

Description

This invention relates to a cluster assembly for connecting three motor leads from a motor compressor to the three prongs of a header or glass-to-metal seal within the interior of a housing for a hermetically-sealed compressor. A cluster assembly according to the preamble of claim 1 is disclosed in document US-A-4,114,971, for example.

The environment in which the present invention is usually employed is the interior of a hermetically-sealed housing containing a motor-compressor unit for a refrigerator or air conditioner. A three wire connection must be made to the motor. To this end, a three prong header or glass-to-metal seal is mounted in the housing wall with three prongs extending externally for application to a supply of power and three prongs extending internally for connection to the motor disposed in housing.

The motor has three leads formed of magnet wire covered by insulative sheaths. These leads are terminated in clips adapted to be applied to the prongs of the header. The clips are mounted in a cluster block so that they are equiangularly disposed within the cluster block. The cluster block has spaced parallel passageways through which the leads pass.

In assembly, the header is mounted on a metal lid that will form a part of the housing. The assembler applies the cluster assembly to the internal prongs of the header. The lid is thereafter placed onto the rest of the housing and welded there to complete the hermetic sealing of the housing around the motor and compressor.

It is desired to provide assurance that the leads will be spaced from the housing at all times, thereby avoiding possible abrasion of the varnish on the magnet wire and hence the possibility of a short circuit.

A cluster assembly adapted to be mounted on a three prong connector adjacent the internal surface of a housing in accordance with the invention comprises an insulative block having three spaced parallel passageways therein in which connector clips are disposed, two outboard and one central conductive lead being connected to the clips and projecting through respective said passageways from one end of the insulative block, characterised in that means is provided at the ends of the passageways from which the leads extend for restraining the leads at a distance from the housing which is approximately equal to the thickness of the insulative block when the cluster assembly is mounted on a three prong connector, the restraining means projecting from the surface of the block on the side thereof remote from the housing when the assembly is mounted on the connector.

The invention thus provides for the modification of the conventional cluster block in such a way as to effectively space the leads from the housing. More specifically, in a preferred form notched ears project from the surface of the cluster block, on the side remote from the housing when the block is applied. The ears permit the wires extending through the parallel passageways to be passed through the notches in the ears and the three wires twisted together immediately adjacent the block, thereby spacing the wires a significant distance from the housing. By way of example of the effectiveness of this, the wires as they project through the passageways in the cluster block normally lie about 1/16 inch (1.6 mm) from the surface of the cluster block facing the housing. When the above arrangement is employed, the wires, now twisted and lying adjacent the opposite surface of the cluster block, are about 5/16 inch (8 mm) in distance from the same surface which faces the housing.

The invention will now be further described by way of example with reference to the accompanying drawing in which:-

Fig. 1 is a fragmentary perspective view of the cluster assembly of the present invention applied to a header forming part of a hermetically-sealed compressor;

Fig. 2 is a perspective view of the cluster assembly; and

Fig. 3 is a perspective view of a modified cluster block.

Referring to Fig. 1, a motor-compressor unit 10 is mounted in a housing 11. Power is supplied to the motor through a header or glass-to-metal seal 12. The header consists of three conductive prongs 14 which are mounted in insulative material 15 and project through a metallic skirt 17. The metallic skirt is welded to the housing 11 with the prongs 14 projecting into the interior of the housing 11.

The motor-compressor 10 has three leads 20 which must be electrically connected to the prongs 14. To this end, the cluster assembly 21 is employed. The cluster assembly preferably is of the type disclosed in Patent No. 4,114,971. The cluster assembly consists of an insulative block 23 having three longitudinal passages extending therethrough. The outboard passageways are indicated at 24 and a central passageway is indicated at 25.

In each passageway is a motor lead 20 and a clip 28. The clips 28 are forced over the inwardly-projecting prongs 14 of the header, thereby making the electrical connection of the motor-compressor to the externally-projecting prongs for application of power to the compressor.

It can be seen that leads 20 projecting through the passageways 24, 25 would normally lie quite close to the housing 11. Further, there must be

slack in the leads between the cluster assembly and the motor-compressor unit 10. The slack is necessary to accommodate the assembly process in which a lid 29, on which the glass-to-metal seal is mounted, is initially separate from the housing. After the cluster assembly is applied to the prongs of the header 12, the lid is welded to the rest of the housing on the line 29a. The slack, referred to above, is necessary to permit the application of the header to the pins when the lid is initially free of the housing.

To keep that slack spaced from the surface of the housing, thereby preventing abrasion and short circuits, two flanges 30 are provided. The flanges are generally an extension of the side 31 of the block 23 which is opposite the side 32 applied to the prongs 14 and facing the housing. Each flange has a keyhole notch 34 in which outboard lead wires 20 can be placed as they exit from the outboard passages 24. It can be seen from Fig. 1 that when those outboard leads are disposed in the notches 34, the leads lie outside of the remote surface 35 of the block 23 and are thus spaced away from the housing 11. The center lead passing through the center passageway 25 is twisted along with the outboard leads. Since the cluster block is about 5/16 inch (9 mm) thick, the notched ears increase the spacing of the three leads outside the surface 35 in a position spaced away from the housing 11.

While the drawings disclose two outboard flanges 30 with keyhole notches 34, it should be understood that a third central flange with similar keyhole notch could be employed to provide further assistance in spacing the leads as far away as possible from the housing 11. Such a structure is shown in Fig. 3. There, a central flange 40 having a notch 41 lies in the plane of the outboard flanges 30 and is aligned with the central passageway 25.

In practice, lead wires from all three passageways are passed upwardly through the respective notches 34 and 41 so as to extend beyond the surface 35. In this attitude, the wires are twisted together. The third central flange 40 thus provides a new factor against the inadvertent drooping of the central lead wire into contact with the housing.

Claims

1. A cluster assembly adapted to be mounted on a three prong connector adjacent the internal surface of a housing, the cluster assembly comprising an insulative block having three spaced parallel passageways therein in which connector clips are disposed, two outboard and one central conductive lead being connected to the clips and projecting through respective said passageways from one end of

the insulative block, characterised in that means (30, 34, 40, 41) is provided at the ends of the passageways (24, 25) from which the leads (20) extend for restraining the leads (20) at a distance from the housing (11) which is approximately equal to the thickness of the insulative block (23) when the cluster assembly (21) is mounted on a three prong connector (12), the restraining means (30, 34, 40, 41) projecting from the surface of the block (23) on the side (31) thereof remote from the housing (11) when the assembly (21) is mounted on the connector (12).

2. A cluster assembly as claimed in Claim 1 in which the insulative block (23) has, as said restraining means, two flanges (30), one adjacent each corner of the block at the end from which the leads (20) project, the flanges (30) lying generally in the plane of said surface, each flange (30) having a keyhole recess (34) in an edge, whereby each outboard lead (20) may extend from its respective passageway (24) and pass through a respective keyhole recess (34) to lie outside the plane of said surface and is thus spaced away from the housing (11) when the assembly (21) is mounted on said prongs (14), the outboard leads being twisted together with the central lead to hold the central lead away from the housing (11).
3. A cluster assembly as claimed in Claim 1 wherein the insulative block (23) has, as restraining means, two flanges (30), one adjacent each corner of the block at the end from which the leads (20) project, the flanges (30) lying generally in the plane of said surface, each flange (30) having a keyhole recess (34) in an edge, and, wherein the block includes a central flange (40) and keyhole recess (41) therein disposed on the insulative block (23) adjacent the central passageway (25) and in the plane of the outboard flanges (30), whereby the leads (20) may extend from their respective passageway (24, 25) and pass through a respective keyhole recess (34, 41) to lie outside the plane of said surface to thus space them away from the housing (11) when the assembly (21) is mounted on the prongs (14).

Revendications

1. Assemblage de douille voleuse (21) adapté pour être monté sur un connecteur à trois broches (12) à côté de la surface interne d'un boîtier (11), l'assemblage de douille voleuse comprenant un bloc isolant (23) présentant



slack in the leads between the cluster assembly and the motor-compressor unit 10. The slack is necessary to accommodate the assembly process in which a lid 29, on which the glass-to-metal seal is mounted, is initially separate from the housing. After the cluster assembly is applied to the prongs of the header 12, the lid is welded to the rest of the housing on the line 29a. The slack, referred to above, is necessary to permit the application of the header to the pins when the lid is initially free of the housing.

To keep that slack spaced from the surface of the housing, thereby preventing abrasion and short circuits, two flanges 30 are provided. The flanges are generally an extension of the side 31 of the block 23 which is opposite the side 32 applied to the prongs 14 and facing the housing. Each flange has a keyhole notch 34 in which outboard lead wires 20 can be placed as they exit from the outboard passages 24. It can be seen from Fig. 1 that when those outboard leads are disposed in the notches 34, the leads lie outside of the remote surface 35 of the block 23 and are thus spaced away from the housing 11. The center lead passing through the center passageway 25 is twisted along with the outboard leads. Since the cluster block is about 5/16 inch (9 mm) thick, the notched ears increase the spacing of the three leads outside the surface 35 in a position spaced away from the housing 11.

While the drawings disclose two outboard flanges 30 with keyhole notches 34, it should be understood that a third central flange with similar keyhole notch could be employed to provide further assistance in spacing the leads as far away as possible from the housing 11. Such a structure is shown in Fig. 3. There, a central flange 40 having a notch 41 lies in the plane of the outboard flanges 30 and is aligned with the central passageway 25.

In practice, lead wires from all three passageways are passed upwardly through the respective notches 34 and 41 so as to extend beyond the surface 35. In this attitude, the wires are twisted together. The third central flange 40 thus provides a new factor against the inadvertent drooping of the central lead wire into contact with the housing.

Claims

1. A cluster assembly adapted to be mounted on a three prong connector adjacent the internal surface of a housing, the cluster assembly comprising an insulative block having three spaced parallel passageways therein in which connector clips are disposed, two outboard and one central conductive lead being connected to the clips and projecting through respective said passageways from one end of

the insulative block, characterised in that means (30, 34, 40, 41) is provided at the ends of the passageways (24, 25) from which the leads (20) extend for restraining the leads (20) at a distance from the housing (11) which is approximately equal to the thickness of the insulative block (23) when the cluster assembly (21) is mounted on a three prong connector (12), the restraining means (30, 34, 40, 41) projecting from the surface of the block (23) on the side (31) thereof remote from the housing (11) when the assembly (21) is mounted on the connector (12).

2. A cluster assembly as claimed in Claim 1 in which the insulative block (23) has, as said restraining means, two flanges (30), one adjacent each corner of the block at the end from which the leads (20) project, the flanges (30) lying generally in the plane of said surface, each flange (30) having a keyhole recess (34) in an edge, whereby each outboard lead (20) may extend from its respective passageway (24) and pass through a respective keyhole recess (34) to lie outside the plane of said surface and is thus spaced away from the housing (11) when the assembly (21) is mounted on said prongs (14), the outboard leads being twisted together with the central lead to hold the central lead away from the housing (11).
3. A cluster assembly as claimed in Claim 1 wherein the insulative block (23) has, as restraining means, two flanges (30), one adjacent each corner of the block at the end from which the leads (20) project, the flanges (30) lying generally in the plane of said surface, each flange (30) having a keyhole recess (34) in an edge, and, wherein the block includes a central flange (40) and keyhole recess (41) therein disposed on the insulative block (23) adjacent the central passageway (25) and in the plane of the outboard flanges (30), whereby the leads (20) may extend from their respective passageway (24, 25) and pass through a respective keyhole recess (34, 41) to lie outside the plane of said surface to thus space them away from the housing (11) when the assembly (21) is mounted on the prongs (14).

Revendications

1. Assemblage de douille voleuse (21) adapté pour être monté sur un connecteur à trois broches (12) à côté de la surface interne d'un boîtier (11), l'assemblage de douille voleuse comprenant un bloc isolant (23) présentant



trois passages parallèles espacés (24, 25) à l'intérieur de celui-ci où sont disposées les pinces de connecteur (28), deux fils conducteurs extérieurs et un fil conducteur central (20) étant raccordés aux pinces (28) et dépassant d'une extrémité du bloc isolant (23) après avoir traversé lesdits passages respectifs (24, 25), caractérisé en ce que des moyens (30, 34, 40, 41) sont positionnés aux extrémités des passages (24, 25) d'où sortent les fils (20) afin de maintenir les fils (20) à une certaine distance du boîtier (11) qui est approximativement égale à l'épaisseur du bloc isolant (23) lorsque l'assemblage de douille voleuse (21) est monté sur un connecteur à trois broches (12), les moyens de maintien (30, 34, 40, 41) s'éloignant de la surface du bloc (23) sur le côté de celui-ci (31) éloigné du boîtier (11) lorsque l'assemblage (21) est monté sur le connecteur (12).

2. Assemblage de douille voleuse selon la revendication 1 où le bloc isolant (23) comporte, comme lesdits moyens de maintien, deux brides (30), une à côté de chaque coin du bloc à l'extrémité d'où sortent les fils (20), les brides (30) se trouvant généralement dans le même plan que ladite surface, chaque bride (30) présentant une encoche en trou de serrure (34) sur un rebord, dans laquelle chaque fil extérieur (20) peut ressortir de son passage respectif (24) et passer à travers une encoche en trou de serrure respective (34) pour se placer hors du plan de ladite surface et être ainsi écarté du boîtier (11) lorsque l'assemblage (21) est monté sur lesdites broches (14), les fils extérieurs étant ensemble enroulés avec le fil central pour maintenir le fil central éloigné du boîtier (11).

3. Assemblage de douille voleuse selon la revendication 1 où le bloc isolant (23) comporte, comme moyens de maintien, deux brides (30), une à côté de chaque coin du bloc à l'extrémité d'où sortent les fils (20), les brides (30) se trouvant généralement dans le même plan que ladite surface, chaque bride (30) présentant une encoche en trou de serrure (34) sur un rebord, et où le bloc comporte une bride centrale (40) et une encoche en trou de serrure dans celle-ci (41) placés sur le bloc isolant (23) à côté du passage central (25) et dans le même plan que les brides extérieures (30), de sorte que les fils (20) puissent ressortir de leurs passages respectifs (24, 25) et passer à travers une encoche en trou de serrure respective (34, 41) pour se placer hors du plan de ladite surface et être ainsi écartés du boîtier

(11) lorsque l'assemblage (21) est monté sur les broches (14).

Patentansprüche

1. Mehrfachbuchsenanordnung (21), die geeignet ist, auf einer dreistiftigen Steckervorrichtung (12) neben der inneren Oberfläche eines Gehäuses (11) angebracht zu werden, wobei die Mehrfachbuchsenanordnung einen isolierenden Block (23) mit drei voneinander entfernten parallelen Einschubkanälen (24, 25) darin hat, in denen Leiterklemmen (28) angeordnet sind, wobei zwei aussen gelegene und eine zentral gelegene leitende Leitungen (20) an die Klemmen (28) angeschlossen sind, und aus entsprechenden der Einschubkanäle (24, 25) von einem Ende des isolierenden Blocks (23) hervorragen, dadurch gekennzeichnet, dass an den Enden der Einschubkanäle (24, 25) ein Mittel (30, 34, 40, 41) vorgesehen ist, von dem sich die Leitungen (20) erstrecken, um die Leitungen (20) in einem Abstand von dem Gehäuse (11) zu halten, der ungefähr gleich der Dicke des isolierenden Blocks (23) ist, wenn die Mehrfachbuchsenanordnung (21) auf einer dreistiftigen Steckervorrichtung (12) angebracht ist, wobei das Abhaltemittel (30, 34, 40, 41) aus der Oberfläche des Blocks (23) auf der Seite (31), die von dem Gehäuse (11) entfernt liegt, hervorragt, wenn die Anordnung (21) auf der Steckervorrichtung (12) angebracht ist.

2. Mehrfachbuchsenanordnung nach Anspruch 1, in der der isolierende Block zwei Flansche (30) als Abhaltemittel hat, wovon einer an jede Ecke des Blockes an dem Ende, aus dem die Leitungen (20) hervorragen, angrenzt, wobei die Flansche (30) im allgemeinen in der Ebene der Oberfläche liegen, jeder Flansch eine Schlüssellochaussparung (34) in einer Kante hat, wobei sich jede aussen gelegene Leitung (20) von ihrem entsprechenden Einschubkanal (24) erstrecken kann, und durch eine entsprechende Schlüssellochaussparung (34) gehen kann, um ausserhalb der Ebene der Oberfläche zu liegen, und daher von dem Gehäuse (11) entfernt ist, wenn die Anordnung (21) auf den Stiften (14) angebracht ist, wobei die aussen gelegenen Leitungen mit der zentral gelegenen Leitung verdreht sind, um die zentral gelegene Leitung von dem Gehäuse (11) abzuhalten.

3. Mehrfachbuchsenanordnung nach Anspruch 1, worin der isolierende Block (23) zwei Flansche (30) als Abhaltemittel hat, wovon einer an jede Ecke des Blockes an dem Ende, aus dem die

Leitungen (20) hervorragen, angrenzt, wobei die Flansche (30) im allgemeinen in der Ebene der Oberfläche liegen, wobei jeder Flansch eine Schlüssellochaussparung (34) in einer Kante hat, und worin der Block einen zentral gelegenen Flansch (40) und eine Schlüssellochaussparung (41) darin einschliesst, der auf dem isolierenden Block (23) neben dem zentral gelegenen Einschubkanals (25) und in der Ebene der aussen gelegenen Flansche (30) angeordnet ist, wobei sich die Leitungen (20) von ihren entsprechenden Einschubkanälen (24, 25) erstrecken können, und durch eine entsprechende Schlüssellochaussparung (34, 41) gehen können, um ausserhalb der Ebene der Oberfläche zu liegen, um sie so von dem Gehäuse (11) entfernt zu halten, wenn die Vorrichtung (21) auf den Stiften (14) angebracht ist.



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