



# SACRAMENTO POLICE DEPARTMENT GENERAL ORDERS



536.04

## CHEMICAL RESTORATION OF OBLITERATED VEHICLE IDENTIFICATION NUMBERS

10-09-12

### PURPOSE

The purpose of this order is to establish procedures for chemical restoration of Vehicle Identifications (VIN) numbers.

### POLICY

It shall be the policy of the Sacramento Police Department to establish a standard for conducting chemical restoration of VIN numbers.

### PROCEDURE

#### A. GENERAL

1. This process shall be performed by Forensic Investigators in coordination with the Office of Investigations Auto Theft Unit.
  - a. When possible, Forensic Investigators shall perform restorations accompanied by auto theft investigators
  - b. Auto theft investigators may perform chemical restoration if Forensic Investigators are unavailable in order to expedite the investigation.
2. Restoration results shall be processed through the OOI Auto Theft Unit as soon as possible.

#### B. SAFETY PRECAUTIONS WHILE PROCESSING

Employees conducting chemical restoration of VIN numbers shall:

1. Use goggles or a face shield, and chemical resistant rubber gloves.
2. Use chemicals in well ventilated areas to avoid toxic fumes, or if unable to obtain adequate ventilation, use the half face respirator equipped with cartridge filters approved for organic vapor/acid, and gas.
3. Ensure all chemicals are labeled.
4. Ensure a neutralizing solution of baking soda and water is available.
5. Ensure personal eye wash is nearby.

#### C. SURFACE PREPARATION

Individuals shall prepare the surface as follows:

1. Remove all paint, dirt, grease, etc., using an automotive degreaser, or a non-abrasive cleaning agent.
  - a. Limit the use of scrapers when cleaning. The surface metal must be completely bare and smoothed to a mirror-like finish.
  - b. Be careful to remove as little of the metal as possible
2. Photograph the area before and after cleaning. Include close ups of any discernable numbers.
3. Document any discernable numbers.

#### D. ETCHING SOLUTIONS

1. Employees shall use the following solutions when chemically restoring obliterated VIN numbers.
  - a. Nitric acid - Use a diluted solution of 25% acid to 75% water. Used for aluminum surfaces.  
**ALWAYS ADD ACID TO THE WATER, NOT THE WATER TO ACID.**
  - b. Fry's solution - A hydrochloric acid based compound with cupric ammonium chloride and water. Use a diluted solution of 25% acid to 75% water. Used on steel or aluminum surfaces.  
**ALWAYS ADD ACID TO THE WATER, NOT THE WATER TO ACID.**
2. The chemicals shall be mixed in a glass Pyrex measuring cup and be used for the chemical processing. **ALWAYS ADD THE ACID TO THE WATER, NOT THE WATER TO ACID.**

#### E. CHEMICAL PROCESSING

1. **CAUTION:** Numbers will often appear one (1) at a time and then disappear before another number can be restored. When possible, photograph the numbers as they appear.



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2. The following procedures shall be used for the surface indicated:  
Aluminum surfaces
  - a. Use a diluted solution of either Nitric Acid or Fry's solution.
  - b. Apply the solution to the prepared surface using a cotton ball or synthetic cotton ball held in surgical forceps.
    - (1) The application should be in a sweeping motion along the surface in the same direction. Continue this application until the obliterated number is restored.
    - (2) Alternate the application with a water spray which helps remove residue and highlight the restored numbers.
3. The restored numbers can be preserved by spraying the metal surface with oil or silicone.  
Steel surfaces
  - a. Use a diluted form of Fry's solution.
  - b. The "ELECTROLYTIC PROCESS" is recommended to enhance the restoration on steel surfaces. NOTE: If the subject vehicle has a battery connected, disconnect the battery by removing the negative (-) cable first, followed by removing the positive (+) cable before using the Electrolytic process.
    - (1) Apply the solution in combination with electrical current (ELECTROLYTIC PROCESS). The electrical current serves as a catalyst for the acid and speeds up the etching.
    - (2) The source of the electrical current shall be 12 volts DC supplied by an automobile battery or battery charger.
    - (3) The electrical current is applied directly to the surface being processed by two (2) wires, #12 or #14 gauge.
      - a) One (1) wire is attached to the ground, (negative (-) terminal and then to the surface.
      - b) The second wire is attached to the hot lead, (positive (+))terminal at one end and the other end is attached to an alligator clip type clamp to which the synthetic cotton-like ball is attached.
    - (4) Once the cotton-like ball is attached to the clip, it is dipped/soaked in the etching solution and then swabbed across the surface as above until the numbers are restored. Alternate the swabbing with sprays of water to help remove residue and highlight the numbers
  - c. As above, the restored numbers can be preserved by spraying the surface with oil or silicone.

## F. CLEAN-UP

1. Contaminated cotton-like balls shall be wrapped in newspaper and disposed of in an outdoor industrial trash receptacle.
2. Unused chemicals shall be returned to their glass storage container and that container shall be secured inside of the metal storage container.
3. All gloves, clips, and other equipment shall be rinsed with a solution of baking soda and water and then flushed with clean water.
4. If necessary, notify a supervisor of any faulty equipment or need for chemicals and supplies.

## G. ACCIDENTAL SPILL, SKIN CONTACT, OR INHALATION OF SOLUTIONS

1. In the event of a spill, dilute with water and baking soda then rinse with clean water.
2. In the event of contamination to the eyes, use personal eye wash and flush eyes for at least fifteen (15) minutes and seek medical attention.
3. In the event of contamination to the skin, rinse with water and wash thoroughly with soap and water.
4. In the event of inhalation, remove to fresh air and obtain medical attention. Be prepared to provide the doctor with the name of the solution inhaled.