

USER MANUAL ARC-KILLER SV-25



SV250000 ARC-KILLER FOR DF-A



READ THIS DOCUMENT CAREFULLY BEFORE OPERATION



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2. PREFACE

This document is intended as a reference for qualified and trained operators to transport, operate and maintain the arc-killer in a safe and economical way.

In the documentation the words “left”, “right”, “front” and “behind” are used to indicate a specific part of the arc-killer. The starting point is always the position of the operator, standing in front of the arc-killer, facing the arc-killer.

2.1. Related documentation

The following technical documentation is available about the DF-2 medium-voltage switchgear:

- User Manual
- Spare Parts List
- Technical Brochure

2.2. General safety directions and instructions

The general applicable safety guidelines are included in full in the user manual.

2.3. Intended Use

The arc-killer is designed exclusively to offer protection against the negative consequences of an internal arc in medium-voltage switchgear. Both in the cable and bus bar compartment.

3. TECHNICAL SPECIFICATION

KEMA type tested according to IEC 60298 appendix AA all 6 criteria: arc extinguishing in less than 50ms.

4. TRANSPORT AND STORAGE

The general applicable safety guidelines are included in full in the user manual.

We reiterate that:



Cubicles that fell over or have otherwise been damaged always HAVE TO BE RETURNED to SGC – SwitchGear Company for a checkup.

5. OPERATIONAL PROCEDURE ARC-KILLER SV-25

5.1. Operational procedure during first operation

After the installation and before the actual commissioning of the medium-voltage cubicle, check whether the overpressure flaps at the rear of the cubicle are entirely free of damage or distortion.

Check whether the cubicle door of a cubicle equipped with an arc-killer has not been swapped for a standard type door. The door corresponding to a cubicle fitted with an arc-killer is always equipped with an additional door hook (Photo 1).



Photo 1: Door fit for a DF-A cubicle equipped with arc-killer

DF-A type cubicles are by default delivered as follows

1. Load break switch OPEN: no connection between cables and bus bars.
2. Earthing switch CLOSED: cubicle is connected to earth.
In this position the door is always removable.
3. Arc-killer OPEN: armed to react to a fault.

Only if the arc-killer is in the open position, can the cubicle be commissioned according to the safety guidelines and operating procedures "Opening the earthing switch and closing the load break switch", found in the user manual.

5.2. Rearming the arc-killer

The process outlined here for rearming the arc-killer can be performed in two ways. Either by one or by two persons.

STEP 1: In the case of two operators, one operator holds down the safety catch continuously and sufficiently deep during the entire process (Photo 2).



Photo 2

Procedure with 2 operators

The safety catch is held down during rearming the arc-killer (sufficiently deep) and continuously

If performed by one person, an accessory is used to hold down the safety catch (Photo 3). The safety catch is found in the rectangular plate piece to the left of the front of the cubicle. It can be pressed down using the accessory.

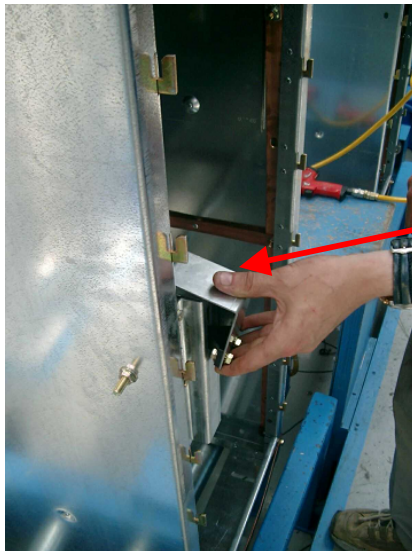


Photo 3

Procedure with 1 operator

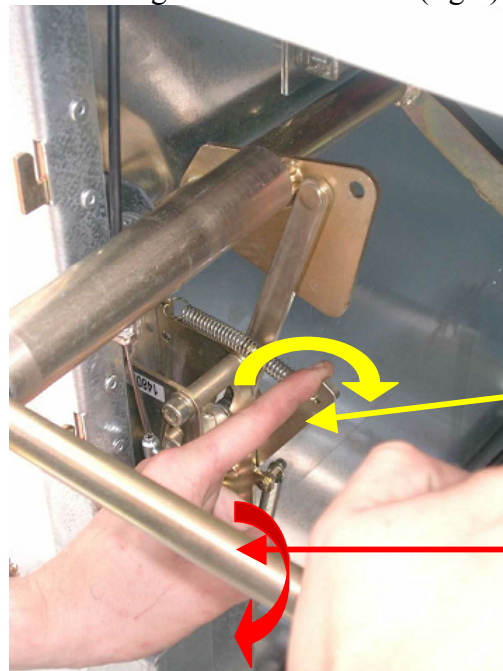
Accessory to hold down the safety catch during rearming.

STEP 2: Place the operating handle on the arc-killer's visible main axis.



Photo 4

STEP 3: Rotate the “arc-killer blocking handle” clockwise (right).



Arc-killer blocking
handle

Operating handle

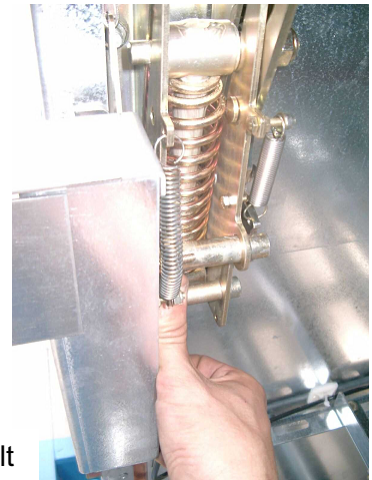
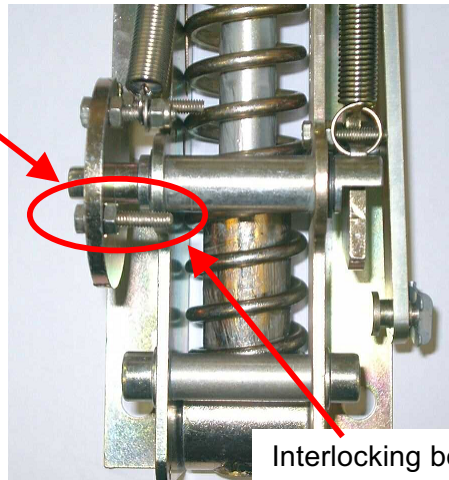
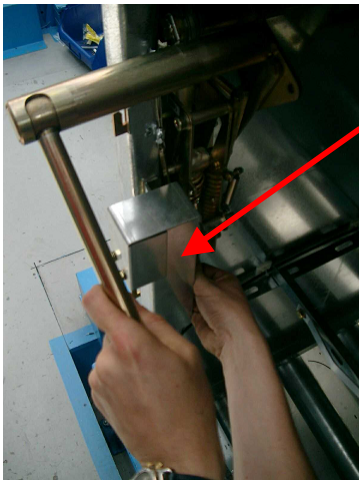
Photo 5

STEP 4: While the “arc-killer blocking handle” is pressed right, use the right hand to move the “operating handle” to the left until the earthing knife is released from the earthing blocks, see Photo 6. Release the “arc-killer blocking handle” and keep the “operating handle” under tension.



Photo 6

STEP 5: Rotate the “interlocking bolt” marked in Photo 7 fully clockwise until it stops.



Interlocking bolt

Photo 7

STEP 6: While holding down step 5, move the “operating handle” towards the left side panel until the mobile part of the arc-killer touches the side panel. Release the “interlocking bolt” now. If and ONLY IF, you experience NO counterpressure from the “operating handle”, the arc-killer is now armed and in the OPEN position.



If after releasing the “interlocking bolt” any counterpressure is experienced on the “operating handle”, this points to an incorrect interaction between the “interlocking bolt” and the “operating handle”. In this case, the procedure needs to be performed again until the arc-killer is armed correctly.

STAP 7: Check the interlock: the safety catch needs to be on the same level as the reference line (Photo 8).

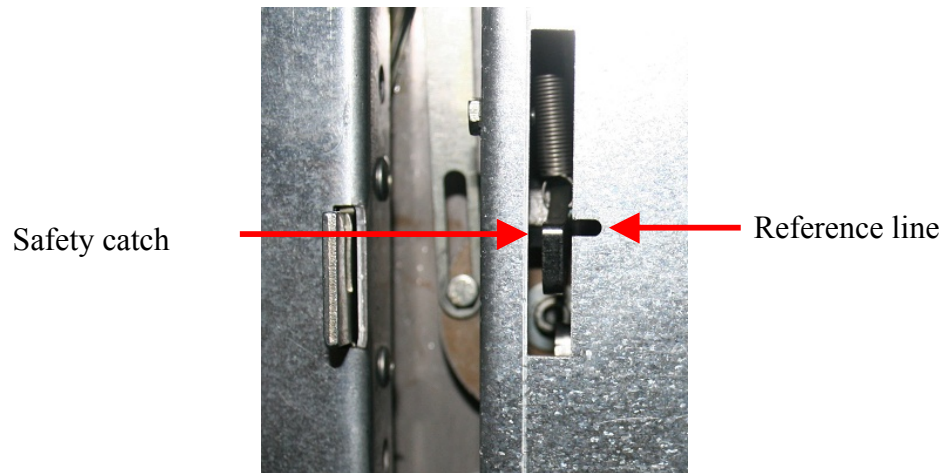


Photo 8



If the safety catch is not on the same level as the reference line, the cubicle **CANNOT** be entered.

In this case, the operating handle needs to be used to exert additional pressure in the direction of the left side panel (Photo 9). This will allow the safety catch to move to the position corresponding to Photo 8.

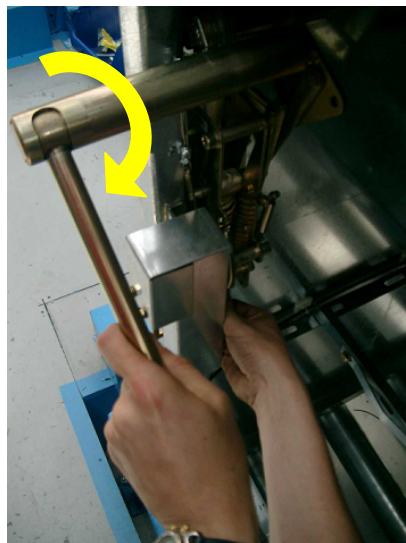


Photo 9



Never place your head inside the cubicle during operation. When the arming of the arc-killer is performed incorrectly, the “operating handle” might backfire and possible cause serious injuries.



Only if the arc-killer is in the “OPEN” position, can the cubicle be commissioned according to the safety guidelines and the operating procedure outlined in "Opening the earthing switch and closing the load break switch", found in the user manual.

STEP 8: Remove the “operating handle” from the arc-killer’s main axis.

5.3. User procedure after an internal arc is interrupted by the arc-killer

The voltageless cubicle is now taken out of operation according to the procedure "Opening the load break switch and closing the earthing switch" outlined in the user manual. After following the procedure, the door can be opened. The arc-killer is on top of the earthing blocks (Photo 10).

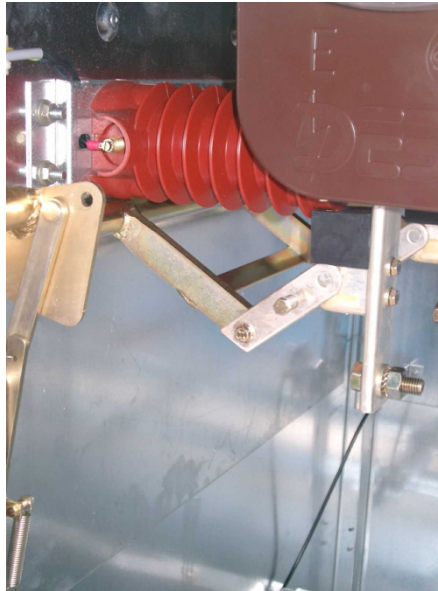


Photo 10: Arc-killer in closed position



If the cause of the arc cannot be determined with certainty, it is required to contact SGC – SwitchGear Company. As soon as the arc-killer is rearmed or as soon as any maintenance or cleaning operations are performed, SGC or Mevoco's liability is no longer valid.

If, after taking into account what has been described, the cause of the arc is determined to be known, the following steps need to be taken before the installation can be recommissioned:

- If possible, remedy the cause of the internal arc. Check the cable connections.
- Check the condition of the arc-killer contacts and earthing knife blocks. They cannot be burned in severely. The copper needs to show a layer of silver at all times.
- If necessary, remove carbon black on the isolators and the poles.
- Clean the arc killer's movable earthing knife contacts and earthing blocks and regrease these. It is advised to regrease the components using contact grease or silicone grease.
- Rearm the arc-killer as described above
- It is recommended to perform a 1 min. 38 kV «power frequency withstand test» to evaluate the status of the entire medium-voltage switchgear.

After remedying the cause of the problem, **checking the cable connection**, and after the recommended testing, the cubicle can be recommissioned on the condition that the rear flaps are back in their original position and the cable connections are intact (Photos 11 and 12).



Photo 11: Cable connection cable compartment



Photo 12: Cable connection in bus bar compartment

6. MAINTENANCE

The general maintenance guidelines, and maintenance procedures that apply here are fully included in user manual.

The procedure “Greasing the movable earthing knife contacts and earthing blocks” applies to both the arc-killer, as well as the standard earthing knife.



As soon as the door to the cubicle is removed, the arc-killer is blocked. Check the interlock BEFORE starting any maintenance operations. Only if the safety catch is at the same level as the reference line can the maintenance operations be performed. In this case any operation can be carried out in absolute safety.

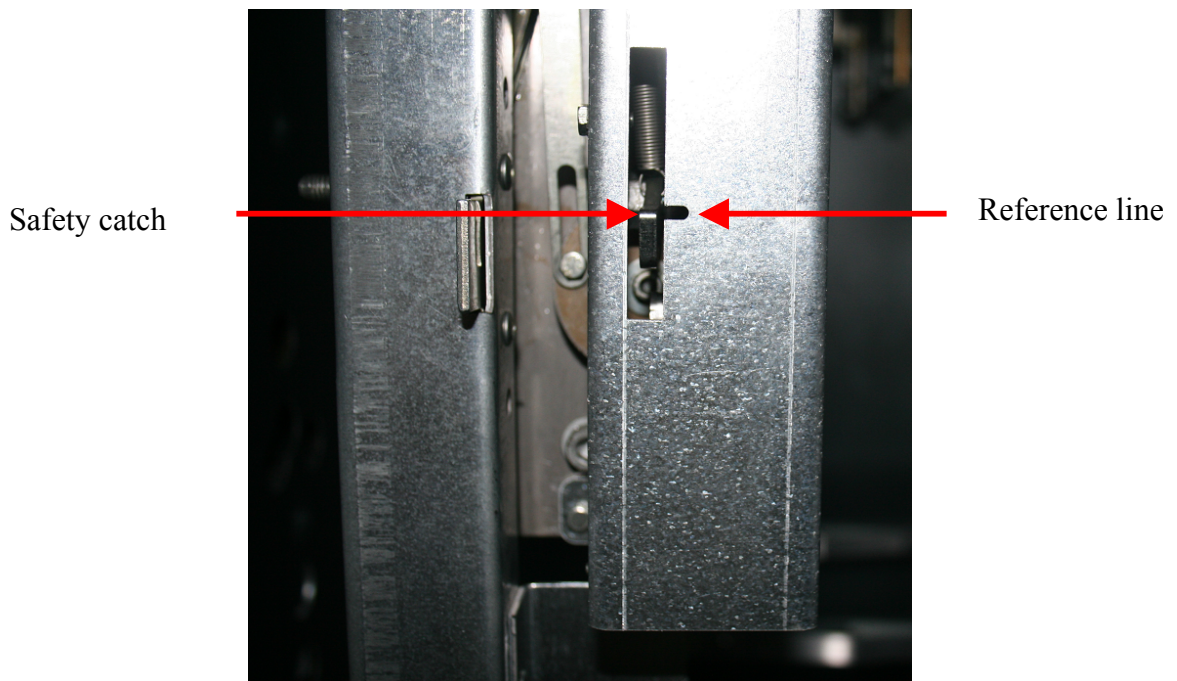


Photo 13



Never touch the plate levers, the rear flaps, or the operating cables, during maintenance operations, with an open door and an armed arc-killer.