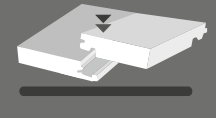


Detailed Installation Manual Herringbone

fold down

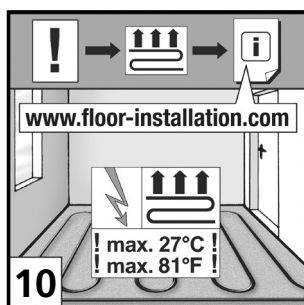
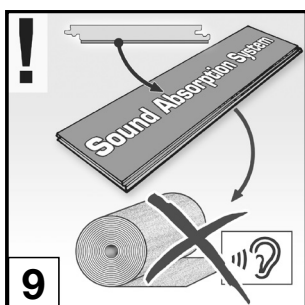
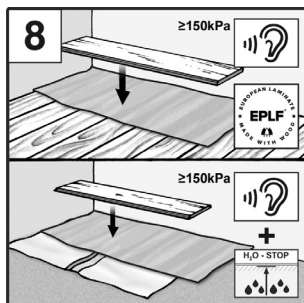
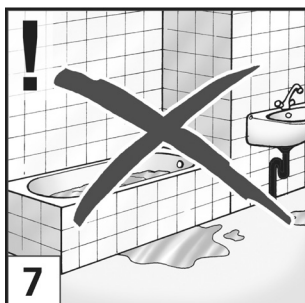
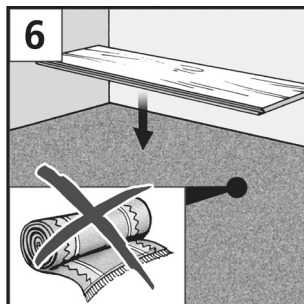
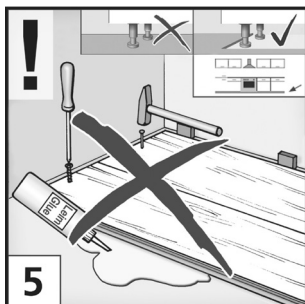
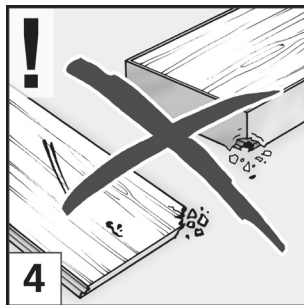
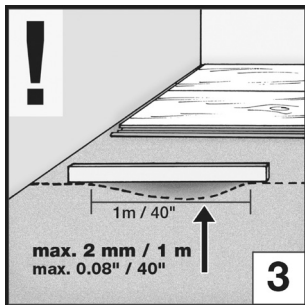
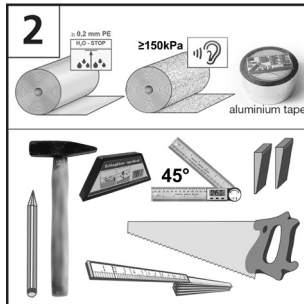
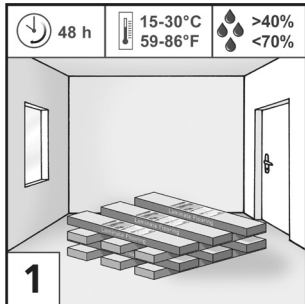


General and preparatory steps

Please follow these instructions carefully before and during laying! Please first read through these laying instructions! Flooring works are subject to the "General Technical Terms and Conditions for Construction Work" (ATV) DIN 18365.

In order to retain the full warranty entitlement, these instructions must be strictly adhered to.

Preparation: The sealed packs must be stored for 48 hours before the laying under the same climatic conditions as will be experienced during assembly. A room climate in the range from 15 to 30°C and a relative air humidity of 40 to 70% [1] is a key requirement for installing and maintaining the value of the laminate flooring. Materials and tools needed: system-related setup, i.e., as appropriate add2 PE film, add2 insulating underlay (pressure resistance CS $\geq 150\text{kPa}$ and thickness $\leq 2\text{ mm}$), Add2 aluminum strip, Add2 spacer wedges, saw, pencil, folding ruler, measuring devices to capture angles (e.g. protractors), hammering block, hammer (recommended: a recoilless mallet) [2]. Basically, no glue is needed for laying, i.e., the panels are joined without it. However, it is recommended to use the wood glue (white glue D2/D3) when filling open areas with relatively small pieces of laminate and when closing drilled holes for heating pipe ducts.



The substrate for laying the laminate panels must be such that the laminate flooring can be laid in accordance with the instructions. Suitable substrates include mineral substrates (such as screed, concrete, and asphalt), wood particle board structures and wooden board floors. The underfloor must be absolutely level, dry, clean and capable of bearing loads. Any unevenness in the floor exceeding 2 mm over a length of 1 m must be expertly leveled (per DIN 18202) [3]. The evenness of the substrate can best be determined using a straightedge or a long spirit level.

No offsets, steps or similar unevenness must be present. Construction dirt such as residues of render or plaster or similar must be removed completely. Cracks in the substrate must be also considered as concerning. In order to assert full claims for damages, the provisions of ATV DIN 18365 and § 4 para. 3 VOB/B must be observed.

The panels must be checked in good light for defects. Boards with visible defects outside the applicable tolerances, such as deviations in height, gloss, dimensions and color, must be rejected and replaced free-of-charge [4]. No claims can be made in respect of the panels that have been processed in any way or have already been installed.

A laminate floor is generally laid as a floating floor and must not be glued, screwed, nailed or otherwise fastened to the underfloor. Placing very heavy objects on it, such as fitted kitchens and cupboards before laying and to lay laminate floor only up to behind the plinth panel. In the event of failure to comply with these requirements any claims for damages shall be excluded [5].

Carpets must always be removed and are not a suitable substrate. If there is a carpet underneath the laminate flooring, when the laminate surface is walked on this produces a springing effect, thus causing strong pressure to the edge area. This destroys the tongue-and-groove joint and causes gaps to form. Carpets must also be removed for hygiene reasons. Mold and bacteria may grow in areas subjected to humidity [6].

Please note that this laminate flooring is not suitable for wet rooms such as bathrooms or saunas, and must not be laid there [7].

For substrates with and without underfloor heating, the specialist installer must perform and record the necessary CM measurement prior to installing the floor. Among other things, humidity must be measured when laying onto mineral substrates such as concrete, cement screed, calcium sulfate screed or stone tiles. Before laying, make sure the residual humidity of the screed does not exceed:

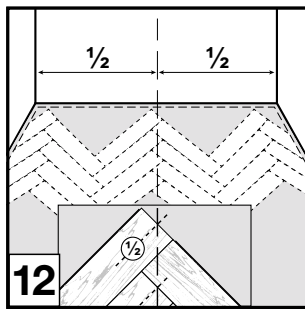
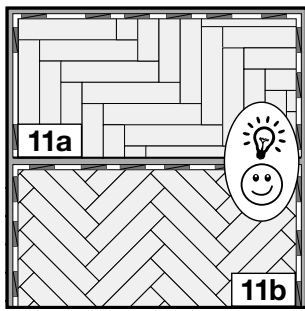
Cement screed: < 1.8% CM with underfloor heating, < 2.0% CM without underfloor heating
Calcium sulfate screed: < 0.3% CM with underfloor heating, < 0.5% CM without underfloor heating

To protect against moisture, a suitable damp-proof membrane (PE film) must be installed in a trough shape before laying onto a mineral substrate such as concrete, screed, etc. unless it is integrated into the system-related underlay. The runs are laid over the complete room geometry next to each other with around 50 mm overlap and fixed to prevent mutual displacement, using the aluminum adhesive tape. No PE film should be used with wooden substrates, e.g., chipboard panels or boards [8].

It is recommended to use a system-based insulating underlay (see required materials) on all substrates. The insulating underlay is installed edge to edge, i.e. is not overlapping [8]. If the laminate flooring already has an integrated insulating underlay, no additional insulating underlay should be used – double insulating underlay must generally be avoided [9].

The use of underfloor heating (hot water/electric) is only possible if expertly laid and provided that the heating operates properly [10]. The supply and installation of the underfloor heating system must be state of the art and commissioned by a specialist company in accordance with the relevant heating criteria. Accordingly, a signed heating-up and cooling-down protocol must be in place. Underfloor heating must be laid and operated across the full area of the room. Partial underfloor heating is not permitted. A temperature of 27°C on the surface adjacent to the underside of the flooring should not be exceeded at any time anywhere over the area. Any complaints in connection with the operation or the installation of an underfloor heating system is excluded if the requirements described above are not met. Claims can be asserted solely within the scope of our general warranty and guarantee provisions.

For floating installation, the thermal resistance of the laminate floor and the insulating underlay must be observed. The total of the thermal resistance of all components must be $\leq 0.15\text{ m}^2\text{ K/W}$ in accordance with the requirements of DIN EN 14041. When using insulating underlays which do not come as part of our range of accessories, any warranty is excluded in the case of floating installation on heating screeds with regard to compliance with the effective maximum permissible thermal resistance of the overall structure [10].

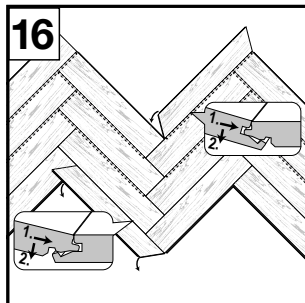
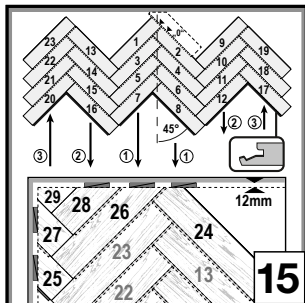
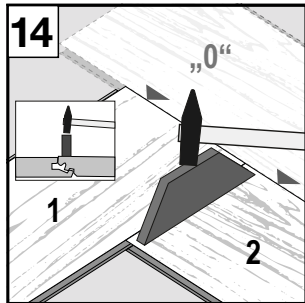
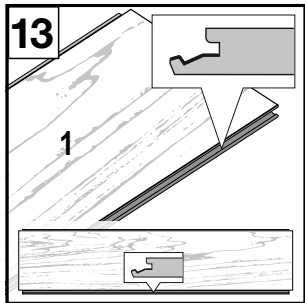


It is recommended that you sort the panels prior to laying to ensure the desired graining pattern and possibly color nuances. Once the packs are opened, start working immediately!

Before laying begins, a decision is needed on which installation pattern to choose [11]. The two patterns described below, "45° herringbone" [11b] and "90° herringbone" [11a], are based on this decision. Any deviation from these patterns requires adjustment of the laying scheme and is therefore not part of this manual.

The following generally applies to the laying technique described below:

- Before connecting any two panels, it must be ensured that all profiles of each panel are absolutely free from impurities, i.e., the profiles must be clean (no shavings, no wood residues or other foreign matter).
- Connection of the long sides of two panels is always created by angleengaging tongues and grooves [16].
- The long and short sides of two panels cannot be connected by simply placing them against each other or angleengaging into each other, but always with the aid of a hammering block, hammer and finishing tap [14].
- Once two panels are interlocked, the edge symmetry must always be checked along the V-joint, i.e., no misalignment or protrusion should be noticeable or palpable. The most precise laying possible, from the first connection on, prevents any error propagation and guarantees the best possible laying result [14]. It is advisable to use an auxiliary panel (0) [14][15] (see explanations below).
- During the laying of complete, untrimmed panels, the long groove side is always oriented in the laying direction or facing the installer – shown by bold black lines in [13] and [15].
- A gap of 12 mm must always be observed on all sides between the border panels and the adjoining room boundaries (walls, stairs, ledges, floor-level windowsills, door frames etc.) [15]. Add2 spacer wedges can be used for this purpose on all sides.
- No gluing must be performed when laying complete panels together. It is only when filling (closing) the remaining triangular areas [15] using small cutouts or when joining to drilled holes for heating pipes [19] that wood glue (white glue D2/D3) can be used as required. Should the use of wood glue in any form be deemed necessary, care must be taken to ensure that any glue overflowing or welling out is removed immediately and without residue with a wet cloth, in order to preserve the visual quality of the floor when in use. The use of wood glue refers here explicitly to connecting individual panels to each other – the floating installation of the entire flooring remains fundamentally unaffected by this.

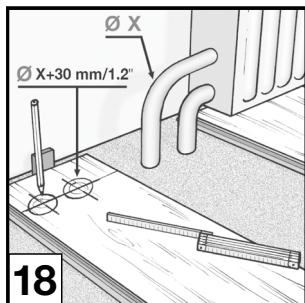
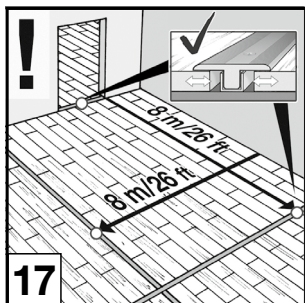


45° herringbone laying pattern

The following work steps refer to the scheme presented in the figure [11b]. If the laying direction or room geometry is different, the work steps must be adjusted accordingly. For square or rectangular rooms, the room centerline must be determined using appropriate measuring devices and marked so it is clearly visible [12]. In case of non-rectangular or sharply angled rooms, the customer must determine a preferred centerline, i.e., a reference line for the installation described below. It is recommended to set the centerline so that it comes from the center of the door and is oriented perpendicularly to the window or to the opposite wall.

The first step is to lay the panels (1) through at least (8) in the order shown [15a]. The result is referred to as the central strand or central spine and, once completed, it serves as an essential part of the alignment of the entire panel group with reference to the room geometry (alignment to the room centerline). Accordingly, laying it requires particularly careful attention.

The panel (1) must be placed roughly centrally in front of the rear wall [15]. The protruding groove lip [13] points in the laying direction, facing the installer [15]. The panel (2) is to be placed with its short tongue side against the long groove side of the panel (1) such that both panels together form the first "roof" [14]. Make sure that the V-joint edges of both panels are aligned edge-symmetrically at their contact surfaces. The hammering block required for laying must be placed with the longest trapezoid side roughly parallel to the short side of the panel (2) and approx. 1 to 2 mm from this edge [14].



While one hand is used to strike the upper surface of the hammering block with the hammer, the hammering block must be held in position with the other hand as firmly as possible, while resting on the panel (2). At least one tap is necessary to connect the panels. If the tap is not strong enough, several taps executed in the same manner may be necessary, if required. Two panels are connected correctly if no gap is visually detectable between the panels, no edge misalignment can be found and no height difference can be detected when tracing by hand the resulting V-joint.

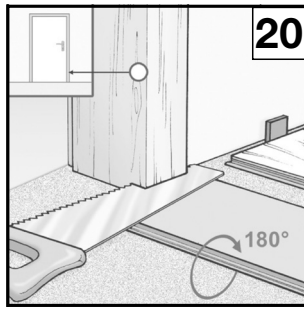
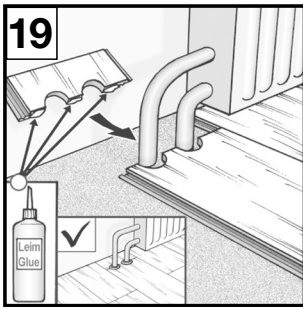
Then the panel (3) must be attached to the panel group (1)(2). To do this, the panel (3) is inserted lengthwise into the long groove of the panel (1) at an angle of approx. 30° and moved with a careful sliding motion in the direction of the panel (2). The motion ends when the panels (3) and (2) fit together. The panel (3) is subsequently lowered and released. The result is that the long groove side of the panel (3) similar to the panels (1) and (2) is facing forward or toward the installer in the laying direction. The panel (3) lying parallel to the panel (1) is locked into the panel (2) in the same way as locking the first two panels, using the hammering block and hammer. The edge symmetry and the absence of a gap between all panels must be ascertained. If the result is not satisfactory, the connection must be carefully loosened and reestablished.

Tip: in order to achieve the best possible edge symmetry for the first connection in the area of the joint edges of panels (1) and (2), the use of an auxiliary panel is recommended (0) [15], which is only placed in position during connection of the panels (1) and (2), and removed thereafter. For this purpose, position this auxiliary panel (0) as shown in the diagram; then connect with the panel (1) using the hammering block and hammer as described above; then connect the panel (2) with panel (1) by inserting at an angle, pushing carefully and attaching using the hammering block and hammer as described above; finally, angle out the auxiliary panel (0) by gripping carefully at the free (unconnected) long side, until the connection of (0) with (1) and (2) is loosened. The result is a perfect edge-symmetrical connection between the panels (1) and (2).

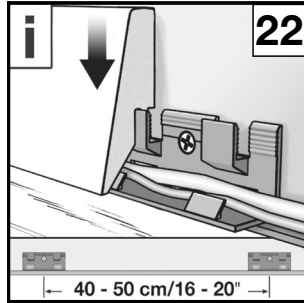
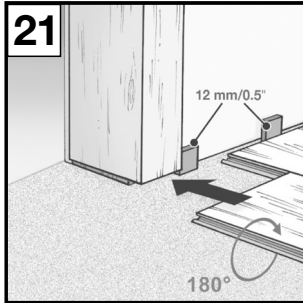
The panel (4) must be turned by 90° in relation to the panels (1) and (3) and thus placed parallel to the panel (2) – the groove lip is again facing the installer and oriented in the laying direction. All further panels of the central strand must be laid and locked in the same way as described previously. If the central strand consists of at least panels (1) through (8) – or further panels to continue the pattern – it must be aligned with the previously-determined room centerline as shown in the diagram [12][15].

This is followed by the extension of the central strand on either side to form a "W"-shaped herringbone pattern. The respective laying order is apparent from the diagram [15] and is similarly facing the installer (arrow 1 and arrow 2). The "W" pattern must be laid until no full-sized panels can be used any longer. Make sure that the correct alignment of the central strand with regard to the room centerline is observed at all times [15]. Due to the floating installation of the panel group and the fact that its weight by area is not yet too high, it is currently still possible to align the group to the intended centerline at any time by moving it manually, should this be necessary. Interlocking the individual panels with each other is to be carried out following the abovementioned procedure.

The gradual side filling (closing) is carried out according to the diagram [15]. It must be noted here, however, that from now on there is a change of laying direction: so the first extension row on the left and on the right of the "W" pattern is oriented away from the installer (arrow 3), while the following one is oriented towards him again and so on. Nonetheless, the groove lip basically always faces the installer. Reverse laying (away from the installer) is possible [16], since in this laying method the long



groove lip of the panel to be laid can be placed under the long tongue side of the panel already laid. However, the short sides must still be connected to the long ones using the hammering block and hammer. By continuing the abovementioned pattern, flooring is now installed in the main laying direction, i.e., oriented towards the installer, until the rear end of the room is reached and no more complete, i.e., untrimmed panels can be added. If laying complete panels is no longer possible on all sides, it is necessary to start filling (closing) the remaining triangular areas. This is indicated in the diagram [15] with the panels (24) through (29). To do this, you must still follow the laying pattern, but use increasingly smaller pieces of panel. To trim the panels with 45° miter, a suitable protractor or a saw with angle-adjustable fixed stop must be used. When filling the remaining areas, it must be ensured that a gap of 12 mm on all sides between the panels and walls is maintained.

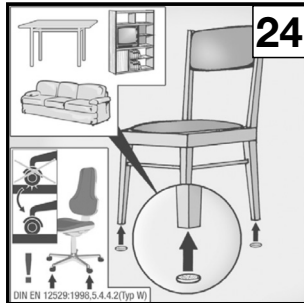
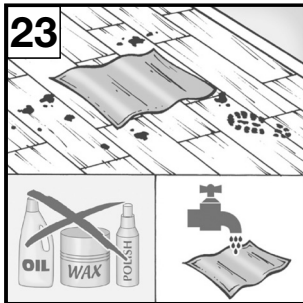


90° herringbone pattern, laid from a room corner

The fundamental work steps, in terms of angle-engaging on the long sides and pushing, as well as using the hammering block and hammer, are identical with the previous explanations for the 45° herringbone laying pattern. Similarly, the groove lips of the complete (untrimmed) panels are always oriented forward in the laying direction. The main difference with the 90° herringbone laying pattern is that the central strand is not aligned with a previously marked room centerline, but is started directly from a room corner. In the diagram [11a], the laying is started from the back left corner. However, through mirroring or rotation, it can be started from any room corner.

Other observations

Installation areas with length or width exceeding 8 m and sharply angled rooms require at least 20 mm wide expansion joints [17]. Only then can the floors expand or contract sufficiently if exposed to climatic changes. It should be noted that the same applies when laying across a full room. In this case, the surfaces must be interrupted in the door frame area. Expansion joints can be expertly covered using corresponding profiles. Expansion joints may not be filled with cables or other materials. The requirements of ATV DIN 18365 should be observed. Expansion and edge joints in the substrate must not be force-locked or otherwise impaired in their function. Expansion joints must be accommodated in the design with the same degree of expandability.



For heating pipes, holes must be cut that are 30 mm bigger than the pipe diameter [18]. Cut out the "trimmed piece", glue it, fit it in place and fix it in position using a wedge until the glue has hardened. Then mask the cutouts with radiator sleeves [19].

Wooden door frames must be trimmed such that a panel with impact sound insulation including a 2-3 mm gap can fit underneath [20, 21].

All spacer wedges must be removed after laying.

As a perfect finishing touch, the skirting board clips are to be attached to the wall at intervals of 40-50 cm and the skirting inserted that has been cut to fit [22].

Cleaning and aftercare

Remove loose dirt by sweeping or using a vacuum cleaner that is suitable for hard floors.

For ongoing maintenance cleaning, use only our add2 laminate cleaner.

Polishes and cleaners with care additives such as wax, oil, etc. are not suitable for treating laminate flooring surfaces. The laminate floors should not be polished.

Footmarks and dirt can be wiped off with a well-wrung out, drip-free cloth [23]. Avoid standing water on the surface under all circumstances!

Special care should be taken with flower pots, vases and similar standing on the laminate flooring. In such cases, a waterproof drip tray must be used.

Stubborn soiling must be treated selectively and removed using a suitable cleaning spray or acetone. Do not apply additional sealants to the laminate flooring surfaces.

Warning! Protect your flooring against scratches and indentations! Use a sufficiently large mat in entrance areas to trap dirt.

Wooden, metal or plastic feet on furniture must be fitted with felt pads. Only use office chairs with soft castors (DIN 12529) [24] or place a proprietary protective mat underneath the chair.

Following these instructions will help increase significantly the value retention of the laminate flooring and preserve full entitlements under the warranty.