# FIXING SOLUTIONS FOR PLASTERBOARD

**an article for the CFA website by**

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## Introduction

*The frequent use of plasterboard for dry lining applications, partitions and ceilings is one of the most notable features of the UK market. The versatility, ease of installation and economy of plasterboard make it a popular choice with builders, especially for domestic applications.*

*However, the builder's choice is often the fixing nightmare for heavy-duty applications or for someone not familiar with this building material. How do you fix heavy items such as radiators, air conditioning units, shelving or cupboards to such a relatively thin and weak substrate? Mirka Valovicova, from fischer fixings, explains just how.*

## Types of plasterboard walls

Before choosing a suitable fixing, the user should make sure that he understands the make up of his wall. How thick is my plasterboard, do I have a cavity behind, is there insulation behind my plasterboard? These are the questions which should be asked first. If not sure, a small diameter pilot hole should be drilled to investigate the construction of the wall.

If your plasterboard creates a partition wall between two rooms, it is most likely to be mounted either on to timber or metal stud frames with a cavity behind. If the plasterboard is located on the external wall, it is more likely to be mounted using the mortar dabs technique, where plasterboard is adhered to the wall by mortar. This would mean that there is only a tiny gap between the board and the face of the block wall.

The first scenario of fixing into plasterboard partitions allows of the use of most types of plasterboard fixings, as the cavity is quite large, usually between 32-38mm. Care must however be taken when fixing into dry lining (plasterboard on mortar dabs). In this case only certain fixings would be directly suitable, some may be used if the hole drilled through the plasterboard is continued into the wall itself.

## Fixing solutions

There is a wide range of purpose-designed plasterboard fixings available on the market and care should be taken to select an appropriate type for the specific application. In order to make the correct selection, the user should take into account various factors such as:

- plasterboard thickness
- cavity depth behind the plasterboard
- the type of application; what load is required, what is the fixture thickness
- will the fixing need to be removed in the future?
- will the fixture need to be removed and replaced in the future?

## Light duty tasks

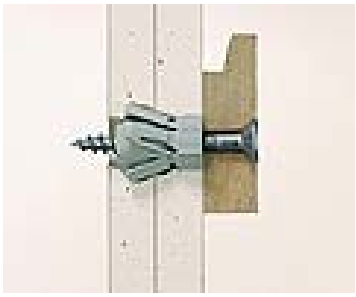
For lightweight applications where it is required to fix back lighter items such as mirrors, lamps, light switches, lightweight shelving, towel rails, cable clamps or floor-supported radiators, it is perfectly possible to fix directly into the plasterboard.

A very popular option is the use of self-drilling plasterboard fixings.

These are probably the easiest to install. No pre-drilling is required, as these fixings cut their own hole and form their own thread with their large thread located around their body. They are available either in metal or nylon and are usually supplied with a suitable screw. Apart from ease of installation, the main appeal of these types of fixings is the limited cavity space which is required.

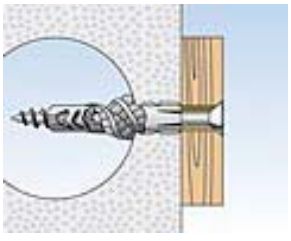
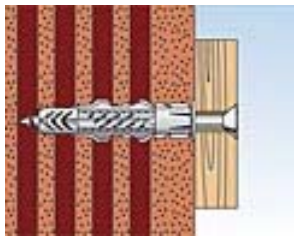
Of course when installing these, and some other types, into tiled surfaces, such as usually found in bathrooms, the tiles would have to be removed around the hole so that the self-drilling fixing can be inserted directly into the plasterboard. This may not be a desirable solution and other plasterboard fixings may be more suitable.

Worth considering is the new generation of specialist nylon plasterboard fixings, such as the type in this illustration. These are technically-sophisticated fixings which are designed to form-lock either behind or within the plasterboard substrate and therefore would work in various panel thicknesses. Due to their design features, including built-in flange and guide ribs to prevent turning, they offer good load capacity. The big benefit they offer is that they are especially suitable for fixing into dry lining walls, as the cavity behind the plasterboard is not required due to their space-saving nature.



Despite the focus on specialist plasterboard fixings, there are nonetheless certain universal nylon fixings which, due to their design, are suitable for use in almost any building materials including plasterboard. This can be a great benefit for people whose job varies every day so that predicting the type of substrate they would have to fix into is very difficult. Instead of holding various types of fixings for specific materials, it is a big advantage to have one product that can be used for any materials. How do these fixings work? When installed into solid materials, universal fixings work by friction, when installed into hollow materials such as hollow blocks, pre-cast concrete slabs or plasterboards, these fixings knot behind and create mechanical interlock in the cavity. Even though universal fixings are not specialist plasterboard fixings, they still offer quite impressive performance and can be used for the previously mentioned applications.



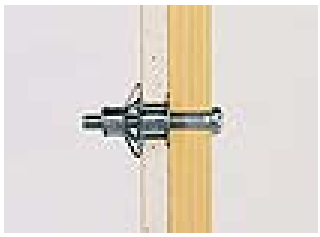
## Medium weight jobs

For medium duty applications, it is better to consider metal cavity fixings as they transfer the load behind the plasterboard and the stresses are put on to a wider area of the board. The load capacity is then determined not only by the strength of the fixing but the strength of the board itself.

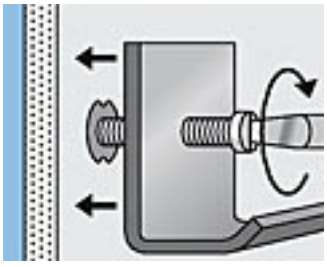
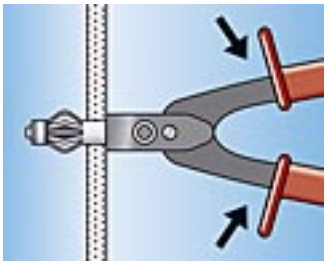
There are generally two common types of metal cavity fixings available, either toggle or “umbrella” types. Toggles come in various designs, supplied with stud or hook end and also toggle itself can be either gravity or spring type as illustrated by the following examples:

Toggle fixings derive their strength from the exceptionally broad splay of the toggle within the cavity, helping to spread the loading on the plasterboard. The drawback with these types of fixings is that they require a relatively large drill hole to accommodate the size of the toggle. Also some toggles are supplied with a pan-headed bolt instead of stud and nut, which mean that they need to be assembled to the fixture prior to installation and if the screw is withdrawn, the toggle falls down within the cavity. For heavier applications where large gravity toggles are specified, the required cavity depth must be observed as 70-75mm free space might be required for a large toggle to be inserted behind the board.

The steel expanding “umbrella” type of fixing is also very strong, limited only by the fact that it doesn’t spread out as much as the toggle type. It has the advantage that it can be placed in the drill hole before offering up the fixture, making installation that much easier. It also allows the fixture to be demounted and refitted again very easily without losing the fixing in the cavity. The disadvantage is that this type of fixing is permanently expanded and therefore, although the screw is removable the anchor body is extremely difficult to dismantle at a later date. For this reason it should not be used for applications where fixing removal is required in the future.



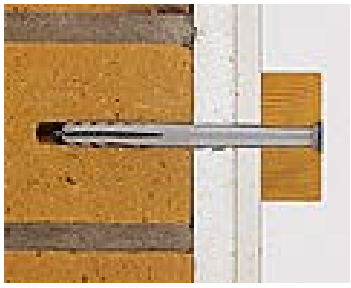
Umbrella type fixings can be expanded by either using a screwdriver or, for high volume jobs, special installation pliers.

There are also on the market very specialist adhesive plasterboard fixings, which require a special element to be inserted and filled with injection resin, to create a form-lock behind the plasterboard. These systems are more complex and cannot be loaded immediately as curing time of the resin must be observed.

## Higher loads

For heavy duty applications where the strength of the plasterboard is not sufficient, other methods of anchoring should be used. For partition walls it is possible to fix directly into vertical wooden or metal stud using self-drilling screws, providing the fixture can be positioned in an area where these studs are located. If it is a new build, it is also possible to install timber studs in the cavity where these heavy items will be fixed. For dry-lining applications with block wall behind, the loads can be transferred to the block by simply using long nylon plugs called “frame fixings”, as shown on this illustration.



## For more information:

Refer to CFA Guidance note “Fixings for Plasterboard” or CFA members’ websites.