



How to Frame and Hang a Door

No 8 in the series of 'How to' brochures
produced by PlaceMakers, New Zealand

How to Frame and Hang a Door

These instructions will show you how to install an **internal door** into a **non-loadbearing partition wall**. The instructions are split into three parts.

- [Part 1](#) Hanging a door
- [Part 2](#) Framing the opening
- [Part 3](#) Fitting the hung door

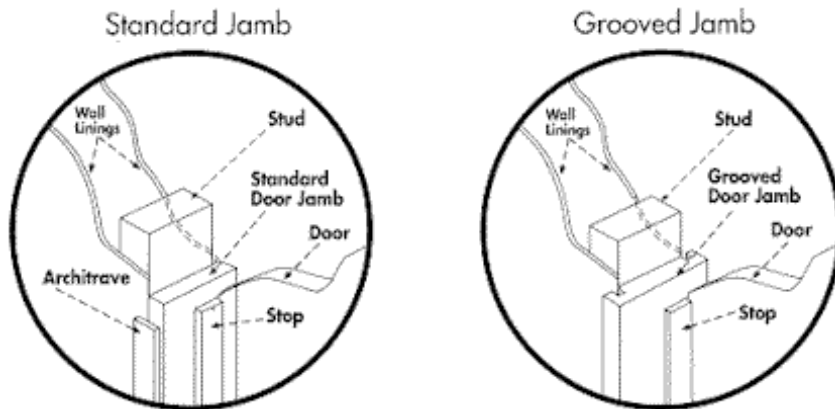
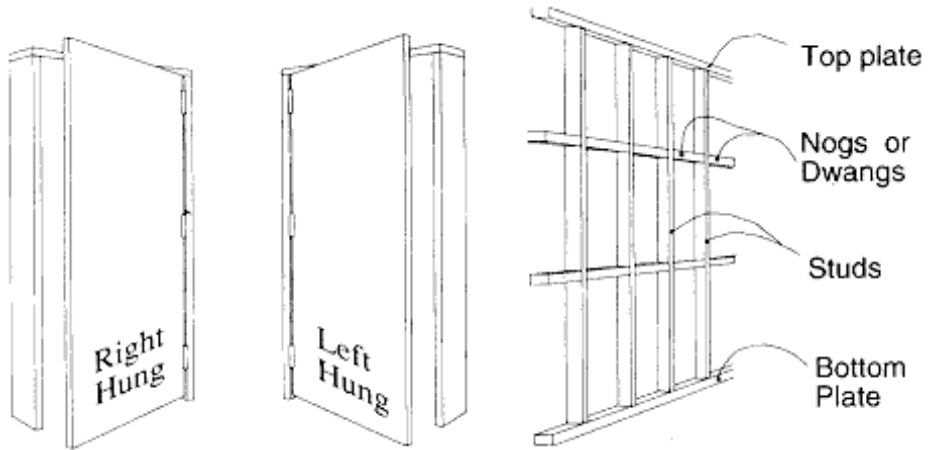
Before you begin

Read this information carefully. It will provide information about the materials and tools required, as well as explaining some of the terms used in describing the work. If you are doing an addition or alteration and want to match the existing work you will be more able to describe the exact materials you require. Your [nearest PlaceMakers branch](#) will supply you with a door already hung in the jamb of your choice if preferred.

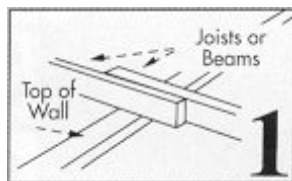
Terminology

Jamb	The door jamb is the name given to the material used to construct the frame around the door. It comes in many different sizes and styles.
Standard Jamb	Plain flat doorjamb used with architraves.
Grooved Jamb	The back of the jamb is grooved. Gib board wall linings fit into this groove making finishing the wall lining neat and easy. Also known as slimline jamb.
Rebated Jamb	The jamb is shaped to act as both jamb and stop. Rarely used, as hanging in a rebated jamb is very exacting.
Stop	The edge against which the door closes. With flat iambs this is made by fixing a moulding onto the jamb.
Architrave	Finishing moulding used to cover the joint between the wall lining and door jamb. Can be used with either standard or iambs. Not used with grooved iambs.
Right Hung	With the door opening towards you the hinges are on the right
Left Hung	With the door opening towards you the hinges are on the left.
Double Hung	A pair of doors hung together.

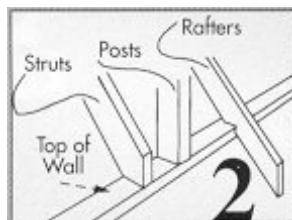
- Stud** A vertical wall framing member.
- Plate** A horizontal wall framing member at the top (top plate) or bottom of the wall.
- Nog or Dwang** Horizontal framing members used to hold studs in alignment and support wall linings.



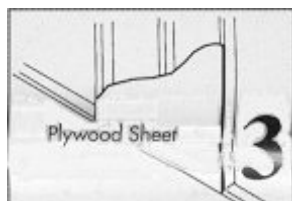
Safety



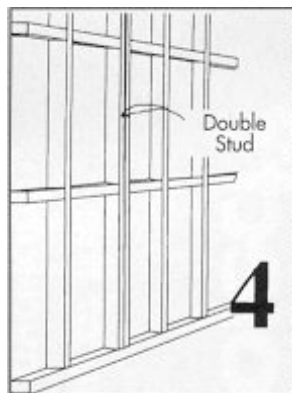
The instructions in this brochure are NOT to be followed if you are installing a door in a structural or load bearing wall. Conduct these checks first.



Inspect the wall from the ceiling space to see if it is a load bearing wall. Look for any other framing member landing on the wall. See diagrams.



Remove the wall linings and check for double studs, angle braces, and plywood bracing panels that will need to be removed in order to fit the new doorway.



If any of these conditions exist, seek professional advice before cutting anything.

Note When demolishing walls and removing linings watch out for concealed wiring and pipes.

Tools Required

Essential

- Hammer,
- Handsaw,
- Carpenter's Square,
- Tape Measure,
- Level,
- Pencil,
- Hacksaw,
- Wood Chisel 18mm or larger.

Desirable

- Circular Saw,
- Plumb Bob,
- Marking Gauge,
- Drill,
- Router,
- Fine Tooth Saw,
- Butt Gauge

Materials Required

It is not possible to give an accurate list of materials that will be needed or of the quantities required. There is a chart below that lists the door hanging materials. This is offered as a guide only as the quantities can vary depending on the circumstances of each project.

Item	Type and size	Quantity
Door Jamb	Will depend on the finishing detail required.	2 pieces about 100mm longer than the door itself. 1 piece about 100mm longer than the width of the door.
Hinges	87mm (3 1/2 inch) loose pin butt hinges. Use Radius Butt hinges if you have a router. Use Square Butt hinges if you do not.	3 only with screws to match. Use Posidrive screws.
Door Stop	See door jamb above.	Same quantities and lengths as for the door jamb.
Nails	50mm panel pins.	1 small packet.

Framing Timber

Usually Radiata No 1 or No2 Framing Grade H1 treatment (Boric) Planer Gauged. If you are framing into an existing wall and wish to line the wall immediately, ask for Kiln Dried timber.

Part 1 Hanging a Door

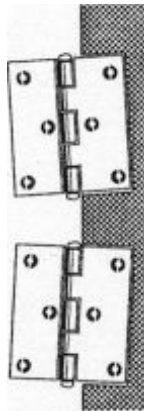
Before you begin hanging your door, consider the alternatives.

It is possible for PlaceMakers to supply you with a door already hung in the jamb of your choice and at a very reasonable price?

If you buy a pre-hung door, you can skip the section on 'Fitting Hinges and Making the Door Frame'.

If you wish the challenge and ultimate satisfaction of doing it all yourself, follow these instructions carefully and the result will be worthwhile.

Fitting the hinges to the door and the jamb is the most crucial part of hanging a door. The hinge is set into a trench or Mortise in both the door and the jamb. These instructions and diagrams will illustrate the techniques you can use to ensure that you mortise accurately and consistently.

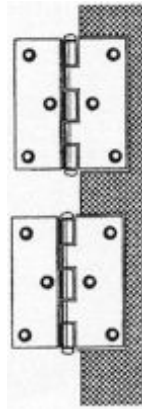


Make sure the hinges are square (and not as illustrated)

If the hinges are not fitted square with the edge of the door and the jamb, then the door will not align with the jamb properly and it may end up being impossible to fit the pin back into the hinge.

Make sure the setback is identical

If the hinges are not fitted equally on the door and the jamb the edges of the door and jamb will not line up, and you may end up with a door sloping from top to bottom.



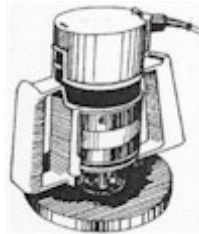
The depth of the mortise is crucial

Rebate the hinges in both the door and frame to a depth that allows a 2mm (5c coin thickness) between the door and the frame when the door is shut. So each rebate is less than half the thickness of the hinge knuckle.

Practice Makes Perfect

For each door you hang, you will need to cut six mortises. The first couple you try may not be perfect, so practice on some scrap timber, until you are confident of your abilities.

Using a Router



The work of accurately mortising the door and the jamb is the most crucial skill required when hanging a door. If you are lucky enough to own a Router or can borrow one the job will proceed much more smoothly.

Hinges:

You can buy hinges that have a curve on all the corners so they fit a mortise cut by a router. These are called Radius Butt Hinges.

Template:

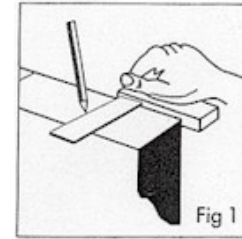
Make a template (pattern) to guide the Router. This will ensure that each mortise is cut straight, square and identical to all the others.

Practice:

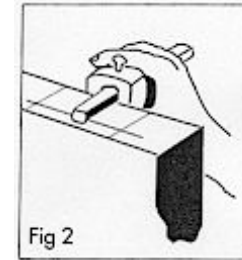
Use the template and practice on some scrap timber. Make sure the hinges are fitting correctly into the mortise. Adjust the template if necessary.

Fitting the Hinges

1. Use a small square to mark the location of the hinge on the edge of the door. For a normal sized door fit three hinges. The top hinge should be about 120mm from the top of the door, the bottom hinge the same distance from the bottom, and the middle hinge at the centre point between the top and bottom hinge (See Fig 1).

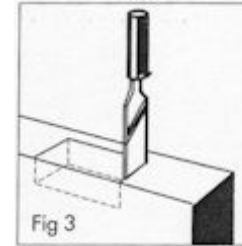


2. Use a marking gauge to mark the setback of the hinge on the edge of the door. You can make a gauge out of some scrap timber and nails or use a small square and a pencil. Hold the pencil against the square and move them together along the edge of the door or face of the jamb. By the same method, also mark the depth of the mortise (See Fig 2).

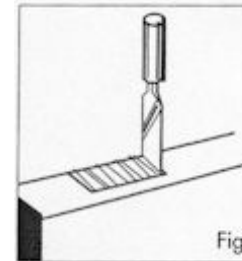


If you have a router you can now align your template over the marks on the door and use the router to produce your mortise.

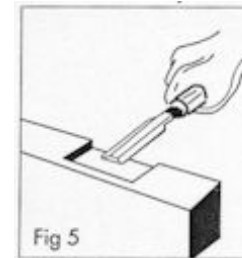
3. Now use a chisel and hammer to score these marks. Use a chisel at least (18mm) or larger and ensure it is sharp (See Fig 3).



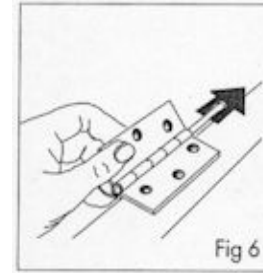
4. Using the same chisel, make shallow cuts about 100mm apart in the marked area. This can be done by tapping the chisel lightly with a rubber or plastic hammer (See Fig 4).



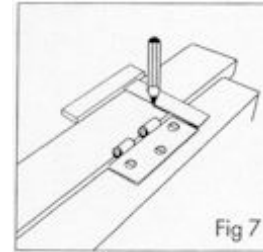
5. Use the chisel to remove the surplus wood from your mortise. Use the hinge to check that you have removed enough material for it to seat correctly (See Fig 5).



6. Remove the pin from the hinge and fit one leaf of the hinge to the door. Use a nail punch or drill to start the holes, and screw the leaf down tight with a good screwdriver (See Fig 6).



7. Hold the jamb alongside the door and mark the positions of the hinges on to the face of the jamb using a square and a pencil. Leave 50mm of jamb running past the end of the door at both ends (See Fig 7).

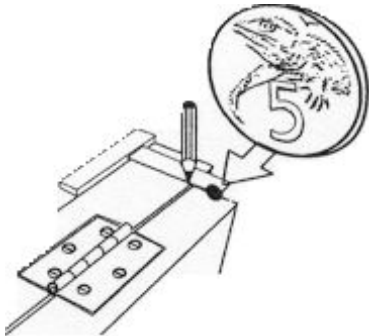


8. Mortise the door jamb, and fit the other hinge leaf to the jamb.

9. Repeat the process and fit the remaining two hinges to the door and jamb.

10. Put the door and jamb together and insert the hinge pins back into the hinges.

Making the Door Frame



Now that you have fixed all the hinges, it is time to hang the door in the jamb.

For the door to open and close smoothly there needs to be a gap between the / door and the jamb. This gap should be 2 to 3mm.

An easy way of measuring / this gap is to use a 5 cent piece as a packer.

1 .Mark the jamb at the top end of the door with a five cent piece between the square and the door to give a clearance gap. Note that this won't work with rebated jambs as they need to be housed into the head section through the depth of the rebate.

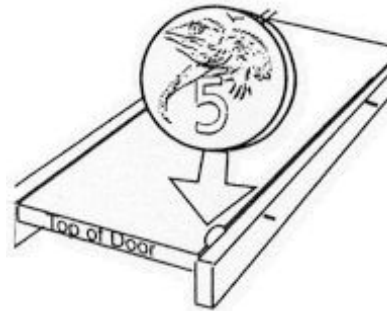
2. Mark the jamb at the bottom end of the door, allowing the jamb to protrude past the bottom of the door. The amount the jamb will go past the bottom of the door will be dependant on the thickness of your floor coverings. Allow 30mm for carpet or 15mm for lino.

3. Remove the hinge pins and detach the jamb from the door.

4. Check your marks are square and then using a fine tooth saw cut the jamb to this length.
5. Cut another piece of jamb to exactly the same length as the piece with the hinges on it.
6. Fit the hinged jamb back to the door and replace the hinge pins.
7. Tack the other jamb to the door, ensuring the edge remains flush with the face of the door. The top of the jamb sticks past the top of the door the thickness of the 5 cent piece.

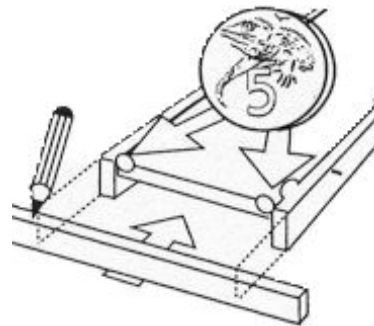
8. Pack the jamb away from the door with a 5 cent piece. This packer only needs to be at the top of the door (See Fig 8).

9. Tack the last piece of jamb (the head) to the top of the door running right across both of the side jambs. Again, make sure the top edge of the jamb is flush with the face of the door.



10. Mark the position of the two side pieces of jamb onto the top piece with a pencil and square (See Fig 9).

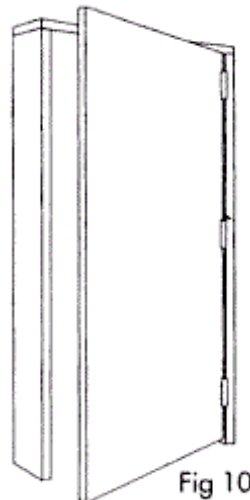
11. Remove the top piece of jamb. Check that your marks are square. Cut the piece of jamb to the marks.

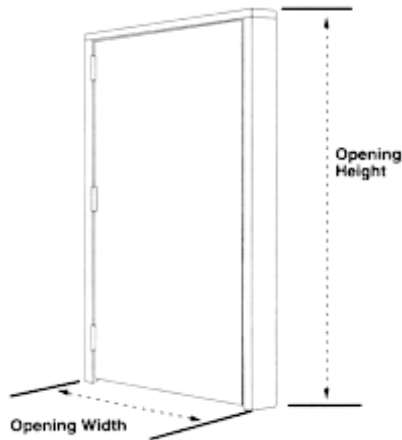


12. Tack the head jamb back into place and correctly align. Nail through the top of the head jamb into the side iambs with 50mm jolt head nails.

Check the edges of the jamb and sand smooth any high spots or damaged edges.

Leave the nails holding the side and head jambs to the door until just before you fit the door and frame into the trimmed opening in the wall.(See Fig 10).





Measuring the opening size

The overall width of the door and jamb is called the 'opening width'.

The overall height of the door and jamb is called the 'opening height'.

The gap between the bottom of the door and the end of the jamb is to allow the door to swing above any floor coverings.

Part 2 Framing the Opening in the Wall

All of the instructions given on this page assume that you are cutting a new doorway into an existing wall, constructed from 100x50mm framing. If in fact you are constructing a new wall, or the wall uses different sized timber, please modify the instructions to suit.

1. Please read the [safety warning](#) in this document before cutting into an existing wall structure.
2. Add 15mm to the door opening width (See Fig 11). This is the trim width.
3. Mark this trim width measurement in the position of the new door on the bottom plate of the wall with a pencil and square. (See Fig 12)
4. Remove all studs and nogs or dwangs from the existing wall between these two marks. Cut any nails left sticking out of the plates with a hacksaw.
5. Measure the distance from the underside of the top plate to the top of the bottom plate, and cut two pieces of 100 x 50mm framing timber to that length for use as new studs.
6. Nail these two studs into the wall frame with their faces flush with your pencil marks on the bottom plate.
7. Using a plumb bob or level, check the new studs are vertical and nail them to the top plate. (See Fig 13).

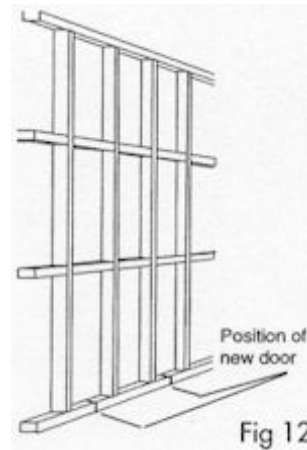


Fig 12

8. Add 15mm to the door opening height (See fig 11). This is the trim height.

9. Mark this trim height measurement on one new stud with a square and pencil, measuring from 5mm above top of the floor finishes. Use a level to transfer the mark to the other new stud. This is the door head height.

10. Place a piece of 100x50mm framing timber on the floor next to the bottom plate and mark the distance between the two studs onto it.

11. Cut the piece to the marks. This is the door header.

12. Nail the door header between the new studs with the bottom face of the header flush with the pencil marks on the stud (See Fig 14).

13. Measure from the top of the header to the underside of the top plate. This is the jack stud length.

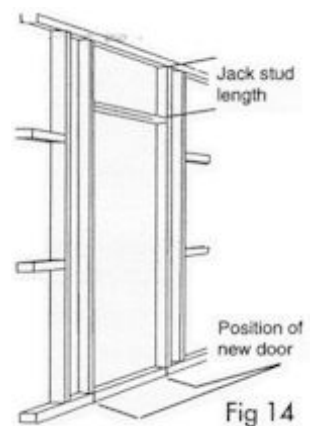
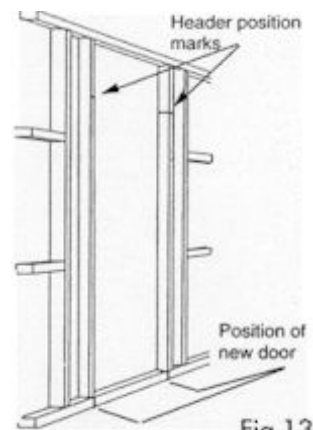
14. Cut jack studs to this length. You will need one jack stud for each end of the header. Jack studs should be fixed no more than 600mm apart. Cut extra jack studs as necessary.

15. Nail jack studs into position (See Fig 15).

16. Cut new nogs or dwangs and fit between the new studs and the old studs. Make sure the new studs remain plumb.

17. Cut through the bottom plate next to both of the new studs, and remove the plate from the doorway.

NOTE: Do not nail the bottom plate to the floor until the new door has been hung in the opening of the wall to get the door plumb, as it may be necessary to adjust the position.



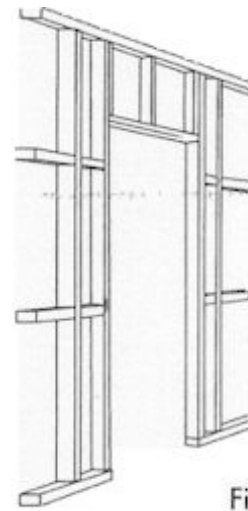


Fig 15

Part 3 Fitting the Hung Door

The most important part of fitting the hung door into the wall framing, is to ensure that the hinged jamb is perfectly vertical (plumb). Once that has been achieved, the rest of the installation is relatively straightforward.

1 .The door and frame should sit in the centre of the framed opening. The gap between the jamb and stud on each side should be about the same.

On the hinge side, measure that distance from the door stud into the opening, and hang a plumb bob from the door header at that point. Pack this out from the line of the wall so it doesn't interfere with the jamb (See Fig 16).

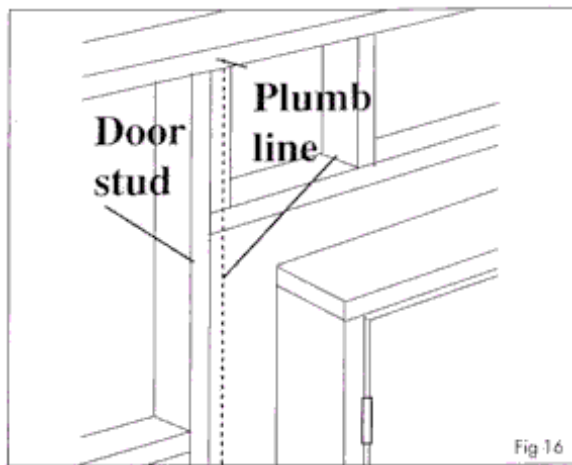


Fig 16

2. Stand the door frame in the opening, and holding it steady, open the door to check there is enough clearance between the bottom of the door and the door. If there is too much clearance, remove the

hung door from the wall and trim the ends of the jambs. If there is too little clearance, put some packing under the door jamb.

3. A commercially produced bracket called 'Jamb fix' is available to help accurately position your jamb in the door opening.

Eleven 'Jamb-fix' door fixing brackets are required for each standard door frame: five on each jamb, and one on the head (See Fig 17).

Centre and nail the flat brackets onto the outside of the frame as shown in (See Fig 18).

Be careful not to nail a bracket where your latch plate will be.

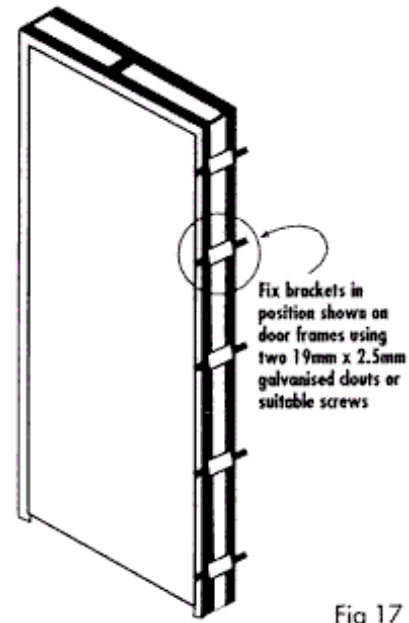
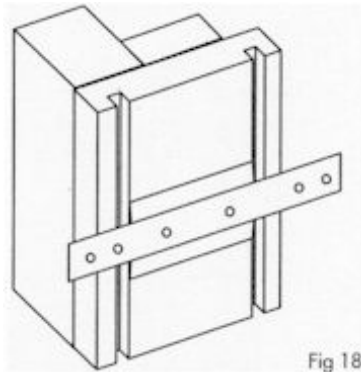


Fig 17



4. Sit the hung door in place in the opening and bend all the protruding 'Jamb Fix' bracket wings on both sides of the wall around onto the studs and the head. (See Fig 19).

Check that the door frame sits beyond the studs on both sides, the right amount for the type of jamb.

For a standard jamb that will be the thickness of the intended wall board (See Fig 20). With grooved jamb, the inner edges of the groove should line up with the outer edge of the studs (See Fig 21).

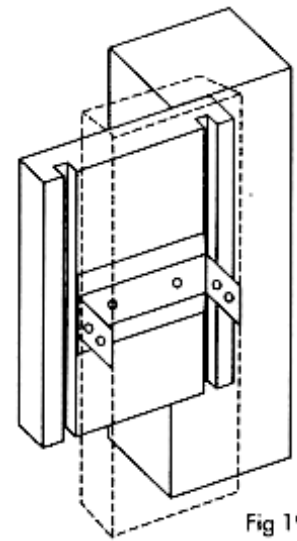
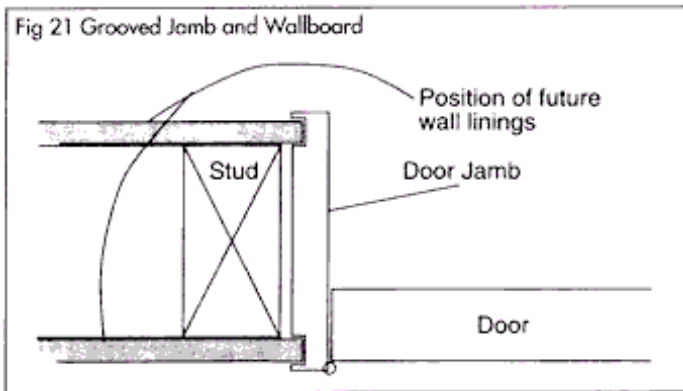
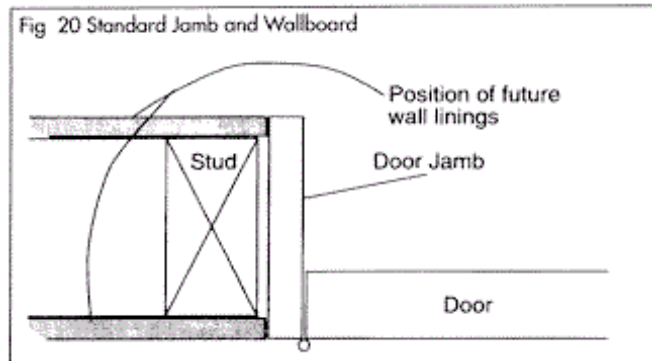
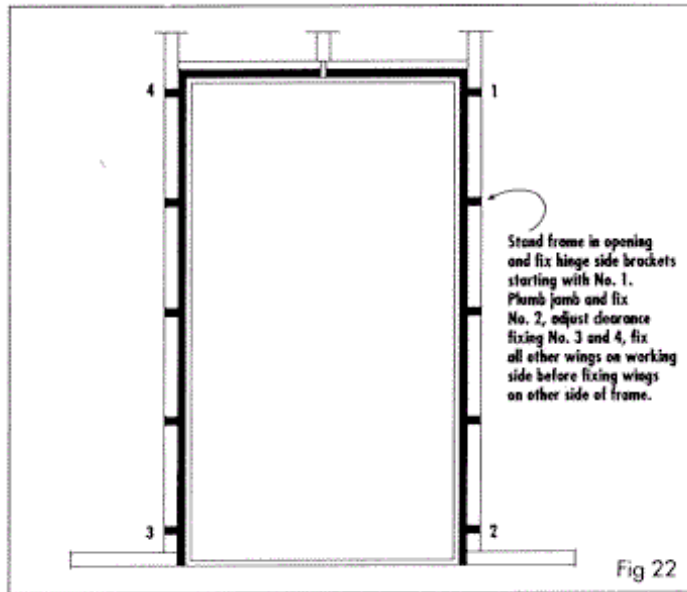


Fig 19



5. Align the hinged jamb with the plumb line and nail through the round hole in the wing of bracket 1 (top of hinged jamb) into the stud. Align the bottom of the jamb with the line and do the same with bracket 2 (bottom of hinged jamb) (See Fig 22).



6. Stay on the same side of the wall and set the latch jamb so that a five cent piece will just slip between the door, and the jamb and head. Nail through the slotted hole in the wing of bracket 3 into the stud. Line up the bottom of the jamb with the same clearance and nail through the slotted hole in bracket 4.

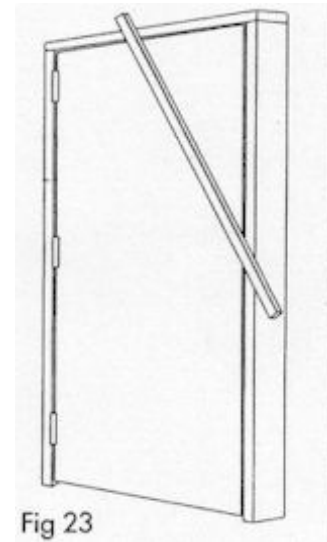
7. Stay on the same side of the wall and nail the remaining brackets on the hinged side through the round holes. Check the clearance at the head, and nail the head bracket to the header through the slotted hole. Check and nail the remaining brackets on the latch side. Adjust the latchjamb and head on the slotted holes where necessary, then nail through the second holes all around.

8. Checking clearances and plumb as you go, follow the same process on the other side of the wall.

9. Fix wall linings and architraves (where applicable) in the normal way.

Fitting the Stops

- 1 .Tack a batten across the corner of the door iamb to hold the door flush with the face of the iamb (See Fig 23).
2. Cut and fit the planted stop to the head jamb first. It must be a tight fit against the door at the unhinged jamb side, with a clearance gap (use the 5 cent piece) at the hinged side. The door will stick against the stop if you don't allow this clearance.
3. Cut and fit the planted stop to the unhinged jamb, pushing the door tight against the batten.
4. Cut and fit the planted stop to the hinged jamb, with a clearance gap from top to bottom.



The job of fitting a new door is now completed. You can now concentrate on putting the linings on the wall and the door handles on the door: When it comes time to paint or varnish the door and jambs, remember that you can remove the door by pulling the pins from the hinges. This makes painting and finishing a lot easier:

Please Note:

Whilst the advice and recommendations contained in this brochure have been produced with proper care, they are offered only with the object of assisting those interested in home improvement projects and PlaceMakers does not accept responsibility for the advice, recommendations, etc, contained herein.

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