

# Timber Doors Tutorial from Professional Joinery

The purpose of this tutorial is to give you **guidance** on the selection of a door, hanging it, fitting door furniture, glazing where necessary, and treating it so that it gives years of service.

PLEASE NOTE that *the correct treatment and weatherproofing of exterior doors is critical and failure to follow instructions in this leaflet and elsewhere will lead to guarantees being invalidated.*

## ***Choosing a Door.***

Doors can be divided into two categories – panel doors and flush doors. Panel or carved doors consist of a strong timber framework enclosing a number of inset panels which are either already in-filled with matching timber or which are intended to be in-filled with glass.

Flush doors have a lighter timber framework which is completely covered on both sides by a sheet material such as hardboard or plywood.

Exterior panelled doors are made of top quality hardwood pre-treated with Base coat. Door sizes are standard. Some have a finished thickness of 40mm, the majority are 44mm (13/4").

Some doors have glazing rebates which will accept 16mm sealed unit glazing and these units will have to be ordered in advance. Other glass is generally held in stock.

When selecting a door for exterior use it is essential to purchase one which is of the correct thickness i.e. 40mm or 44mm depending upon type, so that you can be sure it will be strong and sturdy enough to withstand the weather conditions to which it will be subjected.

Interior doors are thinner – approx. 35mm – and again panelled doors are available in a number of sizes and styles and so are flush doors.

To a large extent the style of your house and your own personal taste will determine the style of door that you choose but it should be remembered that a largely glazed door, interior or exterior, can provide the means to get additional light into darker parts of the house.

## ***Hanging a Door***

The basic techniques for hanging a door are the same for interior and exterior types, the only major difference being that an interior door is generally cut height wise in order to open freely over carpeting or other floor coverings whereas an exterior door is cut to fit between the head (top) and sill (bottom) of the frame. An interior door frame does not have a sill. For the purpose of this leaflet the fitting of an exterior door is described in most detail.

The first job to be done is to have a good look at the existing frame. With an exterior replacement particularly, there is no point in fitting a new hardwood door into an old, perhaps rotting, frame with a well worn sill. Nor will an attractive natural hardwood door look good in an old painted softwood frame. Fitting a new hardwood frame is, therefore, advisable and matching pre-treated hardwood door frames are available from many suppliers. [Professional Joinery](#) can supply these.

When these frames are used and correctly installed, the doors will often prove to be a perfect fit with no cutting to size required but timber tolerances may lead to some shaving being necessary for a perfect fit. Installation of a new frame is described later.

To find out which door size you require when using an existing frame, simply measure the opening rebate in the frame, both height and width, or the size of the present door. Purchase a new door of suitable size bearing in mind that the new door may initially be slightly oversize. External doors can be reduced in height and width by 26mm. This must be taken off equally i.e. a maximum of 13mm off each edge.

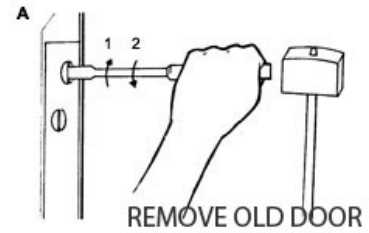
Flush doors can be reduced less than solid timber doors. On flush doors you should not remove more than 5mm from any side. If you remove more than these amounts you will seriously weaken the structure of the door leading to warping or twisting. Under these circumstances your guarantee will be invalid. Always check door labels for details on trimming.

You'll also need to purchase new hinges and other door furniture plus glass, if required. Brass furniture is recommended on all exterior doors and interior hardwood doors.

When you have all the materials on site, the old door can be removed. This must be done with care to avoid damaging the frame especially around the hinge housings. Open the door at 90° to the frame and put wedges under it to support it.

Slightly loosen all the screws holding the hinges to the frame jambs. The slots in the old screws may well have been filled with paint over the years and this must be removed to enable the screwdriver to get a good grip.

If the screws have rusted they may be difficult to loosen. If this is a problem, fit the tip of the screwdriver into the screw slot, then strike the end of the driver sharply with a mallet whilst exerting turning pressure first clockwise then anti-clockwise, on the screw. *Diagram A.*



This will often break the grip of the rust and the screw can be extracted. Remove the screws holding the bottom hinge first, then all but one of the top set. Only remove this last one when sure you can support the door adequately.

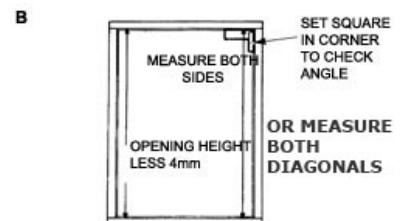
Taking care not to damage the timber around the hinge housing remove the door and put aside.

It will have to be temporarily replaced later. If it was a good fit in the frame it can be used as a template for the new door if this has to be cut.

This is particularly valuable if the frame is badly out of square and the new door has to be unusually shaped to fit.

Offer the new door into, or at least against, the opening to check the fit. If you are lucky it will slot into the opening perfectly with a clearance of about 2mm all round.

It is, however, more than likely that some size adjustments will have to be made and the height should be dealt with first. Check that the frame is square and then measure the height at each side. *Diagram B.*



Deduct 4mm from each measurement. Mark the resulting size on the door, measuring from the top since *excess timber should be removed from the bottom rail.*

NOTE: On flush doors only, an equal amount should be taken from the top and bottom, not all from the bottom.

*Note that exterior carved doors with glazed panels are always fitted so that the glass is installed from the inside of the house.*

When measuring prior to cutting ensure that the door is the right way round. This is particularly important when the door is longer on one edge than the other.

When the excess has been removed reposition the door with the hinge stile (the vertical section of the door frame which will be fitted with the hinges) tightly up against the hinge jamb (the vertical part of the frame on the side where the hinges will be).

*Note that with flush doors there will sometimes be a stamped mark on one edge, or the top of the door, indicating the position of the built-in lock block.*

The edge opposite this mark is the hinge stile. With an assistant holding the door in place from the inside, mark a line using a soft pencil down the outside face of the door where it touches against the locking jamb.

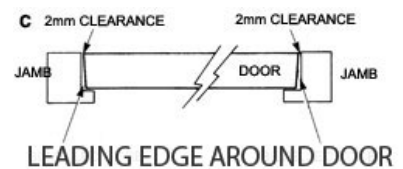
Remove the door again and measure from the hinge stile to the mark on the locking stile. Deduct 4mm from this measurement. This will give you the correct finished width of the door. Now, cutting equally from each edge, remove the excess timber with a plane.

When planing a flush door on the stamped lock block edge, always make a note on the face of the door perhaps using adhesive tape to indicate the position of the lock block before planing off the stamped mark.

Repeatedly reposition the door in the frame to ensure that you do not plane off too much timber. When the door fits with a clearance of 2mm at each side all the way down, the cutting is almost finished.

The plane should be used finally to create a slight bevel on the stile edges towards the door stop.

*Diagram C.*



Before bevelling, check again that the door is the correct way round for glazing. Finally, sand the cut edges and corners of the door to remove sharp edges. Use a medium/fine grade of glass paper for this.

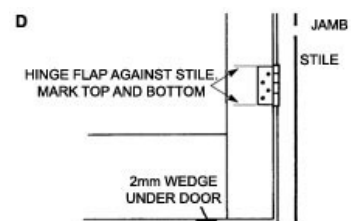
Cutting the hinge housings is the next job.

For hardwood exterior doors and glazed interior doors, you will need to use three 100mm brass hinges.

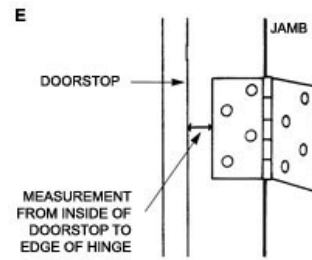
These should be fitted 230mm from the top and bottom of the door and in the centre but if the existing hinge housings on the frame are to be used again, then measuring is not required. Simply check that the new hinge screw holes are correctly aligned with the old holes.

Fit the hinges to the frame jamb using just one screw in each hinge.

It may be necessary to slightly re-cut the housings to accommodate the hinges. Open the hinges and insert the door into the opening. Wedge it in place so that it is raised 2mm above the sill and 2mm below the head of the frame. Close the hinges against the face of the door and mark their positions. *Diagram D.*

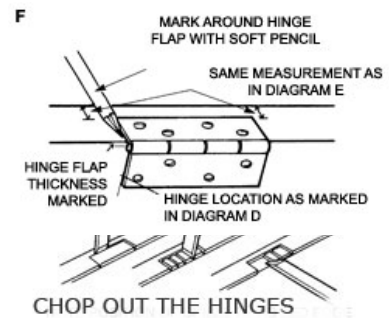


Remove the door. Measure the distance from the doorstop to the nearest edge of each hinge.  
*Diagram E.*



Transfer this measurement to the door working from the face which will be against the doorstop, and mark in line with the intended hinge positions.

Remove the hinges from the jamb and position on the door stile again in line with the marks made earlier. Draw around the hinge arm. Also, mark the hinge thickness on the face of the door. *Diagram F.*



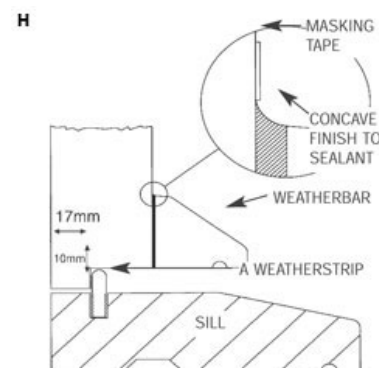
Cut out the hinges using a sharp bevelled edge chisel following the sequence as in *Diagram G.*



Fit the hinges using one screw only in each. Pilot holes should be made for the screws to prevent them splitting the timber. Using wedges to support the door, hang it in place with again just one screw holding each hinge in the jamb housing.

Check that the door closes correctly with clearance all round. If necessary, adjust the depth of the hinge recesses until a perfect fit is achieved. You must now remove the door and temporarily refit the old one.

An inward opening exterior door should at this stage have a rebate cut along the front bottom edge as shown in *Diagram H* in order to accommodate the sill weather stripping and create a good seal. The rebate would be on the opposite side for an outward opening door.



A weather bar should also be fitted to the outside face of the door to throw rainwater off. Run a length of masking tape across the door with the bottom edge where the top of the weather bar will be.

Run a bead of All Purpose silicone sealant along the edge of the weather bar then screw it in place and smooth off to a concave finish.

Remove the masking tape immediately. See *Diagram H*.

A new hardwood door must then be treated with at least one coat of High Performance wood stain on all cut surfaces paying special attention to the top and bottom edges. Lock and hinge housings should also be base coated as should glazing rebates and holes for letter plates. No timber should be left untreated.

When this has dried the entire door should be given three coats of High Performance wood stain. It is very much easier to apply these treatments to the door before it is finally hung and it ensures that it is well protected before having to face the weather.

*Failure to treat any exterior door before it is hung will lead to the absorption of moisture which will cause the door to swell and perhaps even become distorted.*

*Never forget the top and bottom edges.*

The sooner it is treated the better and the treatment should be the same on both sides of the door. If you use a micro-porous finish on the outside, you must do the same on the inside.

When the High Performance wood stain has dried the door can be hung again with all hinge screws being driven in.

## ***Locks and Latches***

Once the door is hung locks or latches and the other furniture can be fitted.

For security reasons it is recommended that a front door should be fitted with (a) a cylinder rim lock, (b) a 5-lever mortice deadlock to BS 3621 for use when the house is unoccupied and (c) a security chain or door viewer.

A back door should have a mortice sash lock to BS 3621 fitted along with two security rack bolts.

*No locks should be cut into doors in line with any centre or off centre horizontal mid rail since this will weaken the joint possibly causing separation of the joint and a breakdown in the surface protection. Such action will invalidate your guarantee.*

If an outward opening door has been fitted, with the vulnerable hinge pivots accessible to an intruder, a pair of hinge bolts should be fitted to prevent the intruder lifting the door out of the frame after removing the hinge pins. All locks are supplied with full fitting instructions.

## Glazing Doors

The glazing of doors is carried out only when the door has been hung. This is to make the door lighter to handle and reduces the risk of the glass being damaged.

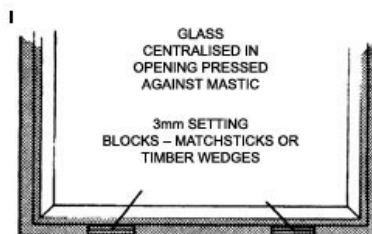
The use of putty for the glazing of decorative doors especially those which are not to be painted is not recommended. It can be difficult to obtain a putty which matches the colour of the door and many people find it difficult to use putty and obtain a neat finish.

A timber glazing bead used with our gun applied all purpose silicone sealant is a far better way of achieving a professional finish to your glazing work and matching glazing beads are usually supplied with doors.

Like the hardwood doors, this glazing bead is pre-treated with a base coat. It is available in 2.4m lengths. Some doors are supplied with pre-cut beads. Whilst waiting to hang the door you should cut the glazing beads to size with mitred ends for each glass opening. Once cut, the bead ends should be treated with two coats of High Performance wood stain and then all faces treated with a finishing coat of your choice.

To fit the glass, apply a bed of the sealant to the rebate up-stand. The bed should be about 4mm thick all round. Press the glass into position, centrally in the opening against the sealant, compressing this to about 3mm thick.

In order to ensure that the glass does not slide to the bottom of the glass opening it is recommended that small wooden wedges about 3mm thick and 4mm wide are used as setting blocks on which the bottom edge of the glass rests. Matchsticks can be used or small scraps of timber. Do not use any metal items to act as setting blocks. *Diagram 1.*

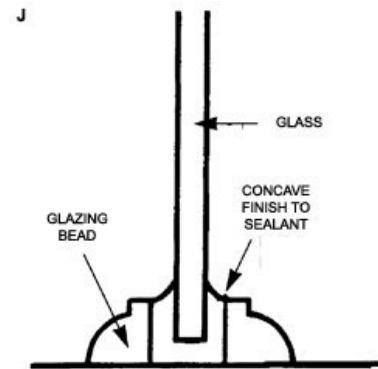


The use of these blocks is essential when fitting clear bevelled edge glass to ensure that the bevelling remains equally aligned around each pane.

Apply more sealant to the face of the glass around the perimeter, again about 4mm thick, then fit the pre-cut glazing bead. This should be pushed firmly against the sealant to compress it. Pin the bead in place with 25mm panel pins. Do not pin within 50mm of the end of each piece of bead since this could cause it to split. Punch the nail heads below the timber surface. In-fill the resulting hollows with a matching filler or sealant.

The excess sealant squeezed out on either side of the glass must now be removed to leave a neat slightly concave surface. This is particularly important on the outside to ensure that rainwater runs off easily.

*Diagram J.*



After glazing has been completed the door should be lightly sanded and given a further coat of your chosen topcoat on both sides.

### ***Fitting a New Exterior Door Frame***

As mentioned earlier it will often be necessary to fit a new exterior door frame as well as a new door.

This is a relatively straightforward process and begins with measuring the existing brickwork opening dimensions to check that a hardwood door frame, complete with a sill, will fit. The necessary brickwork opening dimensions were given earlier but it should be stressed that those dimensions do give about 9mm clearance, so that the frame can be set squarely.

Remove the old door and discard it. The old frame was probably installed in one piece when the house was built and will have to be cut out in sections.

Start by sawing through both side jambs at an angle. Insert the end of a crowbar or similar lever behind the cut jambs and lever them away from the brickwork and separate them from the head and the sill.

Cut through the head and sill in similar fashion and remove them. You may find that the head extends into the brickwork at each end and the sections will have to be pulled out. The resulting holes cannot be used again and should be filled with a cement mortar mix.

Remove all the old nails left in the brickwork and clean up the opening, chopping away any mortar fillets.

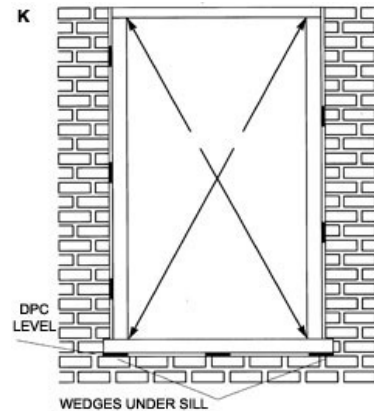
Check that there is a damp proof course fitted directly below the level of the old sill. If this is damaged it must be replaced. If no damp proof course is in place, fit one.

Assemble the new frame knocking the mortise and tenon joints firmly home. Use a waterproof wood adhesive on the joints and screw them together. Only cut the sill if it is too long to fit into the space left by the old one.

*Note that Hardwood frames can be used for inward or outward opening doors, simply by locating the jambs the correct way round on the sill. Exterior doors should open inwards.*

Insert the assembled frame into the opening. Fit wedges under the sill to push it up against the lintel. Use a spirit level to get the sill perfectly horizontal. Use more wedges to get the jambs upright. Use a spirit level repeatedly to check the vertical alignment.

Measure the frame diagonals to ensure that the frame is perfectly square. *Diagram K.* Only when they measure exactly the same can you be sure that it is square and some adjustment of the wedges may be necessary to achieve this.



Secure the frame to the brick opening using our 8mm x 80mm frame fixers. Drill holes directly through the frame and into the wall. Countersink the holes in the frame. Tap in the fixers and drive home the screws taking care not to distort the frame by driving them in too hard.

Avoid using any fixings where the door hinges are to be situated but do have at least one fixing just above or below the intended position of the lock keep for extra security.

Hang the door before covering the screw heads with a matching wood filler and before making good around the frame. This will enable minor frame positioning adjustments to be made if required.

Use a cement mortar mix to fill in the space under the sill and an exterior sealant around the jambs and the head.

***Professional Joinery hope this tutorial has helped you.  
If you need advice or assistance please contact us from  
our web site [contact page.](#)***