

ELECTRICAL ACCESSORY GRID OR MOUNTING PLATE

This invention relates to an improved grid or mounting plate for an electrical accessory, eg a switch or socket, of the kind which is normally mounted to a wall surface by means of fastening screws.

5 Wall mounted electrical accessory devices which include a grid or mounting plate on which an electrical accessory is mounted, and a cover or fascia plate which snap fittingly engages onto the grid plate, are well known in the art. Conventionally, the mounting plate is a solid moulded member of plastics material and generally rectangular in shape with recessed mounting screw receiving openings formed in
10 each of its four corners as well as two further centre-line mounting screw openings adjacent opposite sides of the plate centrally thereof. Traditionally tightening the centre-line mounting screws has resulted in unacceptable levels of deformation of the mounting plate in the central region thereof, such deformation being caused by forces which are transferred from the screw mounting locations to the centre region
15 of the plate. Such deformation causes an undesirable bowing effect in that when the cover or fascia plate is fitted to the mounting plate, the two plates do not lie flush with one another and therefore the extent to which the electrical accessory protrudes through the cover or fascia is decreased. In some cases a gap is created between the protruding electrical accessory (for instance a switch member) and the perimeter wall
20 of the switch aperture in the cover or fascia plate. This is aesthetically undesirable.

One attempt to overcome the above-mentioned problems involved the addition of webs for the purpose of stiffening the central area of the plate; however, this resulted in further transference of the forces produced when the mounting
25 screws were tightened, into the centre area of the plate, and which ultimately resulted in the switch aperture opening up quite significantly (due to the bowing of the top wall of the plate).

A further attempt involved the addition of yet more material in the form of
30 strengthening webs; but once again this resulted only in the forces being transferred to the centre region of the plate, exacerbating the displacement of the top wall in the "z" direction (ie measured along an axis at right angles to the plane of the plate). A still further unsuccessful attempt to solve the problem involved using a stiffer glass



filled material but once again this had a limited but still unsatisfactory effect in controlling the deformation of the central area of the mounting plate in the vicinity of the switch aperture.

5 It is an object of the present invention therefore to provide an improved electrical accessory mounting plate which will obviate at least some of the aforementioned problems associated with prior art mounting plates and which will allow the mounting plate to be securely fastened to a wall surface without any appreciable deflection of its centre panel area towards the mounting surface.

10 According to the invention there is provided a mounting plate for mounting an electrical accessory, the mounting plate comprising:

a generally planar and rectangular front wall;

15 a pair of screw-receiving mounting holes extending through the front wall, the mounting holes located on a longitudinal axis bisecting the front wall and located adjacent respective opposite edges of the front wall;

a pair of apertures, each spaced inwards from a respective mounting hole and extending laterally outwards from the longitudinal axis towards respective opposite longitudinal edges of the front wall; and

20 a mounting panel within the front wall, at least partially bounded on opposite sides by the apertures, the panel adapted to receive an electrical accessory,

whereby tightening of screws passing through the mounting holes and into a mounting surface does not result in any appreciable deflection of the panel towards the mounting surface relative to the periphery of the front wall.

25 A fascia (cover) may be attached over the mounting plate. The fascia can be designed to consistently lie flush with the mounting panel of the mounting plate because there is no appreciable deflection of the mounting panel towards the mounting surface relative to the periphery of the front wall. Consequently, the extent to which an electrical accessory mounted to the mounting panel protrudes through
30 the fascia can be decreased and made consistent. In some applications (for instance where the electrical accessory is a conventional rocker switch), this will also prevent a

gap being formed around the protruding electrical accessory (which is aesthetically undesirable).

Preferably each aperture is an elongate slot.

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Preferably the slots are adjacent their respective mounting holes.

Preferably the slots are adjacent their respective mounting holes and are substantially parallel and extend across a major portion of the lateral width of the plate.

10 Preferably the panel defines an opening for receiving an electrical accessory, eg a switch, the opening being bounded by a raised lip protruding frontwards from the panel.

15 Preferably the mounting plate comprises stiffening ribs on the rear face of the panel wherein the stiffening ribs are arranged around the opening in a rectangular pattern with four arms extending diagonally outwards from each of the four corners of the rectangle.

20 In order to more fully explain the present invention, a preferred embodiment thereof is described hereunder with reference to and as illustrated in the accompanying drawings wherein:

Fig 1 is a perspective view of an electrical switch grid or mounting plate made in accordance with a preferred embodiment of the invention;

Fig 2 is an underside perspective view of the plate shown in Fig. 1;

25 Fig 3 is a plan view of the plate shown in Fig 1; while

Fig 4 is a side view of the plate shown in Fig 1.

Referring to the drawings, there is shown an electrical grid plate or mounting plate 10 for a single switch plate assembly which normally also comprises a fascia
30 (cover) plate (not shown) which is arranged to clip onto the mounting plate 10 in

contiguous relationship, and an electrical accessory in the form of a switch member (not shown) which is mounted to the grid plate within a central aperture 11 formed therein, with the switch member protruding through an aligned aperture (not shown) in the fascia plate. The opening 11 in the mounting plate 10 is bordered by a projecting lip 12 which is shaped to fit closely to the perimeter wall of the aperture formed in the fascia plate. This is designed to improve the visual appearance of the mounting plate assembly.

Also in accordance with conventional design, the mounting plate 10 is provided with a pair of mounting screw receiving mounting holes 14, 15 located on the longitudinal bisector of the plate 10 and located adjacent opposite sides 16, 17 thereof. The holes 14, 15 pass through mounting bosses 18, 19 respectively which project rearwardly from the inner face of the front wall 20 of the plate 10. Although the plate 10 is also provided with mounting screw receiving holes 21 adjacent its four corners, these are very rarely used to mount the plate 10 to a mounting surface. In most instances, the centre-line holes 14, 15 are used to secure the mounting plate 10 to a mounting box or bracket.

The mounting plate 10 has a generally planar and rectangular front wall 20 and a side wall 28 depending from the front wall 20 and extending around its periphery. The front wall 20 is provided with a pair of apertures in the form of parallel elongate slots 22 which extend across a major portion of the width of the front wall 20, with the ends of each of the slots 22 terminating a small distance from the top or bottom edge of the plate 10. The slots 22 are located slightly inwardly of the mounting holes 14, 15 and serve to mechanically isolate the planar centre panel 30 region of the front wall 20 from opposite edge portions of the plate 10 in which are inserted the mounting screws (not shown) used to fasten the plate 10 to its mounting box or bracket. With this arrangement, the slots will allow the screw bosses 18, 19 to move freely and independent of central panel portion 30 of the plate 10 which will be sufficiently stable to enable the cover or fascia plate to be clipped thereonto without a large gap being created around its switch aperture. It has been found that the forces which are produced during tightening of the mounting screws, are prevented from

transferring into the centre panel portion of the plate – forces which would otherwise cause deformation of the front wall of the plate. Tests have shown that by isolating these forces at the screws bosses 18, 19, deformation measured along the “z” axis at right angles to the plane of the centre panel 30 is virtually eliminated.

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In order to stiffen the centre region of the centre panel 30 of the plate 10, stiffening ribs 25 depending from the underside of the centre panel 30 are provided and extend diagonally inwards from an outer edge of the plate 10 to a point in proximity to the switch opening 11.

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It should of course be appreciated that the number and arrangement of the apertures formed in the grid plate can vary widely. For example there may be three or four apertures, and this will depend on the number of switches required and/or the number of power outlets or other electric accessories. In some cases there may be a two, three or four gang switch arrangement or in some cases a combination switch and power outlet devices. This will of course affect the arrangement of the stiffening webs on the underside of the plate.

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The size and shape of the mounting plate 10 can vary to suit the particular application. Where the term “rectangular” has been used in this specification and its claims it should be interpreted to include “square”.

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It should also be appreciated that an arrangement other than two vertical parallel slots 22 may be employed. For example the slots need not be linear nor formed as a single continuous slot. Each side of the plate 10 may be formed with approximately V-shaped slots, with the legs of each slot being symmetrical about the centre line passing through the mounting holes 14, 15. It is important that the slots function in a way so that the centre planar panel region of the plate 30 which contains the switch member(s) is mechanically isolated from the mounting screw regions so that when the screws are tightened, there is no appreciable deflection of the centre panel region 30 towards the mounting surface relative to the periphery of the front wall.

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A brief consideration of the above described embodiment will indicate that the invention provides for a very simple and inexpensive solution to the problem of grid plate deformation caused by the torque from tightening of the mounting screws used to fasten the grid plate to a mounting surface, and one which ensures that the

5 decorative cover or fascia plate will lie flush with the front wall of the grid plate.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A mounting plate for mounting an electrical accessory, the mounting plate comprising:
 - a generally planar and rectangular front wall;
 - 5 a pair of screw-receiving mounting holes extending through the front wall, the mounting holes located on a longitudinal axis bisecting the front wall and located adjacent respective opposite edges of the front wall;
 - a pair of apertures, each spaced inwards from a respective mounting hole and extending laterally outwards from the longitudinal axis towards
 - 10 respective opposite longitudinal edges of the front wall; and
 - a mounting panel within the front wall, at least partially bounded on opposite sides by the apertures, the panel adapted to receive an electrical accessory,
 - 15 whereby tightening of screws passing through the mounting holes and into a mounting surface does not result in any appreciable deflection of the panel towards the mounting surface relative to the periphery of the front wall.
2. A mounting plate as claimed in claim 1 wherein each aperture is an elongate slot.
3. A mounting plate as claimed in claim 2 wherein the slots are adjacent their
- 20 respective mounting holes.
4. A mounting plate as claimed in claim 3 wherein the slots extend across most of the lateral width of the plate.
5. A mounting plate as claimed in claim 4 wherein the slots are substantially parallel.
- 25 6. A mounting plate as claimed in claim 5 wherein the panel defines an opening for receiving an electrical accessory.

7. A mounting plate as claimed in any one of claims 1 to 6 wherein each of the mounting holes is defined by an apertured boss extending rearwards from the plate.
8. A mounting plate as claimed in either claim 6 or 7 comprising stiffening ribs
5 mounted on the rear face of the panel.
9. A mounting plate as claimed in claim 8 wherein the stiffening ribs are arranged around the opening in a rectangular pattern with four arms extending diagonally outwards from each of the four corners of the rectangle.
10. A mounting plate as claimed in any one of claims 6 to 9 wherein the opening is
10 bounded by a raised lip protruding frontwards from the panel.
11. A mounting plate integrally moulded of plastics material for mounting an electrical accessory, the mounting plate comprising:
 - a generally planar and rectangular front wall;
 - a side wall depending from and extending around the periphery of the
15 front wall;
 - four screw-receiving mounting corner holes extending through the front wall, each located adjacent a respective corner of the front wall;
 - a pair of screw-receiving centre-line mounting holes extending through the front wall, the centre-line mounting holes located on a longitudinal axis
20 bisecting the front wall and located adjacent respective opposite edges of the front wall;
 - a pair of elongate slots, each spaced inwards from a respective centre-line mounting hole and extending laterally outwards from the longitudinal axis towards respective opposite longitudinal edges of the front wall; and
25 a mounting panel within the front wall, at least partially bounded on opposite sides by the slots, the panel adapted to receive an electrical accessory, whereby tightening of screws passing through the mounting holes and

into a mounting surface does not result in any appreciable deflection of the panel towards the mounting surface relative to the periphery of the front wall.

12. A mounting plate as claimed in claim 11 wherein the slots are adjacent their respective centre-line mounting holes.

5 13. A mounting plate as claimed in claim 12 wherein the slots extend across most of the lateral width of the plate.

14. A mounting plate as claimed in claim 13 wherein the slots are substantially parallel.