



Requirements to the electrical features of 3-layer impression rollers when using Eltex ESA GNN70 / GNN71

In order to guarantee a perfect function of the electrostatic printing assist (ESA) impression roller coatings with certain electrical features are required. In case of 3-layer impression rollers these features are described by four resistance values, the insulating resistance **R_i**, the conductor resistance **R_L**, the total volume resistance **R_{vt}** and the volume resistance **R_v**.

Insulating resistance **R_i**

$$R_i = > 1 \text{ Gigaohm.}$$

Conductor resistance **R_L**

$$R_L < 1 \text{ Kiloohm.}$$

Total volume resistance **R_{vt}**

The total volume resistance **R_{vt}** is the most important value for the function of the ESA.

$$R_{vt} = \frac{150 \text{ k}\Omega\text{m} \dots 600 \text{ k}\Omega\text{m}}{\text{length of impression roller in meter}}$$

Coatings which are outside the Eltex specifications can still lead to satisfactory printing results depending on paper quality. Impression rollers with excessively low impedance can result in ignition in the printing unit and insufficient print quality in the edge zones. Impression rollers with excessively high impedance can lead to a loss in printing quality.

The total volume resistance **R_{vt}** can only be determined on a special test unit. It is not possible to carry out measurements direct at the impression roller and in the printing press.

On the other hand a fifth resistance value of the impression roller coating, the surface resistance **R_o**, can be determined with the test unit. Extensive tests have shown that there exists a correlation between the total volume resistance **R_{vt}** and the surface resistance **R_o**.

Therefore a value for the surface resistance **R_o** can be indicated as an alternative to the required **R_{vt}** value.

As this connection depends on the recipe of the impression roller coating, the range of the surface resistance **R_o**, which corresponds to the required volume resistance range, can only be determined after having carried out a measurement on the test unit. This measurement has to be made by the manufacturer of the coatings.



For each coating the manufacturer of the coatings informs the user of the range of the surface resistance value R_o which corresponds to the required range of the volume resistance R_{vt} .

We recommend indicating the range of surface resistance on the impression roller certificate for each impression roller.

By this the user can carry out a comparative judgement of the impression rollers for each measurement of the surface resistance.

Volume resistance R_v

$$R_v = \frac{R_o}{1,5...3}$$

The Eltex instructions "Measuring specifications 3-layer impression rollers for Eltex ESA GNN70" inform you how to measure the resistances **R_i** , **R_L** , **R_o** and **R_v** .

Descriptions:

R_i = insulating resistance

R_L = conductor resistance

R_{vt} = total volume resistance

R_o = surface resistance

R_v = volume resistance