

## Tools required

Pencil, Ruler, Mallet/Hammer, Wood chisel, Posidrive screwdriver, and Electric Drill or Drills.

## Prior to Installation

For all fire door installations ensure 'Intumescent' mastic/strips and seals are fitted in accordance with door manufacturer instructions.

The hinges are manufactured to precise tolerances and therefore care must be taken to ensure all hinges are 'in line co-axially' to avoid putting excess stress on the hinges.

Prior to fittings hinges ensure that the available clearance between door leaf and frame are in compliance with BS 4787:

Part 1: 1980 as detailed below:

Door leaf and jamb	2mm each side
Door leaf and head	2mm
Door leaf and transom	2mm
Door leaf and sill	3mm

The allowable tolerance on all clearances is  $-0.5\text{mm} + 1\text{mm}$

## Hinge Installation

1) Identify the required fixing positions of the hinges on the door using the guidelines as detailed below

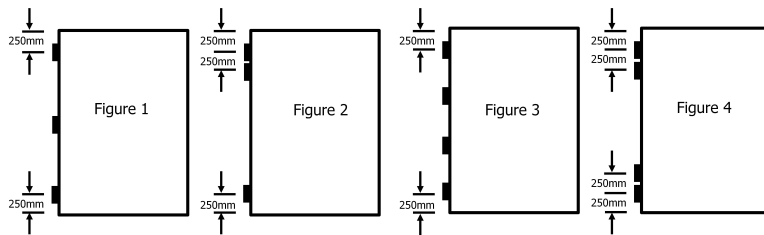


Figure 1

BS EN 1935:2002 The hinge grades detailed in this Standard are based on 3 hinges being fitted to the door set. The standard practice and the most common providing maximum resistance to 'warping'. Hinges are spaced as shown.

Figure 2

When overhead door closers are used, additional lateral forces are applied to the top hinge. To reduce these forces, it is recommended that hinges are spaced as shown.

Figure 3

Where the door width is more than 1000mm and/or the door mass exceeds that allowed for additional hinges can be fitted. Equal spacing shown provides maximum resistance to 'warping'.

Figure 4

Where overhead door closers are used within the example illustrated in Figure 3 due to the increased lateral forces created by the closer on the top hinge. It is recommended that hinges are spaced as shown.

Note. Door closers incorporating hold back devices or back device facility can impose substantially increased lateral forces on the hinges and their fastenings. Hinges of Grades 12, 13 or 14 should be used with such closers.

1) Position the leaf so that the knuckle (crank line) is slightly proud of the door frame and mark around the hinge leaf.

2) Mortise out the door to equal the thicknesses of the hinge leaf. This will provide the optimum clearance between door and frame in compliance with BS 4787.

3) Locate the hinge leaf in the mortise, mark through the hole positions and pilot drill to suit the fixing screws. This is particularly important when screwing into hardwood.

4) Secure the hinge leaf to the door with the screws provided and repeat for other hinges.

5) When all the hinges are fitted to the door, offer the door up to the frame. Pack under the bottom edge of the door leaf to ensure required clearance between the door and floor, and mark resulting hinge positions on frame. It is critical that the door is supported when the first positioning screws attach the door to the frame. Failure to support the door may lead to lateral pressures twisting the hinge. This could cause the caps to come loose, with the result that the pin may fall out, leading to hinge failure.

6) With the door leaf in the 'open' position; open all hinge leaves flat against the door jamb ensuring they align with the positions previously marked on the frame. Once in position, mark out and mortise as per instructions 2-5.

7) Final Installation check: Ensure that all screws are fully tightened – it is recommended that the final turns of the screws are made by hand screwdriver, not by power drive screwdriver, to prevent shearing. If required the hinges may be lubricated using fine machine oil such as '3 in 1' or similar ensuring that any floor finishes are protected, and any excess oil is wiped off on completion.

Extreme care should be taken when fitting hinges to doors installed with an overhead door closer particularly fire doors, to ensure there is no excessive torque required to open/close the door freely thereby reducing the efficiency of the closer.

It is not recommended to use hinges of less than grade 12 to 14 when fitted to doors with heavy-duty closers incorporating 'back-check' or 'hold open' devices.

## Maintenance

Door maintenance, particularly on fire doors, fire exit routes and high traffic routes is an integral part of any well-planned and scheduled maintenance program within a building. Included within this schedule should be a regular minimum annual check on fixing screws, replacing any that are loose, and lubrication of the hinges using a fine machine oil such as '3 in 1' or similar ensuring that any floor finishes are protected, and any excess oil is wiped off on completion.

