MANUAL FOR FLOORING INSTALLATION

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MAIN EXTRACTS FROM

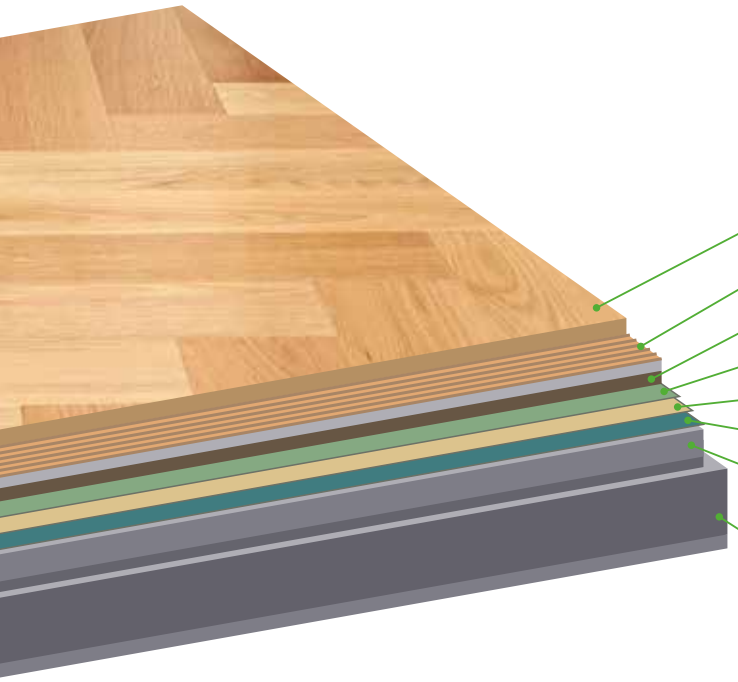
"THE PARQUET- FROM THE PROJECT TO THE INSTALLATION AND SETUP"

The purpose of this text is to report the most salient points of the manual, which represents the updated and complete reference for all professionals working in the sector and especially for installers, companies, designers and technicians.
It is our interest to provide the customer with the main technical information on the parquet installation, to raise the quality level of both the product and the installation itself.

1. INSTALLATION SURFACES

By “installation surfaces” we mean the surface on which, with different methods, the wooden strips are directly applied. The laying surface has the dual function of supporting the floor and distributing the loads. Therefore, it represents the support that must resist the most diverse mechanical stresses.
The stress is caused by the wooden flooring itself (due to the natural contractions or expansions caused by the temperature and humidity variations of the wood), but also by permanent and accidental loads, both static and dynamic, which it bears.

In most cases, under the installation surfaces there is the **compensation layer**, intended for the systems. Even further below, we find the actual **load-bearing layer**, which is generally a slab, especially on the upper floors, while on the ground or underground floors it can be made with other construction methods.



Scheme of a typical wood flooring

1. Wooden floor or parquet
2. Adhesion layer (glue)
3. Load distribution layer (cement screed)
4. Protection film (0.05 mm polyethylene sheet)
5. Thermal / acoustic insulation layer
6. Vapour barrier
7. Compensation layer (cellular concrete) containing the systems
8. Load-bearing structure (slab)

The indications in brackets exemplify one of the possible materials of use.

For details of each layer, please consult the complete manual **(pages 69 to 103)**

The current three most common installation methods for parquet are:

- **glued installation:** the elements are fixed to the laying surface through adhesives
- **nailed/screwed installation:** the elements are tied to the laying surface by nailing or screwing
- **floating installation:** the elements are leaned on the laying surface

The installation surfaces must therefore be designed and built to be perfectly suitable for the chosen installation method, also considering the distribution of loads and stresses. The choice should normally take into account:

- intended use of the room
- location and conditions of the construction site
- thickness
- type of floor to be installed
- waiting time for installation

The installation surfaces can be summarized as follows:

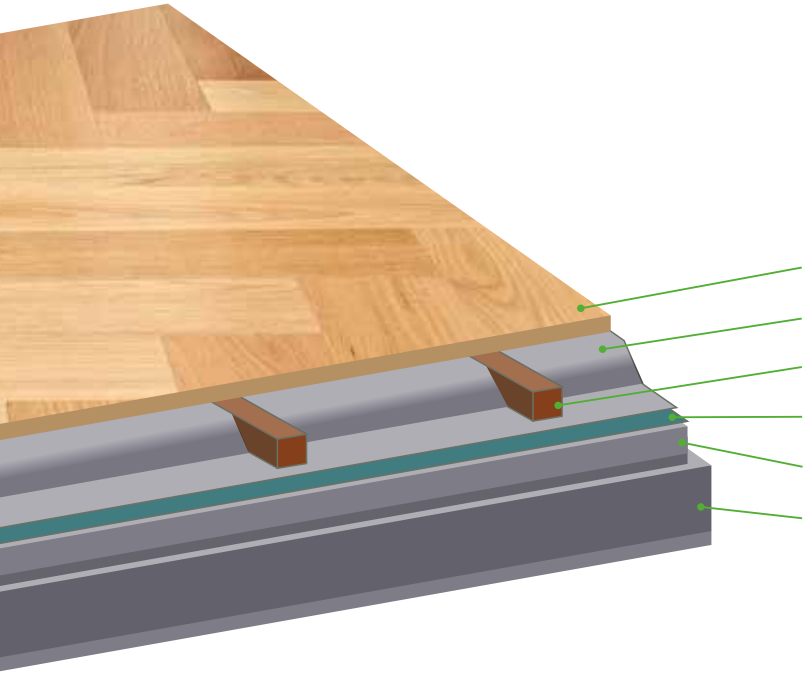
- cement screeds,
- anhydrite-based screeds,
- panels and wood products,
- installation floors made up of pre-existing floors, even recently built.

"TRADITIONAL" CEMENT SCREED

The cementitious screed is a construction element with homogeneous thickness, usually from 3 to 8 cm, made with inert cement based concrete product, often with squared steel mesh insertion or other suitable materials. There are different types of cement screeds, such as the adherent, desolarized, floating, heating and / or cooling screed.

Perimeter joints must always be provided so that the screed is spaced and separated from the walls.
The screed may contain embedded laths or joists, which are necessary if nailed / screwed installation is planned.

For this reason, the nailed/screwed installation requires a thicker screed than the one of the glued installation. The orientation of the laths should always be orthogonal to the boards; consequently, the direction of the boards must be established before the realization of the screed.
A 45° orientation of the laths with respect to the long side of the wooden elements is acceptable. It has to be considered that nailed / screwed wooden floors might react to percussion causing an empty sound; in addition, they can creak, because of the hygrometric settlements of the elements.



Cement screed with laths for nailed flooring

1. Nailed parquet
2. Cement mortar
3. Laths (locating strip insert)
4. Vapor barrier
5. Compensation layer containing the systems
6. Load-bearing structure

VERIFICATION OF THE CONDITIONS OF THE CEMENT SCREED: it is the responsibility of the construction manager and of the client (in case the construction manager is absent) to provide a high-quality screed and to ensure and verify its following characteristics:

a. sufficient and uniform thickness,
b. homogeneous mechanical resistance throughout the thickness,
c. absence of cracks and cracks,
d. protection from heat sources,
e. protection from water and humidity,
f. moisture content,
g. flatness and horizontal dimension,
h. surface quality and cleanliness.

The installer is responsible (unless otherwise agreed between the parties) for checking the characteristics expressed in points b, c, f, g, h before proceeding with the installation. Tolerances and methods for determining all points are explained and illustrated in the complete manual **(pages 79 to 90).**

ANHYDRITE-BASED SCREEDS

This screed is produced with a mixture of finely ground natural or synthetic anhydrite and aggregates, with the addition of additives to facilitate levelling and hardening. They are lighter than traditional screeds and they also dry faster. Before any glued installation of the flooring, it must be dusted and treated with a primer that is compatible with the chosen adhesive. Unless other indications from the supplier, it is not recommended to use adhesives that contain water.

PANELS AND WOOD PRODUCTS

Wood-based panels and wood-based products are often used as laying surface when it is necessary not to add an excessive load to the structures, when there is no particular need for compensation and especially when you want to avoid additional moisture to the subfloor (since all screeds needs water). They are a good solution for obtaining a plan suitable for all types of installation. The vapor barrier must be provided under the laying surface.

PRE-EXISTING INSTALLATION FLOORS

It might happen that the flooring installation can be requested in already paved rooms. Consequently, there might be problems with the finished dimensions, which must be adapted to the new planned thickness. Old wooden flooring, old rigid non-wooden flooring (ceramic, porcelain stoneware, marble, etc.) and old soft flooring (carpet, PVC, linoleum, etc.) can be included in this category.

TO REMEMBER!

Regardless of the different laying surface, remember that:

- The wooden boards/strips remain stable when placed in an environment that has an average temperature of 20 3±5 ° C and a degree of humidity between 45% and 60%. These conditions are valid both before the installation and in the following months.

- Before the installation, firstly it is necessary to check that the entrance doors, external windows and their relative glasses have been installed; secondly, the other floors must have been installed; thirdly, any other work to be carried out on/in the construction site, such as additional walls, assembly of coverings and bathroom fixtures, etc. have all to be completed.

2. PRELIMINARY CHECKS FOR INSTALLATION

ENVIRONMENTAL AND CONSTRUCTION SITE CONDITIONS

The flooring installation can occur only when the following conditions are met:

- the external doors and windows must have been installed with the relative glass and the rooms to be paved must be protected from atmospheric agents;
- the other types of flooring must already have been installed;
- further walls, assembly of coverings and bathroom fixtures must have been completed;
- the room **temperature** must be **greater than or equal to 15°C**;
- the air **humidity** in the room must be **between 45% and 60%**;
- the substrate conditions have been verified as per the manual and the substrate is compliant and suitable for installing the flooring;
- the preheating cycle has been carried out in the case of heating screeds.

The installation of the internal doors and any last painting of the walls are allowed after the installation of the flooring.

ON-SITE STORAGE AND OPENING OF PACKAGING

On site, the wooden elements must be kept in their **original packaging**. The packages must be lifted off the ground to avoid any absorption of humidity. **Storage** places must be closed, clean and dry.
Adhesives and finishing products must be stored under the environmental conditions indicated by the manufacturers.

The packages must be opened at the time of installation according to the specific indications provided by the manufacturer. When starting the installation, it is advisable to open several packages simultaneously to mix the wooden strips and avoid colour differences on the flooring.

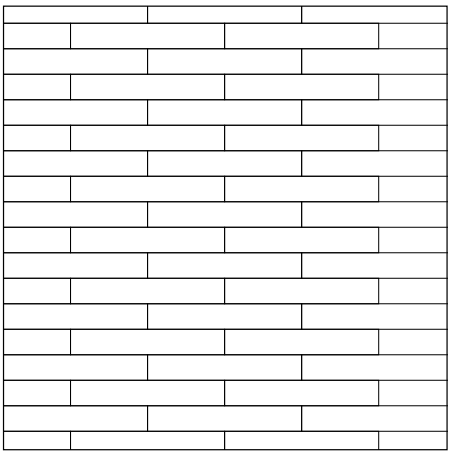
3. THE INSTALLATION

The installation patterns depend on multiple factors such as: the size of the wooden elements, the use of both geometric and non-geometric mosaic floors, the fantasy of the combinations.

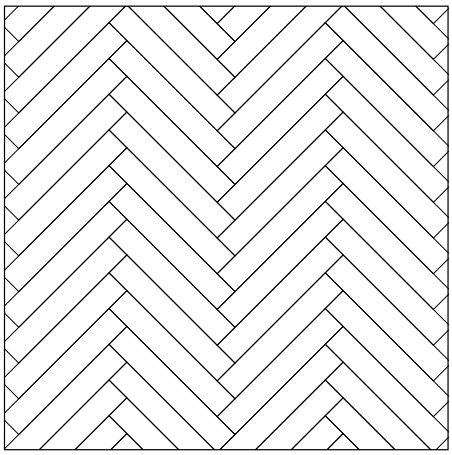
The main ones are:

- strip-pattern parquet flooring;
- brick-pattern parquet flooring;
- herringbone parquet flooring;
- versailles / chantilly;
- hungarian-pattern parquet flooring;
- mosaic or basket pattern parquet flooring.

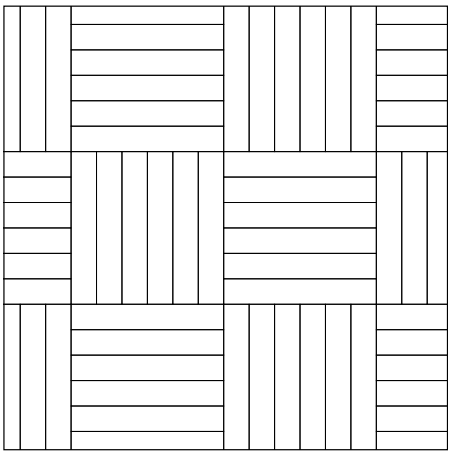
For the specifications of each type, please **check the manual (pages 109 to 111).**



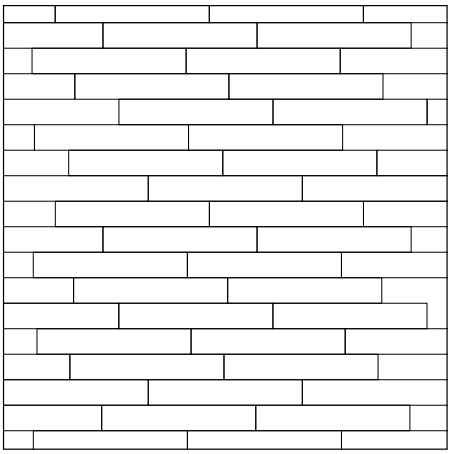
1 BRICK-PATTERN PARQUET FLOORING



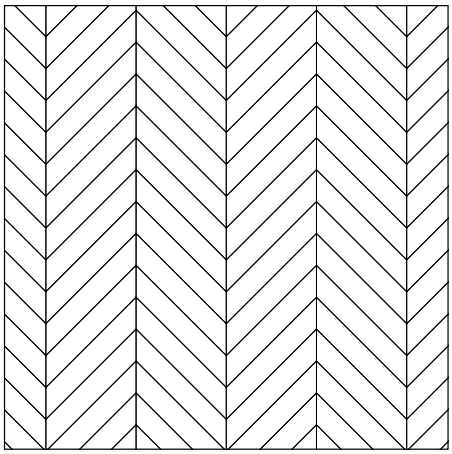
3 HERRINGBONE PARQUET FLOORING



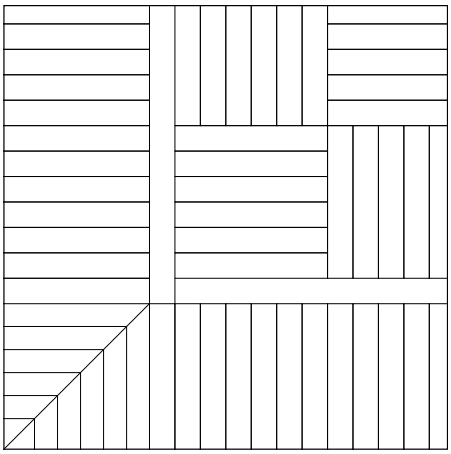
5 MOSAIC OR BASKET PATTERN PARQUET FLOORING



2 STRIP-PATTERN PARQUET FLOORING



4 HUNGARIAN-PATTERN PARQUET FLOORING



6 VERSAILLES / CHANTILLY

GENERAL CRITERIA FOR EXECUTION

There are no general rules regarding the choice of the right laying direction; indeed, there are many possible solutions, perhaps all equally valid.
It is important to create an expansion joint along the perimeter of the room, inserting shims in the initial phases and wedges in the closing ones or by means of special clamps and belts, especially in the case of large elements. As far as possible, it is advisable not to place the parquet on a rigid surface that would prevent the natural movement of the wooden elements.

TYPES OF LAYING

There are three main types of installation: floating, gluing and nailing / screwing.

FLOATING INSTALLATION

Floating parquet must always be installed on a vapor barrier and on a layer of acoustic insulation, which can be made up of various materials such as foam, pressed cork, wood fibre panels, geotextiles, rubbers, etc. The acoustic insulation layer has the double function of making the contact of the parquet with the laying surface uniform and of limiting the transmission of noise in the rooms below. The vapor barrier must be turned up on the perimeter walls and cut at the upper edge of the flooring.

The basic condition for the success of the work is the **screed flatness**; if it is not flat, non-integral flooring areas could be created, causing consequent movements of the floor. The installation is carried out by placing the wooden elements directly on the even laying surface, on the vapor barrier and on the layer of acoustic insulation. The elements are fixed together with a thin layer of D3 vinyl glue, applied to the lower part of the groove, or by means of special “dry” joints, or by any other mechanism that ensures the **matching** of the elements according to the specifications provided by the manufacturers. During installation, a distance from the walls proportional to the size of the flooring must be respected. In general, we recommend a perimeter joint of about 1 cm for a floor size of about 6x6 m. In correspondence with thresholds and connections with other floors, appropriate **expansion joints** must be provided to be subsequently covered with joint cover profiles.

It is necessary to use a skirting board of suitable thickness to cover the perimeter edge of the finished floor. This space must be planned for walls, doors, French doors, chimney plates, pipes and other adjacent floors. If these instructions are not followed, there could be abnormal swelling of the parquet (even if not near the contact point).

GLUING INSTALLATION

A **suitable adhesive** is spread on the laying surface by means of a **triangular spatula**, working it several times with a large semi-circular movement, in order to favour a good contact between the adhesive and the substrate and obtain the so-called **adhesive lines**.

It is important to follow the manufacturer's instructions and comply with the minimum indicated yields. A contact of the adhesive for a surface equal to at least 65% of each single element, regularly distributed, is to be considered satisfactory. An excess or a lack of adhesive can also cause defects.

It is advisable not to spread the adhesive on too large surfaces, following the general instructions provided by the manufacturer.

The installation begins by creating a first row in the starting point of the chosen installation geometry and continues with the subsequent rows. Then proceed to the perimeter walls, along which you need to leave a 5/10 mm joint, depending on the size of the flooring and according to the information provided by the manufacturer. It must be then covered by a skirting board of adequate thickness.

The purpose of this joint is to allow the natural expansions of the wooden flooring that occur after installation, due to the hygrometric conditions of the elements. The surface of the pre-finished elements must then be perfectly cleaned of any residues or smudges of glue, while for the surface of the non-finished elements, cleaning is not necessary as these will then be smoothed and then finished on site.

For non-pre-finished elements (to be sanded) the sides must not be glued at all, while the heads can be glued.

For the choice of glue, it is advisable to consult the **UNI EN 14293 standard** - Adhesives for gluing parquet flooring - considering the characteristics of both liquid adhesives and hardened adhesives.

NAILING/ SCREWING INSTALLATION

The fixing of the boards is done with screws or nails to be slanted at 45°, generally in correspondence with the upper part of the tongue and up to penetrate the support for at least 20 mm; indeed, it must be suitable to allow these operations.

The main types of support are laths embedded in the screed, wooden plank, panels or wood products, laying beams. Regarding the nails, it is necessary that:

- they are of iron and not of steel, in order to avoid breakages;
- the nail diameter is between 1.3 and 1.4 mm;
- the nail length is between 35 and 40 mm;
- if using compressed air or mechanical nailers, they comply with the envisaged equipment.

INSTALLATION ON HEATING SCREEDS

The humidity of the screeds must be determined with a carbide hygrometer and cannot be higher than the following values:

- 1.7% for cementitious or hydraulic binder screeds;
- 0.2% for anhydrite screeds;
- 1.5% for screeds with fast drying hydraulic binders.

To achieve this, it is necessary to proceed with the gradual activation of the heating system, which helps stabilizing the screed and bringing it to the ideal degree of drying, i.e. in equilibrium with the environmental climatic conditions, in which it will be when it is in operation.

The customer or works manager must guarantee the following conditions to the installer:

- presence of a vapor barrier;
- minimum thickness of the screed of 6 cm, of which at least 3 cm above the pipes;
- minimum curing time of the screed (before the start of the heating system) which must be at least 21 days for cementitious screeds, 7 days for anhydrite screeds, 3-4 days for fast drying and very fast drying cementitious screeds;
- the heating system has been put into operation and is adequate;
- the maximum operating temperature of the fluid was maintained for at least 10 consecutive days, adequately ventilating the premises;
- the cooling process took place gradually reducing the temperature of the fluid by 10°C per day, up to the condition of approximately +20°C.

The heating system must be turned off about 5 days before laying the parquet and in any case the surface temperature of the screed at the time of laying must be around 15-20°C with a maximum environmental relative humidity of 60%.

4. MAINTENANCE OF VARNISHED FLOORING

For a routine floor maintenance, we recommend:

- to provide a **doormat** at the entrance of the house, in order to remove dust, dirt and abrasive particles from the soles of the shoes;
- to remove dust or vacuum periodically;
- to clean the floor with a well-wrung cloth, previously moistened with water and neutral detergent for wooden floors;
- to periodically treat with self-polishing or re-polishing **protective products**, which are resins-based in water dispersion; alternatively, treat as indicated by the manufacturers.

The first cleaning of the flooring can be carried out only after at least 7 days from its varnishing.

Maintenance can begin 2-4 weeks after varnishing. A correct and constant cleaning and maintenance favour a longer life of the floor.

For further details, **refer to the manual (pages 171 to 173).**

PERIODICITY OF ROUTINE MAINTENANCE FOR FINISHED FLOORINGS			
Maintenance activities	**Foot traffic of the parquet**		
	Low	**Medium**	**High**
Dusting	Daily	Daily	Daily
Cleaning	Weekly	Weekly / Daily	Daily
Maintenance with protective products	Biannual	Monthly	Weekly
Note: these indications are purely examples			

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