TECHNICAL DATA SHEET

DEGREASING OF COMMUTATORS AND SLIP RINGS

Non-conductive substances such as oil and grease will form an insulating film on the commutator or slip ring. The number of contact points therefore decreases, resulting in a very high local heating.

It may generate sparking, or even melting of the metal, and grooving, and increase the brush wear.

Figure 1 - Effects of grease (from bearings) on a commutator machine

For degreasing commutators or slip rings, **the use of an inappropriate solvent** (or the improper use of such a solvent) **may itself bring about malfunctioning of the carbon brushes**. Degreasing by such a solvent would, as soon as the machine is put into service again, would modify the film (or, if the surface is new, lead to defects on the film), and generate abundant sparking which will damage the film and cause accelerated wear of the carbon brushes.

These troubles are caused by the pollution of carbon brushes and/or the atmosphere by the solvent (in particular for totally enclosed machines); they persist as long as the evaporation continues.

01 – CHOICE OF SOLVENT

Heavy solvents, that is to say those which are evaporated at a high temperature, are more harmful than light solvents, because for an equal volume, they pollute the machine for a longer period. Among such solvents are aromatic hydrocarbons which are derived from petroleum (for example white spirit).

The solvent shall be **dry, chlorine-free, fast evaporating** and **leave no residue**.

On the market it is possible to find commercial products for degreasing electrical machines which are either pure solvents or a mixture of two or three solvents. These products have the advantage of treating with care the varnish and insulation parts. Otherwise some dielectric solvents for degreasing electronics may also be used.

In addition to the special precautions related to operations on rotating machines with carbon brushes, it is necessary to comply with the environmental and safety measures relative to the product; therefore it is highly recommended to refer to the **instructions of use and the Safety Data Sheet (SDS)** of the manufacturer.

02 – RECOMMENDED PROCEDURE

Here are some simple rules which should be applied when degreasing a commutator or a slip ring:

DRY CLEANING

A cleaning with **a dry lint-free cloth** is recommended as a first operation.

For less greasy commutators or slip rings this operation would be enough, that is to say the use of a solvent may not be necessary.

Only use solvents when their use cannot be avoided, that is to say only on very greasy commutators or slip rings.

SOLVENT CLEANING

When the commutator of slip ring is still greasy, particularly grease/oil stuck in grooves of commutators or slip rings, degrease by using **a cloth or a brush impregnated with the appropriate solvent**. This method has the advantage to avoid any excess solvent and limit the operation solely to the zone to be degreased.

When using a solvent carbon brushes need to be removed from the machine to avoid being contaminated during the degreasing operation.

> **Note:** When a commutator or a slip ring is greasy other parts of the machine may also need to be cleaned (see our guidance on maintenance).
> In particular brush-holders may be cleaned by using the same method as described above.

DRYING

When degreasing has been completed, it is necessary to **thoroughly blow out** with the use of compressed air. This should be directed not only onto the commutator or slip ring but also onto the risers, the rocker, the brush arms and the brush-holders, in such a manner as to remove all traces of solvent from the machine.

> **Note:** Particular care is essential with this kind of operation, especially concerning the drying of the parts after cleaning.

List of citations:

- Technical Guide “Maintenance of carbon brushes, brush-holders, commutators and rings”

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