LUBRICATING BRUSHES
CLEANING BRUSHES

If on a ring of copper or bronze, brushes are fed with DC and positioned in such a manner that the positive and negative brushes run on different tracks, it will be observed after a time that the tracks acquire different skin aspects :

- ❒ Under the positive brush or (Anode) there will be a deep blue-black shiny skin. The brushes, therefore, deposit graphite on the ring and, consequently, this polarity has a lubricating effect.
- ❒ Under the negative or (Cathode) brush the skin will be thin, matt and lifeless having the colour of the oxidises metal; the brushes of this polarity have a cleaning or polishing effect.

Furthermore, the lubricating effect is intensified at high current densities while the polishing effect is intensified at low current densities.

Finally, it should be borne in mind that the cleaning or polishing effect is influenced by the abrasiveness of the brush itself. The greater the abrasiveness the greater the polishing effect predominates over the cleaning effect.

These effects can be used to advantage on DC machines where there is no reversal of brush polarity, in cases where better skin control is desired.

The brushes used to obtain the required corrective effect are :

- ❒ either of the soft graphitic brush group (LFC4 for example) the contact drop of which is approximately the same as that of "grey" electrographitic brushes (EG).
- ❒ or of the resin bonded brush group (BG 28 or BG 62) the contact drop of which is similar to that of "Black" EG brushes.

Conditions of applications :

- a) Determine the polarities of the arms of the machine.
- b) According to the effect required, observe the following rule:
  Lubricating brushes on anode arms
  (–brush for generator and + bruch for motor)
  Cleaning brushes on cathode arms
  (–brush for motor and + brush for generator).
- c) Distribute uniformly the LFC or BG brushes on the required polarity arms so that each track is swept by an equal number of brushes.

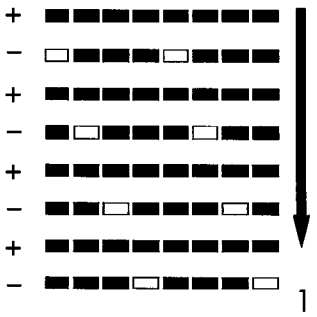
This procedure which is only suitable with a large number of brushes is both flexible and progressive.

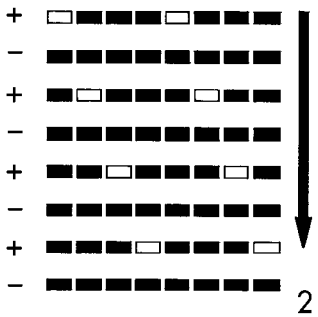
For example on DC generator with 8 arms of 8 brushes ;

❒ the lay out of lubricating brushes with 2 brushes per arm and 1 brush per track would be in accordance with the Diagram 1.

and

❒ the lay out of cleaning brushes with 2 brushes per arm and 1 brush per track would be in accordance with the Diagram 2.





Remarks :

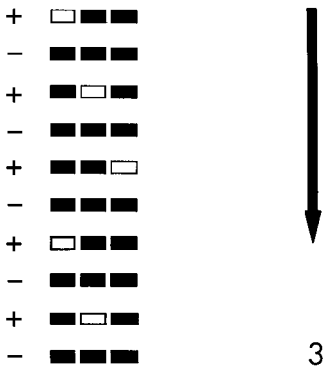
(1) If the number of arms and the number of brushes per arm of the machine do not allow an uniform distribution of the corrective brushes on all tracks, i.e. if the number of tracks is not a whole multiple or sub-multiple of the number of arms, it is most suitable to put :

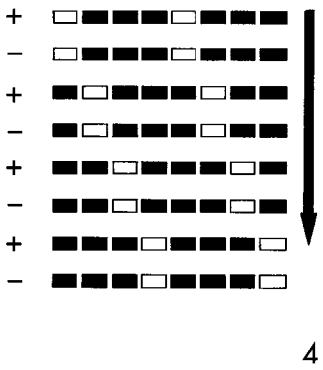
❒ lubricating brushes on the most grooved tracks of the commutator,

❒ cleaning brushes on those tracks where the skin is too heavy.

The Diagram 3 is an example of dissymetrical distribution.

(2) On DC machines, generators or motors with reversal of polarities, the LFC or BG brushes can be laid out on each arm in succession, as mentioned in Diagram 4 so that a stabilization between cleaning and lubricating effect appears on each track.





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