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(54) Title:
CUTTING /CLAMPING CONTACT.

(57) Abstract:
The invention relates to a cutting/clamping contact (1) for contacting as insulated cable core (5), comprising two contact legs (2, 3) made of ablade-type, resilient metarial, between the inner sides (13, 14; 23, 24) of which an upwardly open contact slot (4) with an enlarged wire introduction section (7) is formed. In order to provide a cutting/clamping contact (1) wich allows for contacting cable cores (5) having a thick insulation (6) as well as cable cores having a thin conductive core (12), in particular with a ratio of insulation to conductive core diameter larger than 3, the inner side (13, 14; 23, 24) of at least one contact leg (2, 3) comprises, in the wire introduction section (7) an inclined surface (8, 9) forming a cutting edge (10) directed into the wire introduction section (10). (Fig. 1)

CUTTING/CLAMPING CONTACT

The invention relates to a cutting/clamping contact for establishing a contact with an insulated cable core according to the preamble of claim 1.

From DE-PS 27 25 551, there is known in the art a cutting/clamping contact of the aforementioned species. The cutting/clamping contact comprises two contact legs of a blade-type, resilient contact material, between which a contact slot is formed being limited by the inner sides of the contact legs and to which a V-shaped wire introduction section is assigned. The width of the contact slot is smaller than the diameter of the conductive core of the cable core to be connected. The cutting/clamping contact is inserted into a plastic body, inclinedly to a clamping slot for the cable core, preferably under 45°. When pressing the insulated cable core into the clamping slot of the plastic body, and thus into the contact slot by means of a tool, the contact legs limiting the contact slot will cut the insulation of the cable core through, and penetrate into the conductive core of the cable core, thereby a contact connection between the cutting/clamping contact and the cable core to be connected being established. Such a contact connection has the disadvantage, however, that when contacting cable cores

with thick insulations, a one-side or none at all contact connection is established. This is particularly the case with cable cores, for which the ratio between insulation and wire diameter is larger than 3. Herein, particularly, a permanent deformation (torsion and bending) of the contact legs, and a reduction of the contact force can be expected. A cable core having a thick insulation will contact the sharp edges of the V-shaped wire introduction section of the cutting/clamping contact being arranged inclinedly to the longitudinal axis of the cable core when wiring, earlier than a cable core having a thin insulation. Thus, when wiring a cable core having a thick insulation, the effective contact force is smaller, and the maximum possible deformation or bending-out of the contact legs is larger than with cable cores having a thinner insulation.

When pressing a cable core having a thick insulation into the contact slot, the inner sides of the V-shaped wire introduction section do not have a sufficient cutting force to cut into the insulation. The inner sides will glide, therefore, on the surface of the insulation. The contact force and the permanent deformation or bending-out, resp., of the contact legs increases, the deeper the cable core is pressed in. With sufficiently large cutting force for cutting into the insulation, the inner sides of the contact legs are, however, so far away from the initial position that the contact spring travel is too small, and the contact slot too wide for the thin conductive

core to contact the conductive core of the cable core.

The invention is based on the object, therefore, to provide a cutting/clamping contact of the species mentioned hereinbefore, which allows for contacting cable cores having a thick insulation as well as cable cores having a thin conductive core, in particular with a ratio of insulation to conductive core diameter larger than 3, in a safe and reliable manner.

The solution for this object is achieved with the characterizing features of patent claim 1. By the inclined surfaces within the wire introduction section, considerably smaller cutting forces are required to cut from both sides into the cable core when pressing it into the contact slot. Therein, deformation or bending-out of the contact legs and sliding of the inner sides of the contact legs on the external jacket of the insulation are avoided. A deeper penetration of the wire introduction section into the insulation and into the conductive core of the cable core allows, together with the larger contact force, for a safe, both-sides contacting of the cable core having a thick insulation and a thin conductive core. Due to the inclined surfaces, there is further obtained a reduced wiring force.

Further advantageous embodiments of the invention result from the subclaims.

In the following, the invention is described in more detail, based on three embodiments shown in the drawings. There are:

Fig. 1 a perspective representation of a cutting/clamping contact in the first embodiment with a cable core arranged thereupon,

Fig. 2 a perspective representation of the cutting/clamping contact in the second embodiment,

Fig. 3 the front view according to Fig. 1,

Fig. 3a the top view,

Fig. 4 the front view according to Fig. 2,

Fig. 4a the top view,

Fig. 5 the front view of the cutting/clamping contact in a third embodiment,

Fig. 5a the top view,

Fig. 6 the front view of the cutting/clamping contact in a fourth embodiment,

Fig. 6a the top view, and

Fig. 7 the top view of a cutting/clamping contact inserted into a plastic body, with pressed-in cable core.

The cutting/clamping contact composed of a blade-type metal material comprises two contact legs 2, 3 spaced from each other and forming, between their inner sides 13, 14, a contact slot 4.

In the upper section of the cutting/clamping contact 1 being arranged inclinedly to a cable core 5, a wire introduction section 7 terminating in the contact slot 4 is formed with the inner sides 23, 24 of the contact legs 2, 3. Said wire introduction section includes an enlarged introduction opening 17, the inner sides 23, 24 of which are arranged in parallel to each other, and a substantially V-shaped centring opening 16 following upon the introduction opening 17 and being extended up to the upper edge 15 of the contact slot 4.

Within the centring opening 16 of the wire introduction section 7, at the inner sides 23, 24 of the contact slot 2, 3, are provided inclined surfaces 8, 9 extending between the rear wall 19 and the front side 18 of the cutting/clamping contact 1. The inclined surfaces 8, 9 are arranged such that they will end either at the upper edge 15 of the contact slot 4, Figs. 4 and 6, or within the contact slot 4, Figs. 1 and 3. By the inclined surfaces 8, 9, wedge-type cutting edges 10

of the centring opening 16 of the wire introduction section 7, and cutting tips 20 at the upper edges 15 of the contact slot 4.

In the first two embodiments according to Fig. 1 to 4, the centring opening 16 comprises a circular introduction section 22.

In the first embodiment according to Figs. 1 to 3, the inclined surfaces 8, 9 terminate within the contact slot 4, so that, within the contact slot 4, there is formed a cutting tip 20 at each inner wall 13, 14. Each leg 2, 3 of the cutting/clamping contact 1 comprises, in the wire introduction section 7, an inclined surface 8, 9, such inclined surfaces being disposed diametrically opposed, such that the cutting edges 10 and the cutting tips 20 are located, respectively, on the front side 18 of the one leg 2, and on the rear side 19 of the other leg 3 of the cutting/clamping contact 1.

In Figs. 2 and 4, the second embodiment is represented, wherein the inclined surfaces 8, 9 terminate at the beginning of the contact slot 4 of the upper edge 15, such that the cutting tips 20 are formed directly at the beginning of the contact slot 4.

In Figs. 5 and 6, the third and fourth embodiments are represented, wherein the centring opening 16 is V-shaped, and

the inclined surfaces 8, 9 are formed of rectangular surfaces 21, which same as in the previous embodiments, terminate either according to Fig. 5 within the contact slot 4, or according to Fig. 6 at the upper edge 15 of the contact slot 4. The centring opening 16 has, in contrast to the other embodiments, no circular introduction section 22.

In the following, based on Fig. 7, wiring of a cutting/clamping contact 1 with a cable core 5 is described in more detail. The cable core 5 is introduced from top into the wire introduction section 7, as indicated by the arrow A in Fig. 1. The cutting/clamping contact 1 is inserted under 45° inclinedly to a clamping slot 25 into a cutout 27 of a plastic body 28. In the clamping slot 25 are provided clamping cams 26 for clamping the insulation 6 of the cable core 5 fast. The cutout 27 clamps the outer edges 29 of the contact legs 2, 3 fast, and permits a free space of movement to the inner edges 30 of the contact legs 2, 3. The distance of the parallel inner sides 23, 24 of the contact legs 2, 3 is, in the introduction opening 17 of the wire introduction section 7, larger than the outer diameter D of the cable core 5.

The distance of the parallely disposed inner sides 13, 14, i.e. the width W of the contact slot 4 of the cutting/clamping cntact 1, is smaller than the diameter d of the conductive core 12 of the cable core 5. In the interposed centring opening 16, the cable core 5 is centred relative to the contact slot

4, so that the conductive core 12 of the cable core 5 will be introduced precisely centrally into the contact slot 4.

As is shown in Fig. 7, when pressing the cable core 5 into the wire introduction section 7 by means of a non-shown press-in tool in the centring opening 16, first the cutting edges 10 will immediately penetrate into the insulation 6, without sliding of the cutting edges 10 on the outer jacket of the cable core 5 being possible. Further, by an inclined positioning of the cutting/clamping contact relative to the axis of the cable core, it is achieved that the diametrically opposite cutting edges 10 will penetrate staggered into the insulation 6 of the cable core 5. If, now, the conductive core 12 of the cable core 5 is pressed into the contact slot 4, the cutting tips 20 and the inner edges 11 of the inner sides 13, 14 of the contact legs 2, 3 will penetrate into the conductive core 12 of the cable core 5, and establish a contact connection between the cutting/clamping contact 1 and the cable core 5.

By the inclined surfaces 8, 9, it is achieved in adantageous manner that in the wire introduction section 7, sliding of the inner sides 13,14 on the outer jacket of the insulation 6 is avoided. The contact legs 2, 3 cannot be twisted relative to each other, thus an enlarging of the contact slot 4 being prevented. It is guaranteed, thus, that the conductive core 12 will be cut in, even with very small diameter, by the inner edges 11 of the contact slot 4.

In Fig. 7 is shown, further, that the cutting tips 20 cut into the insulation in the areas C, thus the contact legs 2, 3 being guided in the insulation 6, until the sharp inner edges 11 of the contact slot 4 cut into the conductive core 12 in the areas F. Twisting the contact legs 2, 3 in the direction of the arrow E is thus prevented by the inclined surfaces 8, 9.

PATENT CLAIMS

1. A cutting/clamping contact element for contacting an insulated cable core, comprising two contact legs being inclined relative to the longitudinal axis of the cable core, and between the inner sides of which an upwardly open contact slot with an enlarged wire introduction section is formed, characterized by that the inner sides (13, 14; 23, 24) of at least one contact leg (2, 3) comprise, in the area of the wire introduction section (7), an inclined surface (8, 9) forming a cutting edge (10) directed into the wire introduction section (7).

2. A cutting/clamping contact element according to claim 1, characterized by that the inner sides (12, 13; 23, 24) of the two contact legs (2, 3) form inclined surfaces (8, 9) diametrically arranged on the front and rear sides (18, 19) of the cutting/clamping contact (1).

3. A cutting/clamping contact element according to claim 1, characterized by that the inclined surfaces (8, 9) terminate at the upper edge (15) of the contact slot (4).

4. A cutting/clamping contact element according to claim 1, characterized by that the inclined surfaces (8, 9) terminate within the contact slot (4) of the cutting/clamping contact (1).

LIST OF REFERENCES

1	cutting/clamping contact
2,3	contact leg
4	contact slot
5	cable core
6	insulation
7	wire introduction section
8,9	inclined surface
10	cutting edge
11	inner edge
12	conductive core
13,14	inner side
15	edge
16	centring opening
17	introduction opening
18	front side
19	rear side
20	cutting tip
21	area
22	introduction section
23,24	inner side
25	clamping slot
26	clamping cam
27	cutout
28	plastic body
29	outer edges
30	inner edges

S U M M A R Y

CUTTING/CLAMPING CONTACT

The invention relates to a cutting/clamping contact (1) for contacting an insulated cable core (5), comprising two contact legs (2, 3) between the inner sides (13, 14; 23, 24) of which an upwardly open contact slot (4) with an enlarged wire introduction section (7) is formed. In order to provide a cutting/clamping contact (1) which allows for contacting cable cores (5) having a thick insulation (6) as well as cable cores having a thin conductive core (12), in particular with a ratio of insulation to conductive core diameter larger than 3, the inner side (13, 14; 23, 24) of at least one contact leg (2, 3) comprises, in the wire introduction section (7) an inclined surface (8, 9) forming a cutting edge (10) directed into the wire introduction section (10). (Fig. 1).