A polarizing or keying system wherein the keyed elements in a mating pair of connectors can be selectively preset in any of a number of positions. The keyed element in one connector is polygonal in external cross-section, so that it can be selectively inserted with its keyway in various rotational positions in a correspondingly shaped polygonal opening in the dielectric body of the connector. The connector can then be mated only with a unit in which the coacting key is correspondingly oriented. The keyed element has a shoulder engaging the dielectric body; when the keyed element is retained by fastening means engaging an outer shell, the dielectric body is in turn retained in the shell by the keyed element.

1 Claim, 3 Drawing Figures
PRESETTABLE POLARIZING KEY FOR ELECTRICAL CONNECTORS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of electrical connectors, particularly connectors in which one part is keyed or polarized so that it can only mate with a second part which is similarly polarized. The polarizing elements can be preset in any one of several predetermined positions.

2. Description of the Prior Art

In a conventional connector of this type, a housing is provided with an inwardly extending indexing pin at the side opposite to an inserted contact set. A corresponding coding member terminates in the form of an indexing sleeve, into which the indexing pin can be inserted. Both the indexing pin and the indexing sleeve are provided with interlocking indexing shoulders.

The contact set inserted into the housing is provided with an opening aligned with the indexing pin. A coding member is pushed into this opening (after the contact set has been inserted), until the indexing pin snaps into the indexing sleeve. A shoulder provided at the coding member supports the contact set in the housing. Both the indexing pin and the coding member are provided with a hole for accepting a screw which passes through the housing from the side opposite to the contact set and which joins the two connector parts after they have been plugged together. The disadvantage of the connector of this type is that the coding member, once it has been inserted, can be detached only by means of a special tool which must be introduced from the side of the contact set. Thus, the coding can be modified only when such a special tool is available.

SUMMARY OF THE INVENTION

It is an object of the invention to provide an improved keyed connector having a keying member which can be easily detached from the connector without requiring special tools in order to set the connector in one of several predetermined keyed positions.

According to the invention, a first connector part of the assembly has a housing with a retaining sleeve extending through a wall in the housing. A first keying member is positioned within the first connector part in one of several predetermined positions. This first member has an indicating portion detachably engaged with the retaining sleeve accessible through the sleeve for detachment therefrom.

A second connector part mates with the first connector part, and has a second keying member positioned therein which is engageable with the first keying member when the two are in appropriately keyed relationship, permitting the first connector part to be joined to the second connector part only when such appropriately keyed relationship exists.

In a preferred embodiment, the first keying member is a pin which is split by a transverse slot at one end to form resilient tongues, one of which is provided with a latching shoulder by which the keying member is retained in the housing. The advantage of this configuration is that the keying member can be easily detached by pressing an object such as a screwdriver or other simple tool introduced into the sleeve from the outside against the tongue provided with the latching shoulder, to release the latching engagement so that the keying member can be pushed out of the connector.

It is advantageous to provide the end of the keying member which protrudes from the indexing sleeve with a mark such as a groove indicating the position of the keyway of the keying member in the housing. Thus, the position of the keyway in the housing can be read from the outside without unmuting the connectors.

Furthermore, it is advantageous to provide markings on the housing surrounding the opening of the indexing sleeve to facilitate the reading of the position of the keying member in the housing.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention are outlined in the following description of an embodiment to be taken in conjunction with the drawings. In the drawings:

FIG. 1 is a top view of the cable accepting connector part;
FIG. 2 is a longitudinal section through a cable accepting connector mates to an instrument connector part; and
FIG. 3 is a bottom view of the cable accepting connector part.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIG. 2, the connector comprises a connector part 1 for accepting the cable and a connector part 2 for joining to the side of an instrument. Connector part 2 is provided with contact blades 3 which end in cable-connecting terminals 4 at the side of the instrument. A dielectric body 6 carrying contact jacks 5 is inserted in housing 16 of the connector part accepting the cable. Contact jacks 5 carry cable-clamping terminals 7 at the side at which the cable is introduced. In addition, connector part 1 is provided with a packing gland 8 into which a cable (not shown) is clamped.

Each connector part 1, 2 is provided with a keying member 9, 10, respectively, so that connector part can be joined only when their associated keying members are appropriately oriented. Keying member 9 in the connector part accepting the cable has the form of a sleeve, one end of which, at 13, has an outer surface which is octagonal in cross-section, and has an internal keyway 15 at the opposite end, the member 9 has a reduced diameter portion 11 formed with a transverse slot 28 to provide a pair of radially resilient tongues 30, 31. The tongues have conical surfaces at their ends, to facilitate entry into an internally directed boss 17 in housing 16, and tongue 31 has a latching shoulder 12 which engages with an oppositely facing internal shoulder 18 in the boss 17. This engagement provides snap-lock retention of member 9 in housing 16.

Member 9 has a shoulder 19, separating its portion 13 from the reduced diameter portion 11, which engages a corresponding shoulder in dielectric body 6, and thereby retains the latter in housing 16 when the keying member 9 is in its position.

Connector part 2 has a dielectric body 21 which carries a keying member 10 having an upstanding pin 22 which has an axially extending key 23 along one side. The pin is adapted to be received in the socket end 13 of keying member 9, with the key 23 fitting in the keyway 15. The keying member 10 can be rotationally oriented in the body 21 in any of a number of pre-
determined positions, and is retained in the selected position by a snap lock (not shown). When the positions of the key 23 and the keyway 15 correspond appropriately in orientation, connector parts 1 and 2 can be fully joined, but not otherwise.

In addition, keying member 10 is provided with a threaded insert 24 for accepting a screw 25 which retains the two connector parts in the assembled position.

A groove 26 is provided across the end of tongue 31, in alignment with the keyway 15. This makes it possible to read the position of the keyway in keying member 9 in connector part 1 from the outside, when screw 25 has been removed. In order to facilitate the readings a scale 27 consisting of eight letters is provided at the edge of the outer opening from boss 17 (FIG. 1); one letter corresponds to each predetermined position.

In order to change the position in connector part 1 accepting the cable, screw 25 is loosened, and the two connector parts 1 and 2 are separated. By exerting a pressure upon the conical end of tongue 31 by means of a screwdriver or a similar object, such as a ball-point pen, the snap-on lock of keying member 9 on housing 16 is opened; and the keying member can be pushed out in the forward direction. After that, keying member 9 is pushed into dielectric body 6 in a new predetermined position, until tongue 31 snaps into boss 17. After that, connector part 1 can be joined with a corresponding connector part which has been appropriately coded.

From the foregoing, it can be readily realized that this invention can assume various embodiments. Thus, it is to be understood that the invention is not limited to the specific embodiments described herein, but is to be limited only by the appended claims.

We claim:

1. Polarizing means for one of a pair of electrical connectors, wherein said connector has a housing and a dielectric body therein carrying electrical contacts, comprising, in combination,
   a keying member,
   said body having a recess adapted to receive said member,
   the respective contours of said member and said recess being such as to permit reception of said member in said recess in any of a plurality of definite pre-determined rotational positions, a rotationally keyed structure on said member adapted to coact with a reciprocally keyed structure on a mating connector, and
   interengaging means on said body and said member, whereby said member retains said body in said housing, said keying member being a tubular element having axially extending tongues, radially resilient at their extremities, one of said tongues having a latch engageable with a shoulder in said housing, whereby said keying member is retained within said housing,
   said one of said tongues carrying a mark, from the position of which the orientation of said keying member can be ascertained without reference to the face of said one connector which comes adjacent to the other connector of said pair when said connectors are joined.

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