

The invention relates to a fault-current circuit breaker in accordance with the preamble of claim 1.

A fault-current circuit breaker of this kind is already known (DE-PS 23 55 306). In this switch, the summation current transformer and parts of the test device are disposed in a movable carrier part which is also equipped with movable contact pieces of the set of contacts. Thus, the summation current transformer and the carrier part with the contact pieces form a prefabricated unit which renders it possible to assemble the fault-current circuit breaker in a simple manner. Of course, the concept of the movable carrier part only permits a limited scope for switch variants, since the dimensions required for the switch housing would not be met at all or would only be met with difficulty. In any case, this would be associated with considerable extra expenditure.

The object of the invention is to develop a fault-current circuit breaker for a family of switches which, from two-pole fault-current circuit breakers in the range from 16 to A up to four-pole fault-current circuit breakers in the range from 40 to 125 A, covers the entire protective range with a back-up fuse of 100 A in the case of rated currents up to 100 A and a back-up fuse of 125 A in the case of rated currents up to 125 A and a switching capacity of 10 kA.

In accordance with the invention, this object is achieved by the combination of structural features set forth in the characterising part of claim 1.

The advantages achieved with the invention reside in the fact that the various switches of the family may be equipped with a high proportion of identical parts and the joint sequences, that is, the internal construction, always remains virtually the same.

Advantageous further developments and constructions of the subject in accordance with claim 1 are characterised in the sub-claims.

One embodiment is shown in the drawings and will be further described hereinafter. In the drawings:

Fig. 1 shows a fault-current circuit breaker in side view and in section,

Fig. 2 is a plan view of the equipped bottom part of this fault-current circuit breaker with the intermediate plate removed,

Fig. 3 is a plan view of this fault-current circuit breaker with the top part removed,

Fig. 4 to Fig. 9 are plan views of the complete family of switches.

A four-pole fault-current circuit breaker is shown in Figures 1 to 3 as a basic switch for the family of switches. The associated switch housing comprises a bottom part 1 having a base plate 2 and a top part 3. An intermediate plate 4, disposed parallel to the base plate 2, leads to the dividing of the interior of the housing into two chambers. In the bottom part of the housing, one chamber is formed by the base plate 2 and the intermediate plate 4 and partitions 5 and 6. The other chamber is formed in the space between the top part 3 and the intermediate plate 4. Niches for input terminals 7 and output terminals 8 are provided in the housing. A quenching device 9, a set of contacts 10 and a switch drum 11 are located in the chamber in the bottom part 1. A switch lock 12 is located in the top part 3 of the housing and is shown only in Fig. 3. Furthermore, a summation current transformer 13, a tripping device 14, a test device 15 comprising a test key and a test resistor arrangement, and a contact position indicator 16 are also fitted in the top part.

The basic switch of the family of switches, that is, a four-pole fault-current circuit breaker having a module width of 4M for 63 A, is shown in Fig. 4. The variant for 40 A is a fault-current circuit breaker having a module width of 3 M in accordance with Fig. 5.

Referring to Fig. 6, the variant for 100 A is a fault-current circuit breaker having a module width of 4M and, referring to Fig. 7, for 125 A a fault-current circuit breaker having a module width of 5M. Four-pole fault-current circuit breakers are taken into account in Figures 5 to 7 in each case. Two variants are shown in the case of the two-pole fault-current circuit breakers. In accordance with Fig. 8, this is a fault-current circuit breaker for 80 A having a module width of 3M, and for 40 A a fault-current circuit breaker having a module width of 2M, as is shown in Fig. 9.

A uniform cap dimension A is provided for all the switches of the family of switches.



Patent Claims

1. A fault-current circuit breaker of modular construction comprising a housing, formed from a bottom part and a top part having an end cap, for receiving a plurality of switch poles, a switching mechanism belonging to the switch poles, a tripping device, a summation current transformer and input terminals and output terminals, characterised in that the interior of the bottom part (1) is separable from the top part (3) by an intermediate plate (4) disposed parallel to a base plate (2) of the bottom part (1), that a quenching device (9) and a set of contacts (10) with a switch drum (11) are inserted for each switch pole in a chamber formed by the base plate (2) and intermediate plate (4) and lateral partitions (5, 6) for the input terminals (7) and output terminals (8), that a switch lock (12) and the quenching device (14) and the summation current transformer (13) are disposed in the top part (3), that switch variants for various rated current strengths may be equipped with the same parts such as switch lock (12), tripping device (14), quenching device (9), set of contacts (10), test device (15) and contact-position indicator (16), of which the switch lock (12) and the tripping device (14) are commonly accommodated in each switch variant in a space of the width of one module (1M), that the width of a switch variant (number of modules) is in each case determined by the number of the switch poles and by the size of the summation current transformer (13) in dependence upon the rated current strength and the number of the switch poles, and the height of a switch variant is determined in each case by the size of the input terminals (7) and of the output terminals (8) in dependence upon the rated current strength, and that the dimension (A) for the end cap is the same for all the switch variants.

2. A fault-current circuit breaker as claimed in claim 1, characterised in that the tripping device (14) fitted in the switch lock (12) enclosed by two lock plates, and that the lock plates have an outer spacing which corresponds maximally to the width of a module (1M).

3. A fault-current circuit breaker as claimed in claim 1 or 2, characterised in that a four-pole switch for 63 A is constructed with a fourfold module width (4M) as a basic switch for all the switch variants.

4. A fault-current circuit breaker as claimed in claim 3, characterised in that a four-pole switch variant for 40 A is constructed with a threefold module



width (3M), for 100 A with a fourfold module width (4M), and for 125 A with a fivefold module width (5M).

5. A fault-current circuit breaker as claimed in claim 3, characterised in that a two-pole switch variant for 80 A is constructed with a threefold module width, and for 40 A with a twofold module width (2M).