Magneto-optical device for identification and detection of vehicle units numbers falsification Regula 7505M

The device is intended for non-destructive examination of metal surface for authenticity verification and detection of VIN falsification, for restoration of original VIN and verification of vehicle related documents.

Regula 7505M is constructed in a protective case as a mobile complex which comprises a USB device for magneto-optical imaging, a magnetic copying tool kit, a spectral luminescent magnifier Regula 4177.

Functionality

1. **Magnetic copying tool kit.** The tool kit comprises a combination magnetic scanner-demagnetizer with a set of replaceable concentrators, magnetic tape clamps, magnetic tape cartridges, etc.
    - making a copy of magnetic stray fields distribution over the object surface using magnetic tape. The copy displays relief and structural material inhomogeneity.
    - demagnetizing magnetic tapes for further use
    - marking, storing and transportation of a ready-made magnetic tape reserve and obtained magnetic copies
2. **USB device for magneto-optical imaging.** It is constructed as a module built in the device case.
    - magneto-optical imaging of data recorded on magnetic tape as an intermediate carrier
    - converting a magneto-optical image into a digital TV signal
    - step-by-step scanning of magnetic tape with the help of the tape drive and obtaining a panoramic image
    - indicating the status of device systems
3. **Spectral luminescent magnifier** Regula 4177. —The magnifier is used for authenticity verification of vehicle related documents.
    - **Examinations on different levels**
        - **protection of the document basis**
            - security fibers, planchetes, security threads, holograms, foil stamping, pole feature, transparent vanish coating, etc.
        - **printing methods**
            - *intaglio*: texts, guiloche frames, rosettes and vignettes, microprinting, latent images and moire patterns, signs for the visually impaired, blind embossing, colour shifting ink, including OVI with embossing and latent images, etc.
            - *letterpress*: serial numbers, texts, barcodes, etc.
            - *offset printing*including Orlov and rainbow printing: texts, microprinting, moire patterns, background and anti-copy patterns, etc.
            - *screen printing*: security features with optically variable effects, etc.
            - perforation
        - **physico-chemical protection**
            - anti-Stokes luminescence
            - UV luminescence
            - IR luminescence
        - **complex security features**:
            - security features with IR-metameric ink
            - special polymer coating of security laminates
            - special polymer coating of security laminates
            - metallized coating
            - laser engraving
    - **Additional examination of**
        - fragments of document images depending on the degree of absorption or reflection of IR light
        - document alterations such as erasure, etching etc.
        - traces of signature forgery
        - extraneous lines (do not originally belong to the examined object) that are performed with IR opaque inks
        - blurred, crossed out entries, texts and images
        - document mechanical defects such as cuts, tears, folds, etc.
4. **Case** — for the magneto-optical visualization module and other device components.
5. **NUCA** software. — The software is used for loading and processing images of identification numbers:
    - comparing image fragments
    - measuring linear and angle dimensions
    - saving and printing obtained images

Principles of operation

1. The magnetic scanner records a magnetogram which is a recording of magnetic stray fields on magnetic tape.
2. The obtained magnetogram is placed in the USB device for magneto-optical imaging where the data about an object surface is read out.
3. The read-out data from the object surface is converted into a digital signal which is sent to a PC for examination and processing with the help of NUCA software.

Application

- Court expertise
- Forensic departments
- Law-enforcement agencies
- Insurance companies
- Car rental and leasing companies
- Auto service centers

Delivery Set

- **NUCA** software
- Information reference system Autodocs
- Spectral luminescent magnifier Regula 4177
- Tool kit
- Magnetic tape, 10 m
- Optionally
    - notebook, model is selected at customer's request
    - eddy-current magnetographying device Regula 7515 with a tool kit
    - peripheral VIN examination tools Regula 7516

Case with a USB device for magneto-optical imaging

- Examined object material — ferromagnetic
- Magnetic tape width, mm — 25,4
- Image file format — .BMP, .GIF, .JPG, .PCX
- Dimensions (length×width×height), mm — 460×370×180
- Weight without a notebook, kg — 10
- Power supply voltage from a USB port, V — 5
- Power consumption, W — 2,5

Tool kit for magnetic copying

- Magnetic tape length, m — 10
- Dimensions (length×width×height), mm — 120×80×40
- Weight, kg — 0,4

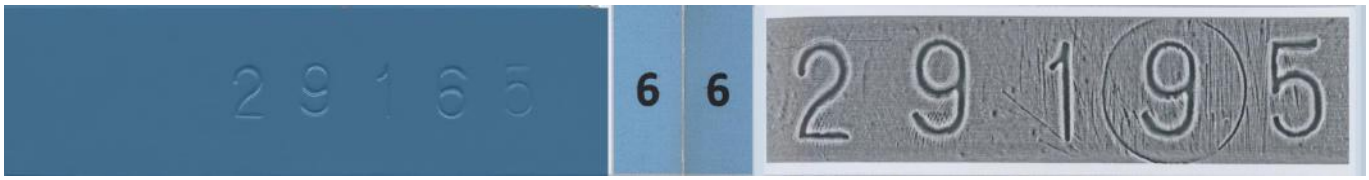
Press processing (calking)

Filling symbols with tin (soldering)

Filling plate with tin (soldering)

Electric arc welding (joint stitch)

Filling plate with polymer



Punching of symbol, rotation, pressing in

Corroded surface of plate

Grinding surface of plate