 Ø
1	Transition piece, 125-100 (N/N)
4 m	Insulation sleeve
1	Roll of tape
20	Drill screws
1	Suspension strapping, 2m
1	Rainhood installation instructions

Nivell System exit air kit type V, Wall (art. no. I14420)



Included components:

Number	Name
1	External wall cover (including gasket for connection to SPIRO ducting), Ø100
1	Flexible acoustic ducting, L = 1,000 mm, Ø100
1	Roll of tape
10	Drill screws

The diameter of the hole through the external wall must be around 130-150 mm.

Nivell System pipe kit, 52 mm (art. no. I14415)

Complete pipe kit with plastic pipes and fittings, installation materials and installation instructions. On special order, floor ducting and fittings can also be supplied in 40 mm format.

Included components:

Number	Name
7	Piping 52 mm, L = 2,000 mm
2	Elbows, 45 – 52 mm
4	Elbows, 90 – 52 mm
6	Muff, 52 mm
2	End cap, 52 mm
1	Pack of glue
1	Suspension strapping

Guarantees

Nivell System floor ventilation

1. Deliveries of materials

Via distributors and retailers throughout Sweden, Prästängen Sverige AB sells complete sets of materials with installation instructions. The customers are building firms and, sometimes, individuals who are installing floor ventilation systems themselves.

Prästängen Sverige AB supplies:

- Guideline installation instructions and inspection plans.
- (Sometimes) Guideline planning/drawing proposals.

Guarantee: 2-year materials guarantee.

2. Ventilation contracts

Customers, most usually building contractors, place floor ventilation contracts with Prästängen Sverige AB.

Prästängen Sverige AB's execution of these is in accordance with Nivell System's type approval no. 1255/97:

- Planning of, and drawings for, floor ventilation.
- Sets of materials.
- Installation of floor ventilation systems. Trained customers can install systems themselves – Self-inspection plans for ventilation inspection plans are sent to Prästängen Sverige AB).
- Adjustment of floor ventilation systems.

Requirements placed on customers (building contractors):

- Floor systems shall be installed as per the relevant instructions.

The accompanying "Inspection plan for joist installation" shall be completed by the quality manager and sent to Prästängen Sverige AB.

Guarantee: 2-year installation guarantee

3. Ventilation contracts with 10-year installation guarantees

(additional fee as per tender)

Customers, most usually building contractors, place floor ventilation contracts with Prästängen Sverige AB.

Prästängen Sverige AB's execution of these is in accordance with Nivell System's type approval no. 1255/97:

- Planning of, and drawings for, floor ventilation.
- Sets of materials.
- Installation of floor ventilation systems.
- Adjustment of floor ventilation systems.

Requirements placed on customers (building contractors):

- Floor systems shall be installed as per the relevant instructions.

The accompanying "Inspection plan for joist installation" shall be completed by the quality manager and sent to Prästängen Sverige AB.

- Inspections during construction (as per project-specific inspection plans). These shall be carried out by an independent expert appointed by the customer and approved by Prästängen Sverige AB. The cost of inspections is to be borne by the customer.
- Re-adjustment of the property's general ventilation systems (to compensate for the operation of the floor ventilation system). The protocol is to be sent to Prästängen Sverige AB. (Prästängen Sverige can carry out this adjustment against payment of a supplementary fee.

Requirements placed on property managers/owners:

- Regular self-inspections/operation inspections of floor ventilation systems shall be carried out as per the instructions in the operation and maintenance documents.
- Operation inspection of floor ventilation in years 2, 4, 6 and 8. These inspections shall be carried out by an expert appointed by Prästängen Sverige AB and as per the instructions in the operation and maintenance documents (e.g. during the mandatory ventilation inspections). Protocols shall be submitted to Prästängen Sverige AB.

Guarantee: 10-year installation guarantee.

Checklist for floor ventilation:

In order to provide a valid quotation, it is important that as much documentation and detail of the project is submitted as possible. Consequently, the questions below are to be answered and the details filled in before sending the form and any available drawings and tender documents to your local Nivell distributor.

Documents:

Drawings with dimensions (reference dimensions are sufficient)

Tender documents

Details of:

The areas to be ventilated?

Whether further areas are to be ventilated in the future?

How many stages the work will be executed in?

Construction height (concrete ground slab to top of joist)?

Walls under which there is/is not "air communication"?

Any fire cells?

Suitable/unsuitable fan placements?

If exhaust from fan/fans is to be via rainhoods or external wall grilles?

Location?

Property's existing ventilation?

Location of radiator pipes, etc. that may affect installation of the BS box?

Project name _____

Property designation _____

Address _____

Town _____

Enquirer _____

Person who is to receive the quotation _____

Address _____

Postal address _____

Contact person _____

Tel: _____ Fax: _____

End-customer _____

Miscellaneous _____

Prästängen Sverige AB/ Nivell System project no. _____

Thank you for your cooperation!

Heat recovery

Nivell ventilation with heat recovery

Nivell System is introducing FTX, a heat recovery system that integrates a building's general ventilation air with that from the floor void. Via a plate heat exchanger, the heat from the used air is recovered/transferred to new outdoor air (replacement air). The system considerably reduces the cost of heating ventilation air and, at the same time, improves the building's indoor climate. A further advantage of the system is that it achieves a better pressure balance. This, in turn, improves the stability and efficiency of the negative pressure ventilation in the floor void. The plate heat exchanger is a sealed construction and no odours are transferred from the exhaust side of the plant to the air on its supply side.

Radon

The Nivell FTX system is also a reliable solution for radon decontamination, irrespective of whether the source is the ground or the building materials. The negative pressure in the floor void prevents the spread of ground radiation throughout the building. The heated outdoor air lowers the amount of radon that can come from building materials (referred to as "blue concrete").

Yet a further advantage is the lower negative pressure in the building (owing to the operation of the Nivell FTX system). This reduces the possibility of inward leakage of ground radon via, for example, wall interfaces that lie below the ground level.

FTX unit Parmair EXS

Parmair EXS is a small, efficient and quiet heat recovery unit for home ventilation. The unit has a lamella heat exchanger. This transfers the heat in the exhaust air to the supply air. The temperature efficiency is around 60%. Thus, over half of the heat

in the exhaust air is transferred to the supply air. The remaining heat requirement is taken care of by the integral post-heating battery.

Reversed air supply

To ensure high ventilation efficiency in the home, the heated outdoor air from the heat exchanger is fed centrally to one or two supply air "boxes" (in the entrance, hall, utility room, etc.) Air dispersion is then "reversed" from these supply air points (i.e. in, through doors, to wetrooms and living rooms and down to the floor void via the Nivell floor inlet). All parts of the house are thus efficiently ventilated.

Lower ventilation costs

Meeting the heat energy requirement of ordinary ventilation systems in buildings is very expensive. Thanks to heat recovery, operating costs using the Nivell FTX system are considerably lower than with conventional, mechanical, exhaust air ventilation. For example, a 140 m², building with ventilation flow as per construction standards requires around 50 l/s (180 m³/h). In areas with an annual average temperature of 6°C (Stockholm is 6.3°C), the yearly cost of heating this make-up air is around

SEK 7,100 (energy price = SEK 1 per kWh). Nivell FTX reduces the cost of heating the ventilation air to around SEK 2,840 a year.

An annual saving of a full SEK 4,260. Thus, a Nivell FTX system pays for itself in a very short time. Furthermore, the system can also be connected to your floor ventilation.

Technical data

Size (W x H x D): 585 x 480 x 430 mm

Weight: 35 kg

Capacity: 85 l/s at 150 Pa

Fan speed: 3 step of 7 selectable

Post-heating: 600W electric battery

Electrical connection: 1 x 230V 10A

Filter: EU5



Brochures

Also available for downloading at www.nivellsystem.se.



Nivell brochure

This brochure deals with the system as a whole.

Construction

Gives construction examples and advice and tips on how to install the floor joist system. Handy to have around at the worksite.

Ventilation

Goes into Nivell floor ventilation in some detail. Where a floor that includes ventilation is to be built both the “Construction” and the “Ventilation” brochures are required.

Before starting joist installation, it is important to follow the instructions in “Ventilation”.

Acoustics

Goes into Nivell System acoustic flooring in some detail. Where acoustic flooring is to be installed, both the “Acoustics” and the “Construction” brochures are required.

The “Ventilation” brochure should also be added if ventilation is part of the design. Before starting joist installation, it is important to follow the instructions in “Acoustics” (and also in “Ventilation” where relevant).

Support, tel +46 500-46 98 76

All construction projects are different. Our technical support service can help when you have questions or queries.

Outline

Self-inspection plan

04-04

For Nivell System VENTILATION INSTALLATION

6:2.2

Point		Approved
VE-1	Plan the installation as per the drawing. Follow the relevant installation instructions throughout installation.	<input type="checkbox"/>
VE-2	Check that fan noise is not disturbing in bedrooms, relaxation rooms, etc. Where necessary, remedy noise by fitting insulation slabs at appropriate points. Check also that exit air is not discharged too near openable windows or outdoor areas where noise/odours may be unwelcome. Fans and ducts in cold areas must be heat insulated to prevent condensation.	<input type="checkbox"/>
VE-3	Site the control equipment (thyristor or transformer) at a child-safe height or make it known that the control room is not to be accessible to children.	<input type="checkbox"/>
VE-4	Ensure/inform that the pipeline between fan and external wall grille (or rainhood) can be inspected.	<input type="checkbox"/>
VE-5	As per drawings, drill holes in the appropriate pipe runs (PRH - pipe runs with holes). Holes are to be spaced as per the separate hole plan. Also as per drawings, ventilation pipes must run with their holes aligned parallel along the subfloor and facing the marked air gap. Site them accordingly/check for compliance. Check that the holes are not blocked by insulation, etc.	<input type="checkbox"/>
VE-6	Check that all the joints in the floor void pipe system are sound. Ensure that there are end caps in pipe ends.	<input type="checkbox"/>
VE-7	Using, for example, galvanised hole straps, fit the floor void pipe system to the subfloor. Check that fitting has not caused any cracks to appear in the piping.	<input type="checkbox"/>
VE-8	Test-run the fan and then let it operate with all dampers open in position 0. Inform the construction supervisor that the system is to operate in this position until final adjustment has been carried out.	<input type="checkbox"/>
VE-9	Check that the construction supervisor's staff has been informed: <ul style="list-style-type: none"> - Of changes to original working drawings. - Where and how AD strips are to be installed. - Where and how BS boxes are to be installed. - That if, for any reason, the BS boxes have to be changed to BS boxes of a different size, a new air quantity calculation must be made and that the number of air inlets and their siting is to be based on this new condition. 	<input type="checkbox"/>
VE-X	Additional, relevant self-inspection plans: <input type="checkbox"/> Construction 6:2.1 <input type="checkbox"/> Acoustics 6:2.5 <input type="checkbox"/> Other...page(s)	
<p>Miscellaneous: The floor ventilation plant (fans, dampers and pipes) must be accessible for inspection and servicing.</p>		

Remarks:

Town _____ Date _____

Signature / Quality manager/Installation manager: _____

Name (please print): _____

Project:

Reference no.:

Articles

Tools

ART NO	PRODUCT	DIMENSIONS
Standard tools		
401	Drill bit and thread tap, complete	
410	Wood drill bit for art. no. 401	21 mm
700	Brace screwdriver, T-handle	
701	Brace screwdriver (short)	200 mm
703	Brace screwdriver (long)	1,000 mm
704	Screw bit drill shank	200 mm
707	Screw bit drill shank	600 mm
702	Screw bit (for power tools)	250 mm
706	Screw bit (for power tools)	600 mm
708	Screw bit (for power tools)	1,000 mm
710	Brace screwdriver, T-handle	1,000 mm
715	Adjustment tool for laser	
990	"Hällger" joist grip	
991	Handle for joist grip	
995	"Hällger" joist grip long	1,900 mm
Tools for anchor fitting		
601 A	Driftpin A (hollow red) for concrete anchors	250 mm
601 B	Driftpin B for concrete anchors (blue, expanding)	250 mm
602 A	Driftpin A (hollow red) for concrete anchors	500 mm
602 B	Driftpin B for concrete anchors (blue expanding)	500 mm
603 A	Driftpin A (hollow red) for concrete anchors	950 mm
603 B	Driftpin B for concrete anchors (blue expanding)	950 mm
950 H	Concrete drill bit	6 x 300 mm
951 H	Concrete drill bit	6 x 210 mm
952	Concrete drill bit	6 x 400 mm, long
963	Concrete drill bit	6 x 160 mm
Tools for use with screws		
935	Magnetic socket	8 mm
936	Socket holder	200 mm
937	Socket holder	400 mm
964	Concrete drill bit	5 x 160 mm
970 D	Concrete drill bit	5 x 400 mm
971	Concrete drill bit	5 x 300 mm
972	Concrete drill bit	5 x 210 mm
Miscellaneous		
0545	"Comfort strip"	5 x 45 x 2,000 mm
110	Nogging channel for joists	
120	Nogging channel for walls	

Ventilation

ART NO	PRODUCT	DIMENSIONS
Supply air		
049102	Metal floor inlet	BS -02 including filter
049105	Metal floor inlet	BS -05 including filter
049110	Metal floor inlet	BS -10 including filter
049120	AD strip, inclusive plastic anchors	L = 2,000 mm
Exit air (pipe components are also available in 40 mm dim.)		
220150	Plastic pipe	52 mm (2 metres)
220155	Elbow	45° / 52
220165	Elbow	90° / 52
220175	T-piece	52-52
220185	Muff	52
220190	End cap	52
031061	Damper	52
026062	Transition piece	63-52
220215	Bonding agent	50 ml
114415	Pipe kit (14 m of pipe complete with elbows and fittings/fasteners)	
Fans/miscellaneous		
114456	Nivell System 50, complete with pipes, AD strip, BS box etc.	
114477	Nivell System 70, complete with 5-step transformer	
114499	Nivell System 100, complete with damper and 5-step transformer	
114466	Nivell System 300/150, complete with damper and 5-step transformer	
114410	Exit air kit with cowl	
114420	Exit air kit wall acoustic	
114433	Alarm kit	

Floor structure

ART NO	PRODUCT	DIMENSIONS	
Joists			
200	Wooden joist	45 x 34 x 3,600 mm	
201	Wooden joist	45 x 45 x 3,600 mm	
202	Wooden joist	45 x 70 x 3,600 mm	
203	Wooden joist	45 x 95 x 3,600 mm	
204	Wooden joist	45 x 120 x 3,600 mm	
225	TM plank	45 x 220 x 3,600 mm	
300	Plastic joist*	45 x 10 x 3,250 mm	
Screws			
505	Low profile screw	50 mm	
506	Acoustic screw	66 mm	
525	Red, industrial screw	100 mm	
501	Original plastic screw	100 mm	
503	Acoustic screw	116 mm	
515	Plastic screw	150 mm	
517	Acoustic screw	166 mm	
530	Long plastic screw	300 mm	
535	Long acoustic screw	316 mm	
570	Screw support	400 mm	
<i>Art 501, 503, 505, 506, 515 & 517 are available with a support plate, for permanent installation with bonding mastic (no drilling).</i>			
Anchors			
901	Concrete anchor		
910	Concrete anchor for acoustic screws		
926	Concrete anchor, industrial		
Screws			
913	Concrete screw		
914	Concrete screw, acoustic screw		
915	Aerated concrete screw		
942	Wood screw/aerated concrete screw		
943	Wood screw/aerated concrete acoustic screw		
Insulation carrier			
805	Insulation carrier	20 mm	
810	Insulation carrier	34 mm	
811	Insulation carrier	45 mm	
801	Insulation carrier	55 mm	
812	Insulation carrier	70 mm	
813	Insulation carrier	95 mm	
814	Insulation carrier	120 mm	
Insulation slabs			
Isover	Paroc	Roxull	
GI 2035			20 x 555 x 1,200 mm
GI 3533	*	*	35 x 555 x 1,200 mm
GI 4533	*	*	45 x 555 x 1,200 mm
GI 7033	*	*	70 x 555 x 1,200 mm
GI 9533	*		
<i>* Roxull and Paroc Roxull and Paroc are ordered and invoiced directly via the respective supplier. The terms of your agreement with the supplier apply.</i>			

Sealing and bonding mastics

ART NO	PRODUCT	DIMENSIONS
1425	Sealing/Bonding mastic	300 ml grey
1430	Sealing mastic gun	
049124	Sealing strip	3 m roll

* Plastic joists are not covered by Nivell System's type approval

Other articles

In addition to the above, Nivell System stocks a wide range of ventilation products such as units, SPIRO pipes, fittings, silencers, parts and spare parts. Contact us for current lists and prices.

Simple • Safe • Flexible

The complete joist system



For your closest regional office and/or distributor, visit our website:

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Manufacturer's declaration of conformity: In compliance with 16 § in BFS 2000:27 (the ordinances of the National Board of Housing, Building and Planning) Type 2, this declaration shall always be given to the work management organisation when goods are delivered to the construction site.

Bygginnovationer i Mariestad AB confirms that the manufacture of NIVELL SYSTEM conforms with **type approval certificate no. 1255/97 and 0469/01** and the documents appertaining and referring thereto.

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