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**FITTING FOR JOINING CABLE TRUNKING UNITS****FIELD OF THE INVENTION**

The present invention relates to cable trunking systems  
5 for use in buildings that distribute services around a room  
in a building. Specifically, the present invention relates  
to a fitting for joining lengths of cable trunking. In  
particular, although not exclusively, the present invention  
provides a tee-piece for providing a junction between three  
10 trunking units.

**BACKGROUND OF THE INVENTION**

Cable trunking systems may be used to distribute  
different types of cables, such as power cables and data  
15 cables, around a room and to provide access points such as  
electrical sockets, telephone/data points and the like.  
Thus, the cable trunking system provides a flexible way of  
positioning electrical sockets and telephone/data points  
where desired around a room.

20 Cable trunking systems generally comprise extruded  
lengths of trunking that are traditionally wall mounted at  
dado rail level. Such lengths generally have a base,  
sidewalls and a cover that fit together to form a sealed  
enclosure. Often, the base has one or two longitudinal  
25 dividing walls projecting therefrom to abut against the  
cover such that, when the cover is fitted to the base, two  
or three separated compartments are formed through which  
cables may be routed. The compartments allow the  
segregation of different types of cables, for example power  
30 cables from data cables.

A common configuration is to have two longitudinal  
dividing walls that divide the trunking into three

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compartments. One type of cable is usually contained in the upper compartment, and the other type of cable is contained in the lower compartment. The middle compartment is used to mount access points to the cables, e.g. power sockets and  
5 telephone points. The appropriate type of cable is routed through to the middle compartment at the access point via holes formed in the dividing walls.

In use, an installer mounts the base to a wall, or other suitable mounting surface, and then places power  
10 cables along one open compartment and data cables along another compartment, add access points where required, and then complete the installation by fitting the cover.

In this way, a room such as an office, may be provided with power points, telephone points and aerial sockets for  
15 all manner of electrical applications such as televisions, computers, telephones, etc. Often, the trunking connects with either a ceiling void or a floor void that provides the routing of services throughout the entire building. Hence, a junction must be formed between vertical and horizontal  
20 trunking.

Such junctions are usually formed using dedicated fittings such as a tee piece. The fittings are arranged to receive a cut end of each length of trunking to be joined. The fitting overlaps the adjacent lengths of trunking to  
25 ensure that there are no gaps in the trunking as a whole. Use of such a fitting enables an aesthetically pleasing installation, and generally ensures integrity of the insulation and protection provided by the trunking. Where the trunking is being used for carrying both data and power  
30 cables, the separation of the compartments carrying each type of these cables must be preserved. This is a

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particular problem in a tee piece where the data cables may need to cross the power cables.

A further problem to be overcome at junctions is that the cables must turn corners. Where the trunking is being  
5 used for carrying data cables such as optical fibres, it is essential that the trunking is arranged so that such cables cannot bend less than a particular minimum bend radius in order to avoid damage to the cables and degradation of the signal.

10 US Patent No. 5,917,982 describes a tee fitting for joining trunking divided into two equal compartments by a central dividing wall. The junction is formed where a horizontal section of trunking is joined to a vertical section of trunking that extends to the ceiling. The tee  
15 fitting has external walls to define the general T-shape of the junction, although the corners have a rounded profile to ensure cables follow at least the minimum required bend radius. A bridge piece is attached to the base of the tee fitting to define: (a) an overpass connection that links an  
20 uninterrupted section of the lower compartment of the horizontal section of trunking to one of the compartments of the vertical section of trunking; and (b) an underpass connection that allows the upper compartment of the horizontal section of trunking to continue uninterrupted  
25 beneath the bridge piece and that also connects with the other compartment of the vertical section of trunking. The bridge part may be positioned in one of two laterally offset positions. The first position sees the overpass align with the left compartment of the vertical trunking, and the  
30 second position sees the overpass align with the right compartment.

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SUMMARY OF THE INVENTION

Against this background, and from a first aspect, the present invention resides in a cable trunking assembly fitting for joining an end of a first length of trunking to an end of a second length of trunking. The first length of trunking has a first compartment for carrying cables and the second length of trunking has an internal volume longitudinally partitioned into second and third compartments for carrying cables. The fitting comprises first, second and third end apertures for interfacing with the first, second and third compartments respectively of the adjacent lengths of trunking. First, second and third passages extend from the first, second and third end apertures respectively to meet at a central void. Thus, when assembled, first passage is a continuation of the first compartment, second passage is continuation of the second compartment, and so on. Guide means are provided that may be located at least partially in the void in first and second positions to define a conduit linking two passages, movement between the first and second positions requiring a rotation of the guide means. In the first position, the conduit links the first passage to the second passage. In the second position, the conduit links the first passage to the third passage.

Hence, a fitting is provided that allows selectable routing of cable from a compartment ("first") of one length of trunking to either of a pair of compartments ("second" and "third") of a second length of trunking. As opposed to the prior art, the two positions are related by a rotation rather than a translation. The guide means may require more than a mere rotation to effect a change of position. For example, walls may overlap such that they prevent mere

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rotation of the guide means. Instead, the guide means may need to be lifted from the fitting before being rotated and dropped back into the fitting.

Clearly, the void is an empty part of the fitting when  
5 the fitting is in a disassembled form: putting the guide means in place will of course lead to the void being at least partially filled with the guide means. Moreover, advantageously the guide means may comprise members that serve to partition some of the passages from the void, such  
10 that only a select few passages are in communication with the void and hence other passages.

Optionally, in the first position, the guide means forms a barrier separating the first passage from the third passage and, in the second position, the guide means forms a  
15 barrier separating the first passage from the second passage. The guide means may maintain a partition between the second and third compartments (of the second length of trunking) in both the first and second positions. Advantageously, the partition is substantially continuous  
20 between the end of the first end aperture and the second end aperture. In this way, different types of cables may remain segregated as they pass through the fitting.

In its broadest sense, the present invention may be used to join a first length of trunking having a single  
25 cable-carrying compartment (the "first") to a second length of trunking having two cable-carrying compartments (the "second" and "third"). However, the present invention enjoys flexibility in that it may be applied to many other junctions of trunking, in terms of the number of sections of  
30 trunking, the number of compartments within any piece of trunking and the orientation of the lengths of trunking relative to each other.

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For example, the first length of trunking may have an internal volume that is longitudinally partitioned to form the first compartment and also a fourth compartment (i.e. the first length of trunking comprises first and fourth compartments, the second length of trunking comprises second and third compartments). The fitting may then further comprise a fourth end aperture for interfacing with the fourth compartment and a fourth passage extending from the fourth end aperture to join the central void. The guide means may then further comprise an arch portion defining an overpass and an underpass, the overpass comprising the conduit described above and the underpass comprising an underpass conduit. In the first position, the underpass conduit links the fourth passage to the third passage and, in the second position, the underpass conduit links the fourth passage to the second passage. In this way, a fitting is provided to link two lengths of trunking having two cable-carrying compartments to each other with the flexibility to choose which compartment is connected to which compartment, while still preserving separation of the cable routes through the fitting.

As a further example, the fitting may further join an end of a third length of trunking having an internal volume longitudinally partitioned into fifth and sixth compartments for carrying cables to the other two lengths of trunking. In this arrangement, the first length of trunking has first and fourth compartments, the second length of trunking has second and third compartments, and the third length of trunking has fifth and sixth compartments). The fitting may comprise fifth and sixth end apertures for interfacing with the fifth and sixth compartments respectively; and fifth and sixth passages extending from the fifth and sixth end

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apertures respectively to join the central void. The guide means may be arranged such that, in the first position, the overpass conduit links the fifth passage to the second passage and the underpass conduit separately links the sixth passage to the third passage. In the second position, the overpass conduit links the fifth passage to the third passage and the underpass conduit separately links the sixth passage to the second passage. Thus a junction is formed where two compartments of two lengths of trunking may be joined to either compartment of the third length of trunking, the other two compartments of the two lengths of trunking being joined to the other compartment of the third length of trunking.

Optionally, the fitting comprises three side walls that define sides between the three ends of the fitting and three internal walls, an internal wall extending from each of the three ends, the side walls and internal walls defining the first to sixth passages and the void. The side walls and the internal walls may have smoothly curving sections where they change direction. The side walls connecting ends of the fitting at an angle to each other may be smoothly curving between the ends. This curvature helps guide cables through the fitting without kinking or forming bends of too tight a radius. For example, the internal walls may smoothly curve towards the void where the guide means is received, thereby being arranged to guide smoothly cables to the overpass conduit and/or underpass conduit.

Optionally, the fitting may have substantially U-shaped internal walls to divide each end into three passages. This allows interfacing with trunking having two dividing walls that separate the trunking into three compartments. The U-shaped walls effectively seal the middle compartments as

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they form blind passages which, generally, is not a problem because cables are routed through only the outer compartments.

According to a first preferred embodiment, the guide means comprises two side walls that define a tapering overpass conduit with a wide open end and a narrow open end, the wide open end being sized to fit between two of the U-shaped internal walls and the narrow open end having a width corresponding to a common width of the outer passages. This sizing allows the side walls of the guide means to abut against the side walls and internal walls of the fitting thereby forming partitions. In this embodiment, the guide means may be rotated so that the narrow open end is received in either of the outer passages. In a contemplated embodiment, one of the sidewalls adjacent the wide open end overlaps a correspondingly shaped portion of one of the adjacent U-shaped internal wall and the other of the sidewalls adjacent the wide open end extends from the adjacent U-shaped internal wall.

In an alternative arrangement according to a second preferred embodiment, two of the internal walls are substantially U-shaped to divide two ends into three passages and the guide means is substantially Y-shaped, having sidewalls that define a single opening in one end that is sized to correspond to a common width of the centre compartment of each end of the fitting, and that define a pair of openings at the other end sized to correspond to a common width of the outer compartments of each end and being disposed to be received in a pair of such outer openings.

The pair of openings may be separated by a U-shaped sidewall that corresponds to one of the internal walls. Optionally, the guide means comprises a smoothly curving

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ramp surface that links the three openings. This allows cables to be passed smoothly over the overpass conduit. The guide means may be rotated through 180° between the first and second positions, such that in the first position, the  
5 single opening opens to the first and fifth passages, and the pair of openings are received in the second and third passages such that the overpass conduit connects the first and fifth passages to the second and third passages, and wherein the underpass conduit links the fourth and sixth  
10 passages to the centre passage between the second and third passages via an aperture provided in the U-shaped wall separating the pair of openings.

Optionally, curved surfaces are provided on the guide means for guiding cables through the aperture in the U-  
15 shaped wall separating the pair of openings.

In order to form partitions to separate passages, the void may be provided with a low wall extending between two of the U-shaped internal walls to divide partially the first and fifth passages from the fourth and sixth passages, the  
20 low wall extending to meet the underside of the arch portion of the guide means when attached to the base part.

Optionally, the guide means has hinged portions that extend from sidewalls of the guide means to meet two of the U-shaped internal walls and to abut the top of the low wall.  
25 In the second position, the pair of openings may open to the first and fifth passages, and the single opening may extend into the end of the fitting comprising the second and third compartments such that the sidewalls defining the single opening form internal walls that define the second and third  
30 compartments, such that the overpass conduit connects the first and fifth passage to the centre passage between the second and third passages, and the underpass conduit links

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the fourth and sixth passages to the second and third passages.

From a second aspect, the present invention resides in a cable trunking assembly comprising first and second  
5 lengths of trunking and any of the fittings described above used to join the first and second lengths of trunking. The first length of trunking comprises a first compartment for carrying cables that terminates at an end adjoining the fitting at a first orifice. The second length of trunking  
10 comprises an internal volume longitudinally partitioned into second and third compartments for carrying cables, the second and third compartments terminating at an end adjoining the fitting at second and third orifices. The first, second and third end apertures of the fitting adjoin  
15 the first, second and third orifices respectively of the first and second lengths of trunking such that the first, second and third compartments are continuous with the first, second and third passages.

From a third aspect, the present invention resides in a  
20 trunking fitting for joining at least a first length of trunking to a second length, the second length having a plurality of compartments and the first length having at least one compartment, and wherein a directing member is arranged to direct cables to and from the first length into  
25 a selected compartment of the second length, wherein the directing member is movable from one angular location to another so as to direct the cable into one compartment or another.

Other preferred but optional features of the present  
30 invention are defined in the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

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Specific embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a trunking assembly,  
5 with covers removed that includes two tee fittings according to a first embodiment of the invention;

Figure 2 is a plan view of a trunking assembly akin to that of Figure 1, shown without a cover and showing one possible cable routing arrangement;

10 Figure 3 is a perspective exploded view of the tee fittings of Figures 1 and 2;

Figure 4 is a perspective view from below the bridge part of the tee fitting of Figure 3;

Figure 5 is a perspective view from the side of the  
15 bridge part of the tee fitting of Figure 3;

Figure 6 is a plan view of a second embodiment of a trunking system according to the present invention, shown without a cover;

Figure 7 is a plan view of a third embodiment of a  
20 trunking system according to the present invention shown without a cover;

Figure 8 is a perspective view of an assembled tee fitting according to a fourth embodiment of the present invention;

25 Figure 9 is an exploded view in perspective of the tee fitting of Figure 8;

Figure 10 is a perspective view of the base part and bridge part of the tee fitting of Figure 8 assembled in a first orientation;

30 Figure 11 is a perspective view of the base part and bridge part of the tee fitting of Figure 8 assembled in a second orientation;

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Figure 12 is a plan view corresponding to the perspective view of Figure 10;

Figure 13 is a plan view corresponding to the perspective view of Figure 11;

5        Figure 14 is a perspective view of the bridge part from above; and

Figure 15 is a perspective view of the bridge part from below.

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#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The trunking assembly 10 of Figures 1 to 4 includes one or more tee fittings 20 and 22a used to join sections of  
15       straight trunking 30, 40, 50. Figure 1 shows three such straight sections of trunking, upper trunking 30, left trunking 40 and right trunking 50 that the tee fitting 20 is used to join. Each section of trunking 30, 40 and 50 comprises a base part 34, 44, 54 and a cover (not shown)  
20       that fit together to form a sealed enclosure. Each base part 34, 44, 54 has a pair of longitudinal dividing walls 35, 36, 45, 46, 55, 56 that separate the trunking into three compartments 31, 32, 33, and 41, 42, 43, and 51, 52, 53. The outer compartments 31, 33, 41, 43, 51, 53 are relatively  
25       narrow while the middle compartments 32, 42, 52 are relatively wide.

The trunking assembly 10 of Figure 2 differs slightly from that of Figure 1 in that left trunking 40 and 50 has unequally-sized compartments 51 and 53, with upper  
30       compartment 51 being wider than lower compartment 53. Similarly, right trunking 40 has an upper compartment 41 that is larger than lower compartment 43. Thus,

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compartments 70, 80 and 72 are correspondingly sized. Upper trunking 30 is the same in Figures 1 and 2, such that compartments 31 and 33 are of equal size.

In use, an installer will use, say compartments 31, 41, 51 for data cables, and 33, 43 and 53 for power cables so that the cables are segregated within the trunking assembly. The third compartments 32, 42, 52 may be used to receive electrical wiring accessories as required along each length of trunking, such as power sockets and telephone points. A possible wiring arrangement is shown in Figure 2.

Figure 3 is an exploded view of a tee fitting 20 used to join the lengths of trunking 30, 40 and 50. The tee fitting 20 comprises a base part 22, a cover 26 and a bridge part 24. The base part 22 and cover 26 are both T-shaped, having three arms. The base part 22 and cover 26 both have sidewalls that overlap to form a sealed enclosure when the tee fitting 20 is assembled, the bridge part 24 being retained within this enclosure. The cover 26 may attach securely to the base part 22 using any number of standard fastenings.

The base part 22 of the tee fitting 20 has side walls 84, 86 and 88 that define the three arms of the tee shape. These side walls 84, 86, 88 abut side walls of adjacent trunking to form continuous surfaces. Sidewalls 84 and 88 are curved to define a minimum bend radius for cables passing therethrough.

The tee fitting 20 has internal dividing walls 60, 62 and 64. The dividing walls 60, 62, 64 are generally U-shaped and are distributed so that there is one in each of the three arms of the tee fitting 20. The ends of the dividing walls 60, 62 and 64 extend to the edges of the arms to meet the longitudinal dividing walls 35, 36, 45, 46, 55,

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56 of the adjacent trunking 30, 40, 50. Hence, the U-shaped dividing walls 60, 62, 64 define termini to the middle compartments 78, 80 and 82. The dividing walls 60, 62 and 64 also partially define a pair of outer compartments 56, 58, 70, 72, 74, 76 to each arm that interconnect in the centre of the tee fitting 20 to form a central void 90.

When assembled, the bridge part 24 is located largely in this void 90, with a wide open end 25 communicating with the lower compartments 72 and 76 and a narrow open end 108 communicating with left vertical compartment 68. Sidewalls 110 and 112 of the bridge part 24 separate the conduit formed by the bridge part 24 from the upper compartments 70 and 74. The bridge part 24 has a general arching shape that provides an overpass with a ramp surface 106 that extends to link the wide open end 25 with the narrow open end 108. The underside of the arch section 102 provides an underpass that links upper compartments 70 and 74.

The side walls 110 and 112 terminate at the narrow end 108 with concave external wall surfaces 116, 116. Concave surfaces 116 and 116 abut against correspondingly-shaped parts of the side walls 84 and 88 and dividing wall 64, to form continuous surfaces to separate compartments appropriately. The side walls 110 and 112 terminate at the wide end 25 with a convex external wall surfaces 114 and 114 arranged to abut against correspondingly-shaped surfaces 118 and 120 of the dividing walls 60 and 62 respectively, so as to provide substantially continuous surfaces. The substantially continuous surfaces are such that any gaps in the surface are less than that allowed by the relevant British Standard or International Standard relating to separation of mains voltage and low voltage cables.

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The bridge part 24 is rotatable to allow selection of either of the left or right vertical compartments 66 or 68. The tee fittings 22 and 22a of Figure 1 show both arrangements. When assembled, one of the vertical  
5 compartments 66 or 68 is connected to the lower compartments 72 and 76 by the overpass formed by the ramp surface 106 best seen in Figure 5; the other of the compartments 31 or 33 is connected directly to one of the upper compartments 70 or 74, and indirectly to the other upper compartment 70 or  
10 74 via the underpass beneath the arch portion 122. As can be inferred from Figures 1 and 2, the side walls 110 and 112 and ramp surface 106 preserve separation of compartments in either orientation.

The bridge part 24 is arranged so that an installer may  
15 easily select which compartments to interconnect at the time of installation. Moreover, the installer need not have to carry fittings for each alternative configuration. An installer may easily locate the bridge part 24 as it is provided with a socket 134 that receives a spigot 92  
20 provided in the void 90. The narrow open end 108 of the bridge part 24 may then only be received in either compartment 66 or 68. Spigot 92 and socket 134 are cylindrical to allow rotation between the two positions that allow connection to either compartment 66 or 68. A step  
25 provided in the base part 22 of the tee fitting 20 allows the wide open end 25 of the bridge part 24, and hence the ramp surface 106, to sit flush with an internal surface 96 of the base part 22. As the wide open end 25 is curved, the flush fit is preserved in both orientations.

30 Figure 2 shows cables 98, 136, 138, 140, 142 and 144 routed through the trunking assembly. Hence, Figure 2 is helpful in illustrating that the tee fitting 20 of Figures 1

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to 4 are provided with many curved surfaces that ensure cables do not bend below a minimum bend radius as they pass through the tee fitting 20. Typical minimum bend radii may be specified as 25 mm or 50 mm.

5       Cables 140 and 144 run between left trunking 40 and right trunking 50. Cable 144 merely extends straight along the lower compartments 43 72, 76 and 53. Cable 140 extends along the upper compartments 41, 70, 74 and 51, and so must bend to negotiate underpass 122. To ensure the bending does  
10 not fall below the minimum radius allowed, dividing walls 60 and 62 are shaped to guide the cable upwardly towards the underpass 122. In addition, side walls 112 of the bridge part 24 are also curved so that whichever sidewall projects into void 90, it provides a suitable curved surface for  
15 guiding cable 140.

      Cables 98 and 142 run from the upper compartments 41, 51 of left and right trunking 40, 50 to the left compartment 33 of upper trunking 30. Cable 142 is routed through compartments 70 and 66 so that it merely follows sidewall 84  
) 20 that is curved to preserve the minimum bend radius. Cable 98 extends through compartments 74 and 66 via underpass 122. As can be seen from Figures 3 and 3A, the narrow end 108 of the bridge part 24 is heel-like, having an upright wall 124. This upright wall 124 is curved so as to guide the cable 98  
25 as it bends to enter compartment 66. U-shaped internal wall 64 also helps guide cable 98 as it enters compartment 66.

      Cables 136 and 138 run from the lower compartments 43, 53 of left and right trunking 40, 50 to the right compartment 31 of upper trunking 30. Cable 136 is guided by  
30 U-shaped internal wall 62 as it bends to run across the ramp surface 106 provided by the bridge part 24. The curved side wall 112 of the bridge part 24 guide the cable 136 as it

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crosses the overpass, with curved ends 116 of the sidewalls 112 guiding the cable 136 as it bends to enter compartment 68. Similarly, U-shaped dividing wall 60 and side wall 112 guide cable 138 as it passes from compartment 76 to  
5 compartment 68.

Figure 6 is a plan view of a second embodiment of a trunking system according to the invention, shown without the covers. The similarity between the trunking systems 10 of all the accompanying figures allows like reference  
10 numerals to be used for like parts. The fitting 20 of Figure 6 joins only a single length of horizontal trunking 40 to a length of vertical trunking 30, and so the fitting 20 has an L-shape. Trunking 30 corresponds to that of Figures 1 and 2 and so has three compartments 31, 32 and 33.  
15 Trunking 40 has only a single compartment 4. Bridge part 24 is the same as in Figures 1 to 4 and is provided to direct cables 136 routed along compartment 41 through the L-fitting 20, either to compartment 31 or to compartment 33. Figure 6 shows a connection to compartment 33, but it will be  
20 appreciated that a counter-clockwise rotation of the bridge part 28 will enable a connection to compartment 31.

In Figure 6, the bridge part's sidewall 110 closes off compartment 31, preventing access to or from compartment 41 to compartment 31 and providing a dividing wall as required.  
25 Cable 136 may pass through the L-fitting 20 from compartment 41 to compartment 33, with curved walls 146 and 116 preventing the cable 136 from being bent tighter than an acceptable minimum bend radius.

Figure 7 is a plan view of a third embodiment of a  
30 trunking system according to the invention without covers, shown with a tee fitting 20 connected to three lengths of trunking 30, 40 and 50. Trunking 30 has three compartments

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31, 32 and 33, compartments 31 and 33 being of equal size. Trunking 40 has only a single compartment 41, akin to trunking 40 of Figure 6. Finally, trunking 50 has three unequally-sized compartments 51, 52 and 53. Bridge part 24 is provided to direct cables placed in compartments 41 and 53 over the tee fitting 20 either to compartment 31 or to compartment 33, depending on the orientation of the bridge part 24.

Figure 7 shows the bridge part 24 connected to compartment 53. The bridge part 24 has a sidewall 110 which prevents access to or from compartment 41 to compartment 31 when in this orientation. Cable 138 passes from compartment 53 to compartment 33 over the ramp surface 106 and is prevented by walls 60, 114 and 116 from being bent tighter than an acceptable minimum bend radius. In this arrangement, the underpass 102 allows cable 98 to run from compartment 57, under cable 138, to compartment 31. When cable 98 is pulled tight, curved walls 64 and 88 ensure that the cable 98 is not bent tighter than an acceptable minimum bend radius. Cable 144 is able to pass substantially straight from compartment 53 to compartment 41.

A further embodiment of the present invention will now be described that is distinctly different from the embodiments described above. Consequently, new referenced numerals will be adopted when describing this fourth embodiment, although it will be appreciated that some parts are similar to those already described. In particular, the tee fitting 500 of this fourth embodiment may be used to join lengths of trunking identical to those described above.

As can be seen from Figure 8, when assembled the tee fitting 500 has the same appearance as the tee fitting 20 previously described as they share a common cover 502 and

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24. As will be more apparent from Figure 9, cover 502 attaches to a base part 600 in much the same way as previously described, with sidewalls 502 and 601 to 603 forming a sealed enclosure. In common with previous  
5 embodiments, a bridge part 700 resides in the sealed enclosure between the base part 600 and the cover 500. The enclosure is separated into respective compartments by dividing walls of the base part 600 and bridge part 700 that extend to abut against the cover 501 when the tee fitting  
10 500 is assembled, as will be described in further detail below.

The tee fitting 500 is used to join three lengths of trunking identical to that of Figure 1, i.e. left, right and upper trunking, all being divided into three compartments by  
15 a pair of longitudinal dividing walls. Accordingly, the tee fitting 500 must abut the lengths of trunking and provide dividing walls that abut against the dividing walls of the adjacent trunking to ensure separation of compartments.

As can be seen from Figure 9, a pair of U-shaped  
20 dividing walls 604 and 605 are provided by the base part 600 that have ends positioned to abut against the two dividing walls of the adjacent trunking. Hence, U-shaped wall 604 defines an enclosed terminus to the middle compartments 606 and 609. U-shaped wall 604 defines an upper compartment 605  
25 where it faces sidewall 602, and a lower compartment 607 where it faces sidewall 601. Likewise, U-shaped wall 604 defines an upper compartment 608 where it faces sidewall 603 and a lower compartment where it faces sidewall 601. It  
30 will be apparent that the compartments 611, 612 and 613 that will continue to the upper trunking are defined partially by the bridge part 700, and so they will be described later.

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The compartments 605 to 613 meet in the centre of the tee fitting 500 at a void 614.

Figure 9 shows that the bridge part 700 is generally Y-shaped with a single opening 701 at one end and a pair of openings 702 and 703 at the other end. A ramp surface 704 extends from the single end 701 over the arched portion before dividing to end at the pair of openings 702 and 703. The bridge part 700 has sidewalls 705 and 706. A U-shaped wall 707 extends to link the pair of openings 702 and 703 where the ramp surface 704 divides. The ends of the U-shaped wall 707 terminate in precise lateral positions such that they abut the dividing walls of the adjacent upper trunking when the tee fitting 500 is assembled and installed. This arrangement ensures that the compartments of the upper trunking are preserved. Moreover, side walls 705 and 706 terminate at the single opening 701 at the same lateral positions, such that orientation of the bridge part 700 may be rotated through 180° and the side walls 705 and 706 will abut against the dividing walls of the adjacent upper trunking. Figures 10 and 11 show these two orientations in perspective, while Figures 1 and 13 show them in plan view.

The bridge part 700 is located in the base part 600 as follows. As can be seen from Figure 9, the base part 600 is provided with six socket holes, all referenced by 615. These socket holes are sized and positioned to receive co-operating spigots 708, 709 provided on the underside of the bridge part 700, as best seen in Figure 15. A single spigot 708 is provided centrally under the single opening 701, while a pair of spigots 709 are provided at the other end, one under each of the pair of openings 702 and 703. A further locating feature is provided by a step 616 that

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extends across the void 614 parallel to the direction of the lower compartments 607 and 610. This step 616 provides an abutment that the end, either that of the single opening 701 or the pair of openings 702 and 703, will rest against when  
5 the bridge part is correctly installed.

In the orientation shown in Figures 10 and 12, the bridge part 700 provides an overpass that allows cables, such as cable 800, to run over the ramp surface 704 from lower compartments 607 and 610 to the left and right upper  
10 compartments 611 and 613. Both compartments 611 and 613 are accessible at the same time, in contrast with the earlier-described embodiments. In addition, the bridge part 700 provides an underpass 710 that allows cables, such as cable 801, to pass between both upper compartments 605 and 608.  
15 Furthermore, U-shaped wall 707 does not extend into the level of the underpass 710 such that upper compartments 605 and 608 are also linked to the middle compartment 612. This allows cables, such as cable 802, to extend from upper compartments 605 or 608 to middle compartment 612. Cables  
20 may then be routed through the middle compartment 612 into the adjacent middle compartment of the adjacent length of vertical trunking.

Although cables are not normally routed through the middle compartments of horizontal trunking, this is because  
25 the middle compartment is used to mount access points such as power sockets and telephone/data points. Access points are not normally located on vertical sections of trunking, so the present invention makes good use of the otherwise redundant middle compartment of a vertical section of  
30 trunking. Moreover, using the middle compartment of the vertical section increases the cable carrying capacity of the trunking system. For example many data cables, that are

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used to wire telephone/data points in a point-to-point configuration, may be routed through the middle compartment before splitting, some to go into the left section of trunking and some to go into the right section of trunking.

5        If, for whatever reason, the middle compartment is not available for cable routing (e.g. because of access points installed in the vertical section), cables may be diverted into one of the outer compartments. For example, in Figure 12, cable 802 may be routed into the left compartment of the  
10 upper length of trunking through a knockout in the dividing wall separating left and middle compartments (or through any other hole, either preformed or made in situ).

      In the alternative orientation shown in Figures 11 and 13, the bridge part 700 provides an overpass that allows  
15 cables, such as cable 800, to run over the ramp surface 704 from lower compartments 607 and 610 to the middle compartment 612. As above, cable 800 may then be routed to a side compartment through a knockout or similar provided in the adjacent length of trunking. The underpass 710 again  
20 allows cables, such as cable 801, to pass between both upper compartments 605 and 608. Cables, such as cable 802, may be routed from upper compartments 605 or 608 to either left or right compartments 611 or 613.

      As can be seen from the cable routing illustrated in  
25 Figures 12 and 13, several surfaces of the base part 600 and bridge part 700 are curved to ensure cables are not bent tighter than the minimum bend radius. For example, U-shaped walls 604 and 605 guide cables as they pass from lower compartments 607 and 610 respectively onto the ramp surface  
30 704. In the orientation shown in Figure 12, curved ends 711 and 712 of the side walls 705 and 706 adjacent the single opening 701 also help guide cables smoothly, as does U-

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shaped wall 707. The side walls 602 and 603 of the base part 600 are also curved to guide cables from upper compartments 605 and 608 to left and right compartments 702 and 703. In the arrangement of Figure 12, a pair of curved walls 715 and 716, provided on the underside of the bridge part 700 under the pair of openings 702 and 703, also help guide cables such as cable 802.

Moreover, the upper compartments 605, 608 and lower compartments 607, 610 are always separated, no matter which orientation of the bridge part 700 is used.

In Figure 12, this is achieved by forming a barrier wall that extends across the void 614. The lower part of this wall (i.e. that at underpass level) is formed by a longitudinal wall 617 that extends from U-shaped wall 604 to U-shaped wall 605. The underside of the ramp surface 704 abuts against this wall 617 when the bridge part 700 is installed, thereby forming a barrier for the central section. A barrier must be formed to the height of the cover 501 to either side, and this is provided by hinged sections 713 provided on either side of the side walls 705 and 706. These hinge portions 713 are resilient such that they are inherently biased to open out and abut against the adjacent U-shaped walls 604 and 605, thereby completing the barrier.

Separation of upper compartments 605, 608 and lower compartments 607, 610 is achieved in Figure 13 by the longitudinal wall 617 abutting against the underside of the ramp surface 704 along virtually all its entire length. As can be seen by comparing Figures 12 and 13, the width of the bridge part 700 is greater over the dividing wall 617 in the arrangement of Figure 13. The small sections of the dividing wall 617 visible to either side of the bridge part

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700 in Figure 13 do not represent a breach in the separation of upper compartments 605, 608 and lower compartments 607, 610. This is because the curved walls 715 and 716 formed on the underside of the bridge part 700 extend such that they  
5 abut the dividing wall 617, thereby ensuring the desired separation.

The hinged sections 713 play no part in the separation of compartments in the arrangement of Figures 11 and 13. In fact, as can be seen from Figure 11, the hinged sections 713  
10 actually restrict the data carrying capacity between compartments 605 and 611, and between compartments 608 and 613. To avoid this, the hinged sections may merely be cut from the bridge part 700. However, this would require the installer to carry a further tool and would take a  
15 relatively long time. Instead, it is preferred that the hinged sections 713 merely be pushed back to be flush against the side walls 705 and 706, as indicated by the arrow X of Figure 11: the hinged portions 713 are held in this position by catches 714, as shown in Figure 13.

20 As will be evident to the person skilled in the art, variations may be made to the embodiments described above without departing from the scope of the present invention defined by the appended claims.

For example, while tee fittings and L-shaped fittings  
25 have been described above, other shapes may be adopted. For example, Y shapes are also possible. In one form, the fitting may be a straight section, for example to join a section of single compartment trunking to a section of two or three compartment trunking (the bridge part allowing  
30 selection of the compartments to be connected while preserving separation from the other compartments).

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Moreover, the number of arms may be varied beyond two or three.

The present invention may be used with different types of trunking, e.g. single compartment trunking, double  
5 compartment trunking, triple compartment trunking and so on. .

The shape of the bridge part may be varied, as will be appreciated from the different forms it takes in Figure 14 as opposed to Figure 4. Essentially, the bridge part should provides an overpass and an underpass to allow cables to  
10 cross over each other whilst preserving their separation. .

CLAIMS:

1. A cable trunking assembly fitting (20) for joining an  
end of a first length of trunking (30) to an end of a second  
5 length of trunking (40), the first length of trunking (30)  
having a first compartment (36) for carrying cables and the  
second length of trunking (40) having an internal volume  
longitudinally partitioned into second and third  
compartments (44, 46) for carrying cables, the fitting (20)  
10 comprising:

first, second and third end apertures for interfacing  
with the first, second and third compartments (36, 44, 46)  
respectively of the adjacent lengths of trunking; and

first, second and third passages extending from the  
15 first, second and third end apertures respectively to meet  
at a central void (226); characterised in that the assembly  
fitting further comprises

guide means (26) adapted to be located at least  
partially in the void (226) in first and second positions to  
20 define a conduit linking two passages, movement between the  
first and second positions requiring a rotation of the guide  
means (26);

wherein, in the first position, the conduit links the  
first passage to the second passage and, in the second  
25 position, the conduit links the first passage to the third  
passage.

2. The fitting of claim 1 wherein, in the first position,  
the guide means (26) form a barrier separating the first  
30 passage from the third passage and, in the second position,  
the guide means (26) form a barrier separating the first  
passage from the second passage.

3. The fitting of claim 2, wherein the guide means (26) maintain a partition between the second compartment (44) and the third compartment (46) in both the first and second  
5 positions.

4. The fitting of claim 3, wherein the partition is substantially continuous between the second end aperture and the third end aperture.  
10

5. The fitting of claim any of claims 1 to 4, wherein:  
the first length of trunking has an internal volume longitudinally partitioned into the first compartment and a fourth compartment (34);

15 the fitting further comprising a fourth end aperture for interfacing with the fourth compartment (34) and a fourth passage extending from the fourth end aperture to join the central void (226);

the guide means (26) further comprising an arch portion  
20 (266) defining an overpass and an underpass, the overpass comprising the conduit and the underpass comprising an underpass conduit; and

wherein, in the first position, the underpass conduit links the fourth passage to the third passage and, in the  
25 second position, the underpass conduit links the fourth passage to the second passage.

6. The fitting of claim 5 for further joining an end of a third length of trunking (50) having an internal volume  
30 longitudinally partitioned into fifth and sixth compartments (54, 56) for carrying cables, the fitting further comprising:

fifth and sixth end apertures for interfacing with the fifth and sixth compartments (54, 56) respectively; and

fifth and sixth passages extending from the fifth and sixth end apertures respectively to join the central void  
5 (226);

wherein the guide means (26) is arranged such that, in the first position, the overpass conduit links the fifth passage to the second passage and the underpass conduit separately links the sixth passage to the third passage and,  
10 in the second position, the overpass conduit links the fifth passage to the third passage and the underpass conduit separately links the sixth passage to the second passage.

7. The fitting of claim 6, wherein the fitting comprises  
15 three side walls (211, 212, 213) that define sides between the three ends of the fitting and three internal walls (214, 215, 216), an internal wall extending from each of the three ends, the side walls and internal walls defining the first to sixth passages and the void (226).

20

8. The fitting of claim 7, wherein the side walls and the internal walls have smoothly curving sections where they change direction.

25 9. The fitting of claim 8, wherein side walls connecting ends of the fitting at an angle to each other are smoothly curving between the ends.

10. The fitting of claim 7 or claim 8, wherein the internal  
30 walls (214, 215, 216) smoothly curve towards the void where the guide means is received, thereby being arranged to guide

smoothly cables to the overpass conduit and/or underpass conduit.

11. The fitting of any of claims 7 to 10, wherein the  
5 internal walls (214, 215, 216) are substantially U-shaped to divide each end into three passages.

12. The fitting of claim 11, wherein the guide means (26)  
comprises two side walls that define a tapering overpass  
10 conduit with a wide open end and a narrow open end, the wide open end being sized to fit between two of the U-shaped internal walls and the narrow open end having a width corresponding to a common width of the outer passages.

13. The fitting of claim 12, wherein the narrow open end is  
15 arranged to abut the walls defining the outer passages when it is received therein.

14. The fitting of claim 12 or claim 13, wherein one of the  
20 sidewalls adjacent the wide open end overlaps a correspondingly shaped portion of one of the adjacent U-shaped internal wall and the other of the sidewalls adjacent the wide open end extends from the adjacent U-shaped internal wall.

25

15. The fitting of any of claims 7 to 10, wherein two of the internal walls are substantially U-shaped to divide two ends into three passages.

16. The fitting of claim 15, wherein the guide means (26)  
30 is substantially Y-shaped, having sidewalls that define a single opening in one end that is sized to correspond to a

common width of the centre compartment of each end of the fitting, and that define a pair of openings at the other end sized to correspond to a common width of the outer compartments of each end and being disposed to be received  
5 in a pair of such outer compartments.

17. The fitting of claim 16, wherein the pair of openings are separated by a U-shaped sidewall that corresponds to one of the internal walls.  
10

18. The fitting of claim 16 or claim 17, wherein the guide means comprises a smoothly curving ramp surface that links the three openings.

15 19. The fitting of claim 17 or claim 18 wherein, in the first position, the single opening opens to the first and fifth passages, and the pair of openings are received in the second and third passages such that the overpass conduit connects the first and fifth passages to the second and  
20 third passages, and wherein the underpass conduit links the fourth and sixth passages to the centre passage between the second and third passages via an aperture provided in the U-shaped wall separating the pair of openings.

25 20. The fitting of claim 19, wherein curved surfaces are provided on the guide means (26) for guiding cables through the aperture in the U-shaped wall separating the pair of openings.

30 21. The fitting of any of claims 16 to 20, wherein the void (226) is provided with a low wall extending between two of the U-shaped internal walls to divide partially the first

and fifth passages from the fourth and sixth passages, the low wall extending to meet the underside of the arch portion of the guide means when attached to the base part.

5 22. The fitting of claim 21, wherein the guide means (26) has hinged portions that extend from sidewalls of the guide means to meet two of the U-shaped internal walls and to abut the top of the low wall.

10 23. The fitting of claim 22, wherein the sidewalls are provided with fastening means for fastening the hinged portions to the side walls.

24. The fitting of any of claims 16 to 23 wherein, in the  
15 second position, the pair of openings open to the first and fifth passages, and the single opening extends into the end of the fitting comprising the second and third compartments such that the sidewalls defining the single opening form internal walls that define the second and third  
20 compartments, such that the overpass conduit connects the first and fifth passage to the centre passage between the second and third passages, and the underpass conduit links the fourth and sixth passages to the second and third passages.

25

25. A cable trunking assembly (10) comprising first and second lengths of trunking (30, 40) and the fitting (20) of any preceding claim that joins the first and second lengths of trunking, wherein:

30 the first length of trunking (30) comprises a first compartment (36) for carrying cables that terminates at an end adjoining the fitting at a first orifice;

the second length of trunking (40) comprises an internal volume longitudinally partitioned into second and third compartments (44, 46) for carrying cables, the second and third compartments terminating at an end adjoining the fitting at second and third orifices; and

the first, second and third end apertures of the fitting adjoin the first, second and third orifices respectively of the first and second lengths of trunking such that the first, second and third compartments are continuous with the first, second and third passages.

26. The cable trunking assembly (10) of claim 25, wherein the first length of trunking has an internal volume longitudinally partitioned into the first compartment (36) and a fourth compartment (34); the fitting further comprises a fourth end aperture for interfacing with the fourth orifice such that the fourth compartment (34) is continuous with a fourth passage extending from the fourth end aperture to join the central void; the guide means (26) further comprises an arch portion defining an overpass and an underpass, the overpass comprising the conduit and the underpass comprising an underpass conduit; and wherein, in the first position, the underpass conduit links the fourth passage to the third passage and, in the second position, the underpass conduit links the fourth passage to the second passage.

27. The cable trunking assembly of claim 26, further comprising a third length of trunking (50) joined to the first and second length of trunking by the fitting, the third length of trunking (50) having an internal volume longitudinally partitioned into fifth and sixth compartments

for carrying cables, the fifth and sixth compartments (54, 56) terminating at an end adjoining the fitting at fifth and sixth orifices,

the fitting further comprising:

5        fifth and sixth end apertures for interfacing with the fifth and sixth orifices respectively; and

         fifth and sixth passages extending from the fifth and sixth end apertures respectively to be continuous with the fifth and sixth compartments and extending to join the  
10        central void;

         wherein the guide means (26) is arranged such that, in the first position, the overpass conduit links the fifth passage to the second passage and the underpass conduit separately links the sixth passage to the third passage and,  
15        in the second position, the overpass conduit links the fifth passage to the third passage and the underpass conduit separately links the sixth passage to the second passage.

20