# INSTALLATION GUIDE





on bringing home the best of wood

Mikasa Doors & Frames have been crafted edge-to-edge by skilled artisans

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Entertain the second of the second

## REQUISITES FOR INSTALLATION OF WOODEN DOORS

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Handling and Stacking

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## **GENERAL INTRODUCTION**

These guidelines are prepared in order to provide assistance and guidance during the planning and execution stages of contracts that involve installation of custom-made doors.

The guidelines cover:

- Site Reception
- Storage
- Handling & Stacking
- Installation



Aspects of Mikasa DOORS, DOOR-SETS & DOOR FRAMES supplied by Greenlam Industries Ltd.

Whereas, the Mikasa Doors/Door-sets/Door frames are manufactured and supplied in conformance to the agreed designs received and specified by customers and since the supplying plant does not have any control on the actual installation methods adopted, the guidelines given here are exclusive and in lieu of all other warranties, expressed or implied, in fact or by operation of law or otherwise, or arising by course of dealing or performance, installation or repair or use.

To maintain a door/door-set/door frame there must be no changes, UNLESS AND OTHERWISE AGREED BY WORKS, to the door/door-set from how it was supplied to the installer. Any damaged components must be obtained from the manufacturer to ensure correct specification.

A list of common tools and tackles that should be used for installation is given on the next page of this guideline.





--Drilling machine (Reverse/forward) capacity 10mm - 1 No.

Electrical/battery operated (Hilti/De-Walt/Bosch)



-Hammer drilling machine (Hilti) - 1 No.



----Concrete drill bit (Hilti) - 1 Set

HSS drill bits 2.7mm, 3.0mm, 4.0mm - 2 Packets of each

PH2 - 1 Pkt.

PH1 - 1 Pkt.



--Anchor fastener HRD-C 8x120 (Hilti, Germany) - as per the requirement

Torx end driving key (standard matching to the anchor fastener) - 1 box



----Standard plumb line - 1 No.

Air compressor single cylinder, 2hp, 220 volts - 1 No. 150 liter tank capacity

PU air hose Ø6/Ø10mm x 20-25 meter long - 1 No.



--Electrical extension line 2.5mm - 4mm square

3 core cable - 1 Unit, Complete with 16 - Ampere

electrical top and 20-25 metre long cable



---- Silicon sealant (Clear) - 1 No.

Application gun for silicon sealant - 1 No.

Block plane 6" - 1 No.



----Hand saw - 1 No.

Triangular file 4" long including handle - 1 No.

PU foam (Mc-Coy SOUDAL) Saudafoam-1K - as per the requirement

Application gun for PU foam (SOUDAL) -1 No. .....



Gun & foam cleaner (Mc-Coy) - 1 bottle

Quick grip 600-900mm (Irwin) - 4 Nos. "



Quick grip 900-1200mm (Irwin) - 2 Nos.

Measuring tape 3-Mtr./5-Mtr. (Stanley) - 1 No. ......(5)



Water level 600mm (Stanley) - 1 No. -----(



Screw jack 600-900mm & 900mm-1200mm - 1 No. each.....



Brad nails 16 SWG x 40mm & 50mm long (Kaymo) - 1box each-



Chisel (12mm, 19mm, 25mm) Stanley - 1 Set -----(\*



Hammer 100 gms - 1 No.----





PVC mallet - 1 No.

Retractable utility knife (Stanley) Model: 10-175/099 - 1No.



Tri square 200mm (Stanley or equivalent) - 1 No.----(



Heavy duty utility blade (Stanley) Model: 11-921 H - 1 Box

Cushion grip nail set (Stanley) Model: 58-930 - 1 Set -----







## SITE RECEPTION

- An authorised site supervisor/store staff should verify the correct receipt of the goods against the packing list and only then the goods are de-palletized.
- Estimate the number of door sets that can be installed during the shift and ensure to unwrap only the required number of doors sets.
- Do not unwrap any additional door sets if the planning for installation cannot be accompanied during the shift operation.
- The material must be segregated and placed floor wise under the supervision of a technical staff.
- It is recommended that the hardware must be issued from stores according to the fitting targets per day to control the missing/lost stuff issues at the final stage.
- Moisture content: Timber doors are manufactured with moisture content of 10-12% for internal use and 12-14% for external use. Do not bring joinery to site until moisture readings are between 40 and 60% RH and until after forced-drying procedure has been completed.



The table below illustrates acceptable and unacceptable levels of humidity for timber - based products:

RELATIVE HUMIDITY	EFFECTS
Below 40%	Materials are susceptible to 'Case Hardening' where the cell structure of the material collapses, resulting in deformation (Bowing/Warping) of the material structure.
40-60%	This level is the 'Optimum' period, to sustain conditioned manufactured joinery, whereby atmospheric moisture is at 'Equilibrium.'
60-75%	Timber being 'Hydroscopic,' is able to absorb moisture, resulting in 'Uncontrolled' expansion and destabilisation of the material.
Above 75%	Materials are now exposed to high level of atmospheric moisture, deformation of the cell structure and uncontrolled excessive swelling resulting in size/shape alterations to the manufactured joinery, the details of which may not return to their original shape after atmospheric stabilization.



#### STORAGE

The store must be clean, level and suitable for stacking doors and provide sufficient space for doors to be moved around, sorted and restacked as installation proceeds. The floor should be suitable to allow the use of pallet moving equipment. (Fig. a)

### HANDING & STACKING

- Avoid bruising and damage caused by heavy contact with the ground.
- Wear clean gloves to avoid leaving finger marks. (Fig. b)
- Do not store door leaf standing, upright or leaning as this causes bowing. Stack horizontally on level supports that extend across the full width of the bottom door leaf.
- Provide at the centre and at 300mm from each end if over 2150mm in height, a second intermediate support.
- Cover the supports with cardboard or something similar to prevent marking.
- Stack with the largest door leaf at the bottom with size reducing up the stack. Plain flush door leaves can be stacked to a maximum of around 20 door leaves. (Fig. c)
- When door leaves have projections such as glazing beads or pre-fitted hardware, provide level intermediate battens between door leaves to allow clearance.
- Assemblies: The same principles apply when storing door assemblies. Stack with
  the door leaf in the closed position on the door frame doorstop. Separate each
  assembly with level battens to ensure that projection such as hinge knuckles do not
  cause damage.
- Covering: Exposure to light will fade timber. Cover stacks with opaque sheeting to
  prevent fading and keep doors clean. This is very important for veneered doors.
  (Fig. d)







Small Length Doors

Medium Length Doors

Large Length Doors

Maximum of 20 door leaves



It is strongly recommended that the installer is appropriately trained, possesses adequate skill and awareness pertaining to -

- the size of operating gaps
- hardware and the quality of the preparations
- the quality of supporting construction and the prepared opening
- the fixing of the doors and door frames

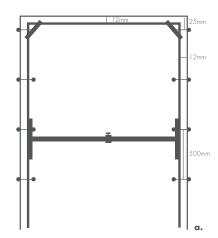
POP protection for floor must be removed before initiating the installation. The POP mud will affect the product quality adversely if removed after the installation. Ensure that the installation surroundings are clean, free from direct water, water logging, foreign matter, concrete chips, nails/screws etc.

#### FIXING DOOR FRAMES

- Fixing from 25mm from the edge of masonry-Fixings into metal stud partitions should be made top and bottom with others a maximum of 500mm <3.
- Standard recommended gaps between structural opening and door frame is 12mm (+/-3mm) on all three sides.
- Care should be exercised when fixing door frames to ensure that jambs and head are fitted both plumb and square (in the horizontal and vertical plane) to prevent any issues with bowing or twisting frame sections, that may then have a detrimental effect on the optimal 3mm(+/-1mm) gap tolerances as recommended by Mikasa Door sets. (Fig. a)

A suitable installation table is recommended to fix the door frames. Do not attempt fitting of frames on the naked floor or inappropriate surfaces. This practice may damage the product and lead to improper outcome after fixing.

The carpenter must ensure the precise rebate tightness before fixing the frame to the structural opening. The standard permissible gap between door and frame is 3.0mm (+/-1.0mm) on all three sides after final fitting. (Fig. b)





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(Level the frame perfectly in both plane vertically using plumb line and spirit/water level minimum 2'-0" long and fix it by means of taper wedges before applying the anchor fasteners.)

Frame bend is natural. Use screw jacks to control the vertical alignments having a bend towards the tight rebate or use taper wedges to control it towards the wall.

#### COORDINATING DIMENSIONS

The coordination height, width and thickness of prepared openings, the fitting-in margin and allowance tolerances must be planned. This information must be made available to the factory before the start of door frame manufacture.

#### PREPARED OPENINGS

Prepared openings must be plumb, square, built to the coordinating dimensions subject to a tolerance of +5/-Omm at each jamb and +5/-Omm at the head and should be of constant coordination thickness around their perimeter within a tolerance of +/-3mm. It is vital to control partition thickness if architraves are to be fitted without excessive trimming and scribing.

Check accuracy of prepared openings as early as possible so that any remedial work can be completed before any attempt is made to manufacture or install doors.

#### UNDERCUT TOLERANCES

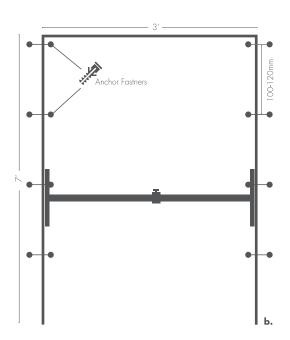
Following are guidelines recommended by Mikasa Door sets:

- Fire and normal doors: Only doors 10mm maximum undercut from top of finished floor finishes to underside of door.
- Fire and smoke controlled doors: 3mm maximum undercut from top of finished floor to underside of door this can be increased up to 10mm with the use of a suitable threshold sealing system. (Fig. a)

Recesses for floor mounted closer boxes: The pockets must be formed and located with great accuracy to co-ordinate with the door frame position.

#### **PROCEDURE**

- Anchor fasteners must be tightened before applying the PU foam between
  door frame and structural opening. Change the location of the fasteners
  immediately if found free/loose or rotating freely during the course of
  installation due to weak/broken brick work or hollow blocks inside.
- Start the first anchor fastener around 100-120mm from the bottom of the frame and rest equally divided throughout the height of the jamb.
- 3-Anchor fasteners minimum are mandatory for a height of around 7'-0" to 7'-6". More than that, it must be minimum 4.
- A span of around 3'-0" to 3'-6" require 1-Anchor fastener minimum to be applied in the middle of the frame head. It may be 2 or 3 if the span of the door is more or in case of pair doors. (Fig. b)
- Recommended anchor fasteners (HILTI or equivalent) having a minimum length of 120-150mm required for installation. (Technical info/product code, please see attached information)
- Moisturize the surface of the wall and rear side of the frame before applying the PU foam.
- Clear silicon sealant is mandatory to provide under the frame and floor after final installation done for each door set.
- Extra PU foam must be chipped off a day after it was applied, as the minimum curing time to get the desired fixation of the PU foam is 24 hours minimum.
- It may be a chance that the structural opening or side surface of the walls is uneven in both planes. Shave off the walls if required to fit the architraves to perfection. (Fig. c)
- Frame components (Architraves/stoppers) must be un-wrapped as and when required





• It is recommended to apply a thin layer of bonding material behind the surface of the components (Architraves/stoppers) during the course of final fitting to get optimum finish for long term.

Hanging door leaves: When it is necessary to trim door leaves, remove equal amount from each vertical edge and make all height adjustments to the bottom of the door leaf.



## Note:

- It may be necessary to apply a lead-in of around 2.5 radius to the leading edge to allow it to close while maintaining the correct gap on the knuckle face.
- Reduction of the lip up to 20% of the lipping thickness may be allowed from each edge, check relevant door set assessment for full rules depending on product being installed.
- Exposed seals must be replaced after any size adjustment has been made.





# PREPARATION FOR HARDWARE

Before installation, prepare doors to receive hardware using instruction provided by the hardware manufacturer or supplier.

## Note:

Preparations are often available from the door manufacturer. These may be supplied 'off machine' i.e. with corners not squared out. Factory assembled doors can be made available fully prepared for hardware with the doors' leaves hung in position though possibly removed for transit.

## FITTING HARDWARE

- Fit hardware using instructions provided by the manufacturer or supplier
- Fit mortised hardware before hanging door leaves or installing door assemblies
- Fit intumescent material exactly in accordance with details supplied
- Fit face fixed hardware at any convenient stage in the installation program

## Note:

- This work is often done immediately prior to handover to avoid the risk of loss or damage
- The drilling of door leaf faces for latch spindles and keyways or cylinders is best left until there is no risk of further adjustment to the position of the lock cases or keeps
- Lubricate hardware as required

## Movement results from:

- shrinkage due to drying out
- growth due to increase in moisture
- deflection of structural members

Defer installation if conditions are unsuitable

## **HINGES**

Hinges must be able to support loads imposed by the door leaf and hardware functions such as self-closing and back check. Consult the hardware supplier if necessary.

Use 3 hinges per door leaf for all fire doors or when above 1000mm in width unless otherwise specified. When door leaves exceed 2200mm in height or 160kg consult the hardware supplier. One or more additional hinges may be required.

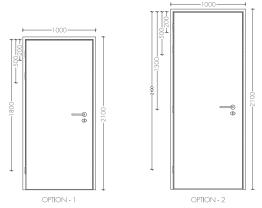
Also, for recommendations on positioning of hinges, please check with the hinges manufacturer.



## **FIX PACKING**

Pack between the door frame and the prepared opening immediately above each fixing position. Ensure that the door assembly, when in position, is perfectly plumb and square. The best practice is to use the hung leaf as a template. Avoid later shrinkage by using packing that is durable, hard and stable, proprietary trouser leg packers are best, alternatives are off cuts of laminate, metal shims or plywood.

Ensure that jambs are straight, operating gaps are even and in tolerance and that fixing screws cannot distort the frame when tightened.



STANDARD HINGES POSITION: Where any height or width is shown please check relevant test evidence for fire certification coverage

#### **FIXING**

When the door frame has been packed into the prepared opening, remove door leaves if necessary to facilitate fixing.

Fix door frame in masonry in conjunction with plugs and woodscrews with minimum 50mm penetration into the masonry.

Fix door frame in metal stud partitions with wood drilled and a pilot hole through the stud into the timber stud filler. Ensure that the door frame fixing pulls the timber filling. Tightly into the stud and pulls the stud tight against the packing.

Re-hang door leaf. Check and adjust for correct operation of seals.

#### Note:

- Adjustment to the fit of door leaves at the installation stage should be deferred until the site is completely dry and when the defect will be fully apparent and can be remedied in a single operation
- Adjustments made too early can result in excessive gaps as the building dries
- If possible, carry out adjustments by reducing packing. Alternatively, pack out behind hinges or recess them further
- Only as a last resort should door leaf edges be trimmed; this necessitates replacement of seals and repositioning of hardware affecting the quality and integrity of the door



#### **DOORSTOP**

Fix loose doorstop after all adjustments. Fit to suit the shape of the door leaf, permit an easy latching action and ensure any seals are in correct contact with the door leaf face.

#### CONCEALMENT OF FIXING

Dress exposed fixings of door frame, doorstops and architraves as specified.

#### Note:

- This operation and the final fitting of architraves should be left until all adjustments to gaps and door leaf operation have been made.
- Screws are normally concealed with timber or plastic pellets. Pine are punched and filled with hard beeswax coloured to match.

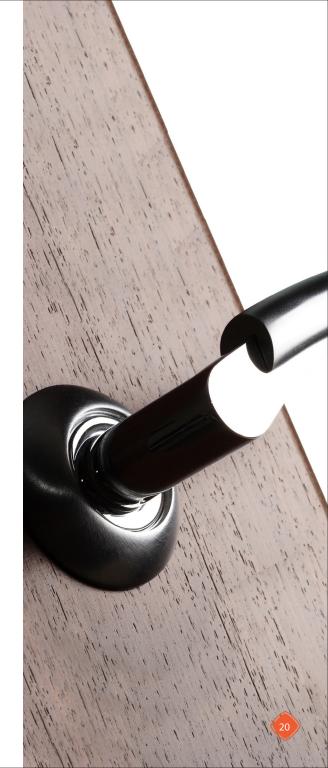
#### IRONMONGERY INSTALLATIONS

With the vast array of ironmongery components available to enhance the performance and aesthetics of any door set, Mikasa Door-sets cannot cover all associated parts in our array of test certificates.

We can however recommend the following is always considered "PRIOR" to proceeding with any installation or fixing of associated parts.

- Ironmongery falls into two specific categories essential and non-essential
- Essential ironmongery is required to enable the door to perform its fire resisting function
- Non-essential ironmongery may be needed to enable other functions to be achieved. But the elements involved could prejudice fire resistance
- It is therefore vitally important to consider the influence that all
  ironmongery may have on fire resistance and establish that products
  being used/considered are compliant

- Full listing of components that Mikasa Door-sets are approved to use for fire and smoke leakage doors can be found in our test evidence that is available upon request from any sales office
- One significant area of compliance is that of steel or aluminum based kick/push plates which may be fitted to Mikasa Door-set and maybe recessed to a maximum depth of 2mm on both sides of the door leaf. These items of hardware are permitted up to a maximum of 20% of the door leaf area, if mechanically fixed, and a maximum of 30% if bonded with a contact or other thermally softening adhesive
- Where kick/push plate areas fall outside of these rules Mikasa Doorsets solution is to offer acronym plates that carry no area restriction at all
- Care should be taken to ensure that, when installing ironmongery with
  the use of battery operated tools, the correct torque setting are applied
  to the tools to minimize the risk of overtightening or spinning of
  screw fixing







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We acknowledge that wood is precious and thereby all Mikasa Doors & Frames use only ethically sourced wood without disturbing the natural balance of our beautiful ecosystem.