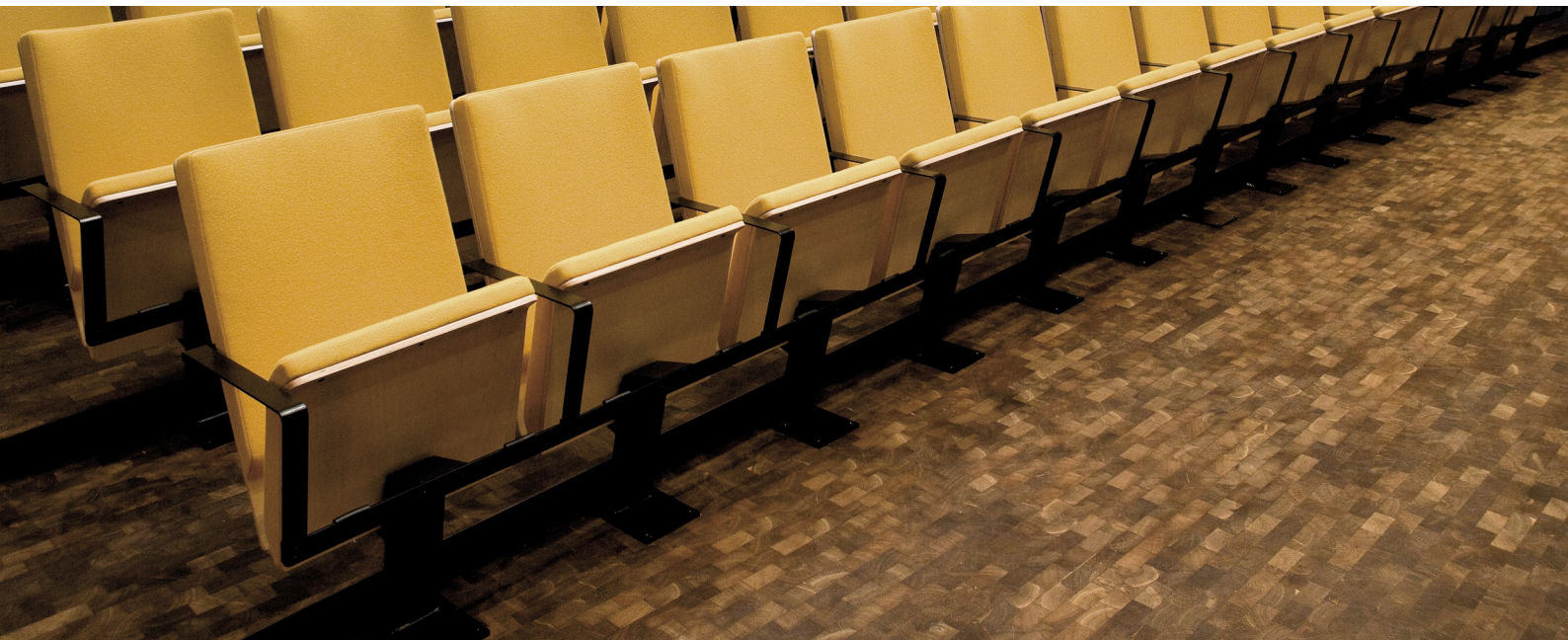


Installation Guide

End Grain Flooring



Robust and square with many expressions

In HØRNING block flooring the wood is cut against the grain.

This results in an extremely durable floor, particularly recommended for spaces that are subject to heavy loads.

With an infinity of combination options, you can create a unique look in each room.

The blocks come in various dimensions, depending on the type of wood and the access to fresh wood.

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End grain flooring from HØRNING is made of solid square/rectangular blocks cut opposite the grain structure with the annual year rings exposed (cross-cut end timber floor).

End grain flooring from HØRNING is very hardwearing and particularly well suited for rooms with heavy traffic. This floor may be sanded many times, as this wooden floor is without any tongue and groove. Installation should be carried out by a specialist.

In addition, it is possible to request a special workshop and industrial grading where the blocks are typically thicker, wider and longer. Moreover, this grading is more rustic and the moisture content in the wood is higher and acclimatized to the climate in the room. Depending on the usage and the dimensions of the blocks, the installation method for the workshop and industrial grading may differ from the installation method described in our installation guide.

As the surface of the flooring is the end of the wood, it can absorb moisture from the air or for example from floor cleaning. Therefore, direct moisture effects should be avoided.

Receipt of goods and quality control

By the delivery of the material the building must be dry and free of construction humidity, such as bricklaying and painting. Never have the floor delivered until the building is sealed, dry and warm, and the humidity levels are under control. Carry the material inside immediately after delivery, do not leave them outside under any circumstances.

Carry the floor into the room where it is to be installed – and stored before installation. Make sure to carry out a detailed quality check of the flooring as well as of other related materials that you have received before signing the freight note. Any complaints regarding visible defects must be made in writing before the floor is installed and no later than 8 days after receipt. A floor which has been installed has also automatically been approved.

Contractions and expansions

The moisture content in wood floors will always seek to adjust in equal weight with air relative humidity (RH) and temperature. The tree absorbs and releases moisture by changes in the relative humidity. It happens in all the wooden floors, but the movement wooden floors in form of contractions or expansions (swelling) depends of product type, wood species, thickness and surface treatment.

In practice, it is often necessary to know how much a floorboard or an entire floor contracts or expands. A commonly and internationally used realistic average used wooden floors of oak, douglas, beech, oak, ash, bilinga and walnut, a mean of 2.2 mm contraction or expansion per meter meters can in practice be calculated for each 1% change in the humidity of the wooden floor.

Preparations

The room temperature must be constantly 18-24 °C and the relative humidity should always be 35-65% (R.H.) before, during and after installation. If the humidity is less than 35%

(R. H.), there is a risk of cracks and damage to the wooden floors, which is not covered by the warranty.

The building must be closed and heating must have been installed and be in operation. The residual humidity in the concrete floor must not exceed 85% (R. H.).

Any and all work, which may expose the building to humidity must have been finished before you start installing wooden floors, such as bricklaying and painting.

Wooden floors and any possible glue must be acclimatized in the rooms where they are to be installed for a minimum of 48 hours or until the temperature of the floors is the same as the room temperature, which may take more than 48 hours.

Underlying sub-floors

The underlying sub-floor must be dry, firm, level, ready to be glued and thoroughly clean. In order to test the solidity of the underlying sub-floor, you may apply the scratch and pull test. HØRNING recommends that you carry out an adhesive test in the form of a pull test with a minimum solidity of 1.5 MPA.

Use a two-metre straight-edge and check the entire area thoroughly. If you find any unevenness of more than 2 mm, the underlying sub-floor must be primed and filled.

The residual humidity in a concrete underlying sub-floor must not exceed 85% (R. H.).

The underlying sub-floor must be damp proofed and rising or penetrating damp must be prevented. In case of uncertainty or residual humidity in the underlying sub-floor in excess of 85% (R. H.), then a suitable moisture barrier must be applied to the floor. Please follow the manufacturer's instructions.

In the case of fully glued wooden floors, please use 'HØRNING MS Flexlim' or a similar type of adhesive, which meets the requirements, on the underlying sub-floor with a residual humidity of up to 85% (R. H.). Please note that 'HØRNING MS Flexlim' is not a moisture barrier! If you use boards, you may use chip-board or plywood of minimum the same thickness as the wooden floor.

Walking comfort

You may improve the comfort when walking on the floor as well as the architectural acoustics by using HØRNING TF302 2 mm cork expansion strips on the underlying sub-floor. HØRNING TF302 2 mm cork expansion strips must be fully glued to the underlying sub-floor with the same glue as used for gluing the floor. Make sure that you use the correct adhesive trowel depending on the residual humidity. The glue must dry for at least 48 hours before the floor is fully glued to the cork expansion strips. HØRNING TF302 2 mm cork expansion strips are custom-made for products without tongue and groove and evens out any variations in the floor and the underlying sub-floor.

NB! Please note that HØRNING TF302 2 mm cork expansion strips are not moisture barriers.

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Under-floor heating

End grain flooring from HØRNING may be installed on floors with under-floor heating. Seeing as end grain flooring has vertical annual year rings, any cracks during the winter period will be slightly larger and you will therefore have to foresee cracks and gaps in the floor.

Distances to walls etc.

Normally the minimum distance between wooden floors and walls, pipes, stairs, permanent fixtures etc. must be at least 20 mm. However, the minimum distance should be at least 1.5 mm per one metre of flooring. Please use distance floor wedges and leave them in until the glue is completely dry.

Wooden floors expand and shrink depending on the climate in the room. In certain instances, it is necessary to use an expansion joint. This applies, for instance, in the following circumstances:

- By doors and permanent walls
- If you are installing a floor covering through several rooms
- In case of climatic deviations across the floor area, for instance, if there is only under-floor heating in parts of the floor area
- If there are expansion gaps in the underlying sub-floor.

Some projects may require an individual specification of distances. Contact HØRNING for further information.

Expansion joints and movement gaps are to be filled with permanently elastic material, such as HØRNING cork expansion strips, joint filler or by using a special profile. Please always follow the manufacturer's instructions.

Patterns of installation

There are no requirements as regards the direction or the pattern of installation. However, you would normally install the floor lengthwise, as this creates the optical illusion of a larger room.

Existing underlying sub-floor

Screw up the underlying sub-floor to avoid any squeaking. You may wish to sand the floor in order to obtain the correct level of planeness. Then you install the boards (typically chip-board or birch/birch plywood).

Board floors

Various types of boards may be used, however, they do not all have the same stability and tensile strength. Two layers are stronger and more stable than only one layer. Plywood is stronger and more stable than chip-board.

The boards must be of at least the same thickness as the wooden floor. Follow the guidelines of the board floor manufacturer.

Fully gluing by using 'HØRNING MS Flexlim'

You may use two different types of adhesive trowel:

Residual humidity of up to 85% in concrete underlying sub-floors: In this case a special adhesive trowel (number 6) should be used to glue (use 1 litre per square metre) the underlying sub-floor in a fully covering manner, so that the glue will work as a moisture retardant barrier.

Residual humidity of up to 65% in concrete underlying sub-floors: In this case you should apply glue to the underlying sub-floor by means of adhesive trowel no. 5 23/48 (use 0.6-0.8 litre per square metre = 1,000-1,400 grammes per square metre. NB: 1 litre of glue = 1.7 kilogrammes.)

Cut short the door frames in order for the parquet to go under them.

It is recommended that you install a guide panel to the underlying sub-floor, which must be installed at right angles to the walls, so that the rows of parquets do not shift in the wet glue while installing the floor.

Mix up the rows of parquets from several bundles in order for your floor to have a harmonious appearance. Then push down the rows of parquets into the wet glue and push them together carefully without any glue appearing between the rows of parquets, as this may result in uneven cracks because the rows of parquets will then be prevented from moving individually. Do not spread glue on too large an area, as you ought to be able to cover the area within approx. 20 minutes. The rows should be installed in staggered joints.

Should you get glue on the surface, please remove the wet glue immediately. Ensure that any and all adhesive is removed from the surface to avoid any subsequent shine from adhesive.

Please ensure at all times that you spread sufficient glue and that the adhesive trowel is vertical. If you use too little glue, the parquets will not stick properly to the sub-floor. Use sandbags on the pressure points/boards (especially along the edges) until the glue is completely dry.

Please do not walk on the floor while the glue is drying. Consequently, please do not use the floor until at least 48 hours after its installation. Remove the distance floor wedges once the glue has dried completely.

Expansion joists should be covered by skirting boards or special profiles.

Products without tongue and groove it's important that no adhesive gets stuck between the units as this may leave permanent marks on the surface of the wood.

After installation

In the case of fully glued floors or floors, which have been glued in tongue/groove, please do not walk on your new floor for at least 48 hours after installation or until the glue is completely dry.

48 hours after completing the installation of the floor you may remove the distance floor wedges, as the glue should then be completely dry.

When using 'HØRNING MS Flexlim', you must not start sanding any untreated floors until at least 2-4 days after installation depending on the climatic conditions in the room

For the best result, office chair mats should be laid out un-

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der office chairs. All chairs and table legs and other items that can scratch or mark marks on the surface should be fitted with felt. Remember to check the felt continuously and replace them if they get worn. Keep in mind that latex-containing pads, mats and black rubber wheels may leave marks on the surface of the wood floor.

Any oiling or lacquering of the floors after installation must be carried out in accordance with the manufacturer's instructions and you have to ensure that the oil or the lacquer is completely dry before the floor is uncovered or before you start walking on it.

May we suggest that you always cover the floor carefully in floor felt or a similarly appropriate material. If any additional building work is carried out in the room after installation and any surface treatment, the floor must be particularly well protected from dirt and pressure marks.

HØRNING always recommends that oiled floors should be re-treated with maintenance oil in order to achieve the best possible result. Oiled floors must not be washed or be subjected to water for at least 14 days after installation or the most recent oil treatment, as the oil dries when it comes into contact with air after installation. Please only use small quantities of water!

Wash lacquered floors with a neutral washing detergent and a firmly wrung cloth.

You should always clean the floor thoroughly before you start using it.

Avoid any type of dirt. Use mats by the entrance doors etc.

Avoid any damage to your wooden floor: Use felt or felt caps under chairs and furniture, use chair mats under office chairs etc.

Hoover and clean the floor regularly once you start using it.

The installation guide is based on long-term experiences and accommodates the most normal conditions in most building constructions.

Hørning Parket accepts no legal responsibility in connection with this indicative information. If you are unsure how to install the floor, please contact Hørning Parket.