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TECHNICAL MANUAL

FINGERPRINT IDENTIFICATION KITS

(ATOS)

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## CHAPTER 1 INTRODUCTION

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### 1. Purpose and Scope

This manual provides information concerning use and care of the following fingerprint identification kits—Type I—Latent, Type II—Taking, Type III—Iodine Fuming, Type IV—Criminal Investigation. This manual is not to be regarded as an authority for requisitioning. Latest standard nomenclature and Federal stock numbers appear in appropriate supply manuals listed in DA Pam 310-30. Approved allowances are indicated in appropriate TA's and TOE's.

### 2. Recommended Changes

Users of this manual are encouraged to submit recommended changes or comments for improvement or correction. Comments should be keyed to the specific page, paragraph, and line of the text in which change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Submit comments direct to the Commandant, U.S. Army Quartermaster School, Fort Lee, Va.

### 3. References

The appendix contains a list of current references applicable to the fingerprint identification kits.

### 4. Definitions

The following definitions are basic to an understanding of fingerprinting:

a. *Fingerprint*. A fingerprint is a reproduction of the pattern or design formed by friction ridges located on fingers or thumbs, and may be used for identification of persons.

- (1) *Plain impressions*. Plain impressions are fingerprints taken simultaneously, printing all the fingers of the hand except the thumb, without rolling. The thumbprint is taken separately. Plain

impressions are used to verify the sequence and clarity of rolled impressions. They are also used for comparison with latent fingerprints.

- (2) *Rolled impressions*. Rolled impressions are fingerprints taken by rolling each finger individually from nail edge to nail edge. The large surface of the fully rolled impression affords a greater number of points for comparison than a plain impression.

b. *Fingerprint Characteristics*. The following are some of the characteristics of finger prints:

- (1) *Pattern Area*. The pattern area is that part of a loop or whorl in which appear the cores, deltas, and ridges which form the fingerprint pattern.
- (2) *Type lines*. Type lines are the two innermost ridges which start parallel, diverge, and surround or tend to surround the pattern area.
- (3) *Core*. The core is the approximate center of the pattern area.
- (4) *Delta*. A delta is the point on the characteristic, or any point upon a ridge at or nearest the center of divergence of two type lines, located at or directly in front of their point of divergence.

### 5. Forms

Blank forms that may be used in preparation of records and reports relating to the fingerprint identification kits are—

- a. DA Form 2407 (Maintenance Request).
- b. DD Form 6 (Report of Damaged or Improper Shipment).

**CHAPTER 2**  
**DESCRIPTION OF FINGERPRINT IDENTIFICATION KITS**

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**Section I. TYPE I KIT (LATENT)**

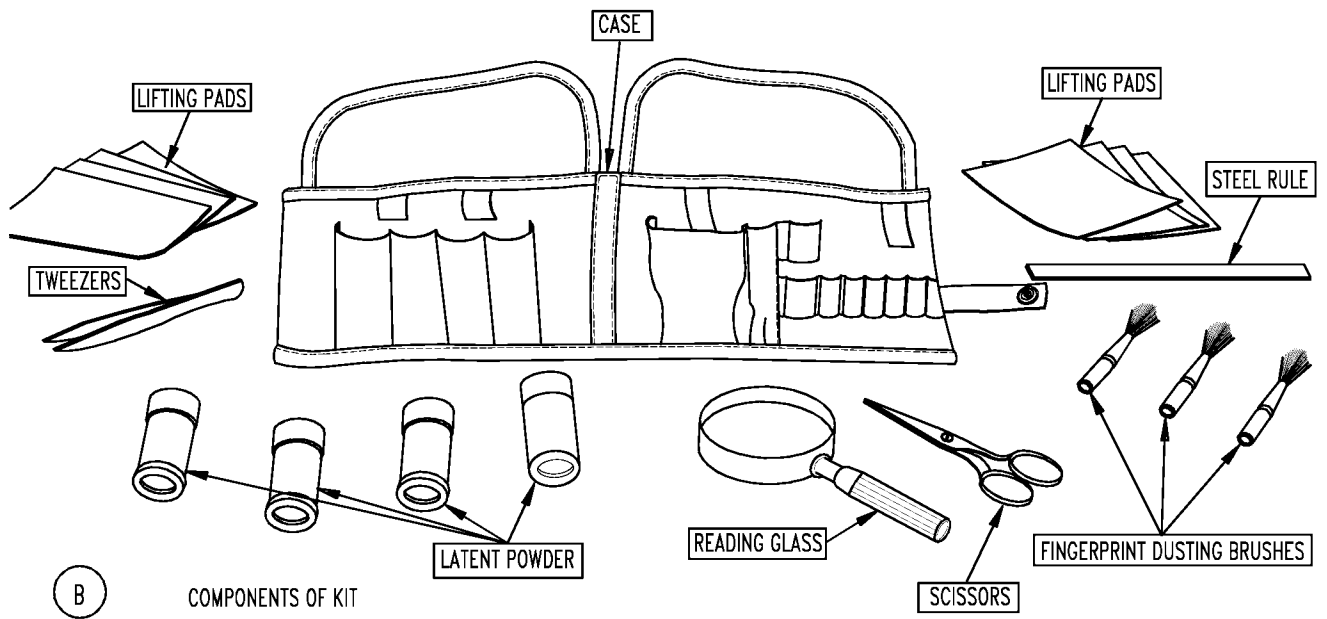
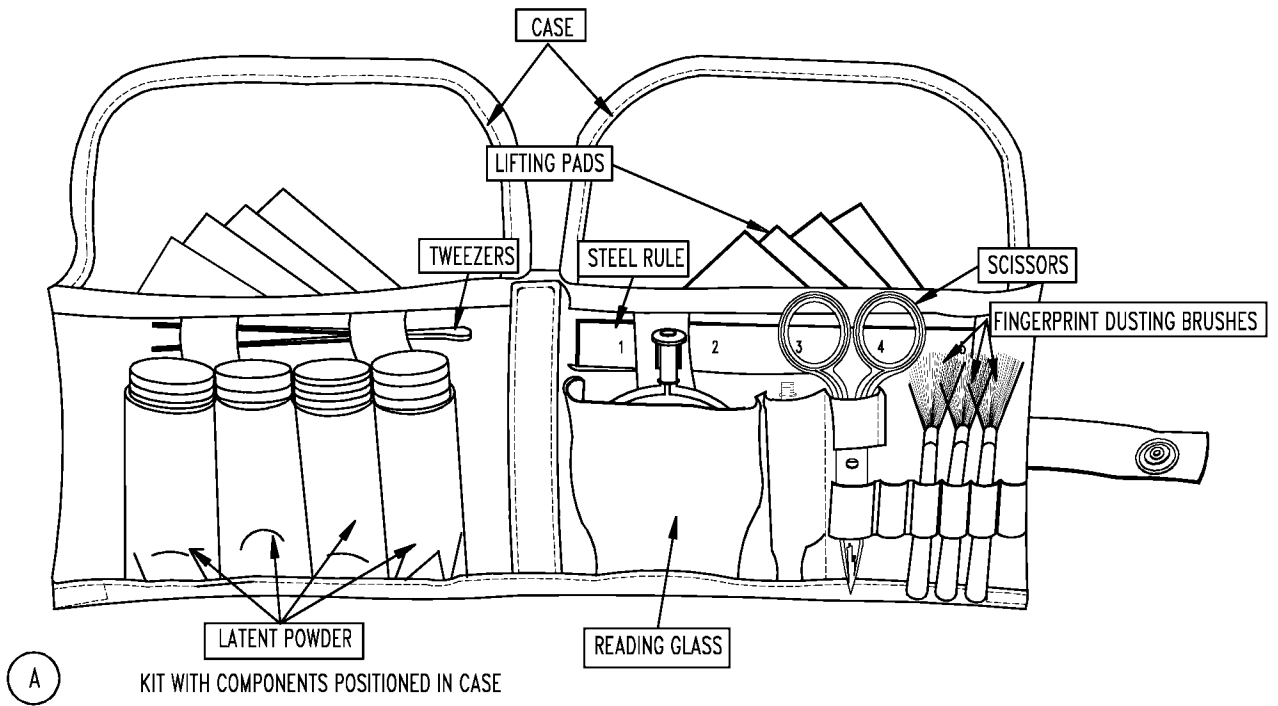
**6. Purpose of Type I Kit**

The fingerprint identification kit, type I (latent) (fig. 1), is used for obtaining fingerprints from smooth nonporous surfaces.

**7. Components of Type I Kit**

The type I kit consists of a case made of No. 5 duck, folded size approximately 4 1/2 by 6 7/8 inches, and the following items—

- a. Pads, lifting, four black and four white.
- b. Powder, latent, one 1-ounce bottle each of asphaltum, black, french gray, and silver.
- c. Three brushes, fingerprint dusting, for brushing fingerprint powder on dry surfaces to render fingerprint impressions visible for photographing or lifting.
- d. Magnifier, reading glass, 2 1/2-inch diameter.
- e. Rule, steel, machinist's, 6-inch.
- f. Scissors, pocket, 3 1/2-inch.
- g. Tweezers, 4-inch.



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Figure 1. Type I kit (latent).

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## Section II. TYPE II KIT (TAKING)

## 8. Purpose of Type II Kit

The fingerprint identification kit, type II (taking) (fig. 2), is used for taking fingerprints directly from the fingers.

## 9. Components of Type II Kit

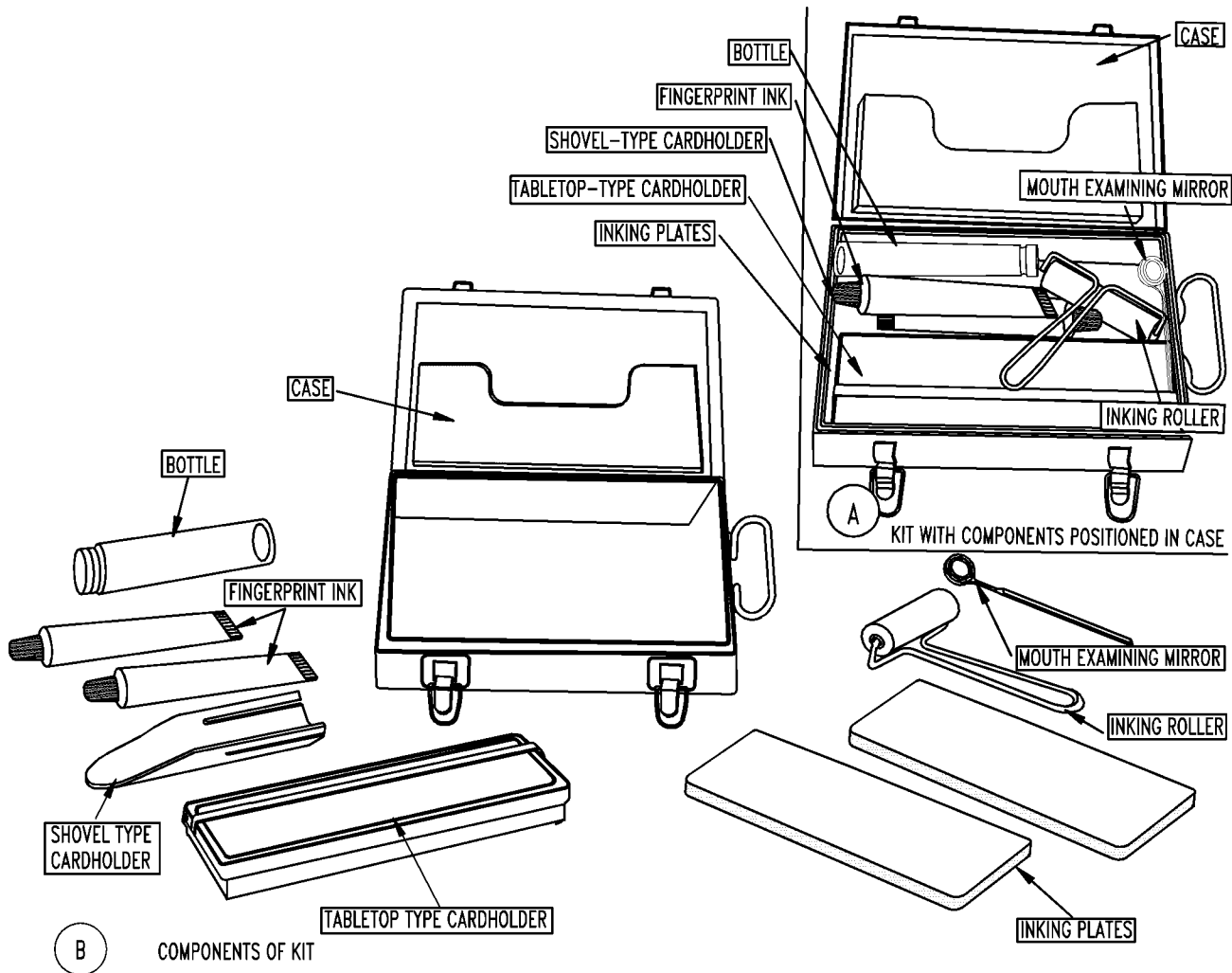
The type II kit consists of a metal case 9 1/2 inches long by 6 3/4 inches wide by 2 3/16 inches high (all inside measurements), and the following items:

- a. Inking roller, hand.
- b. Two plates, fingerprint inking.

- c. Cardholder, fingerprint, shovel-type.
- d. Cardholder, fingerprint, tabletop-type.
- e. Bottle, round, with screw cap.
- f. Two 2-ounce tubes of ink, fingerprint, black, permanent.
- g. Mirror, mouth examining.

## NOTE

Whenever possible, dental charts are made on all deceased personnel subsequent to fingerprinting.



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Figure 2. Type II kit (taking).



**Section III. TYPE III KIT (IODINE FUMING)****10. Purpose of Type III Kit**

The fingerprint identification kit, type III (iodine fuming) (fig. 3), is used for developing latent fingerprints on paper, greasy objects, fabrics, and other rough, porous surfaces from which fingerprints cannot be obtained by using the Type I kit.

**11. Components of Type III Kit**

The type III kit consists of a metal case 9 1/2 inches long by 6 3/4 inches wide by 2 3/16 inches high (all inside measurements), and the following items:

a. Calcium chloride, hydrated, technical, flake, in an 8-ounce glass bottle, fitted with a screw-type, airtight plastic cap.

b. Magnifier, reading glass, 2 1/2-inch diameter.

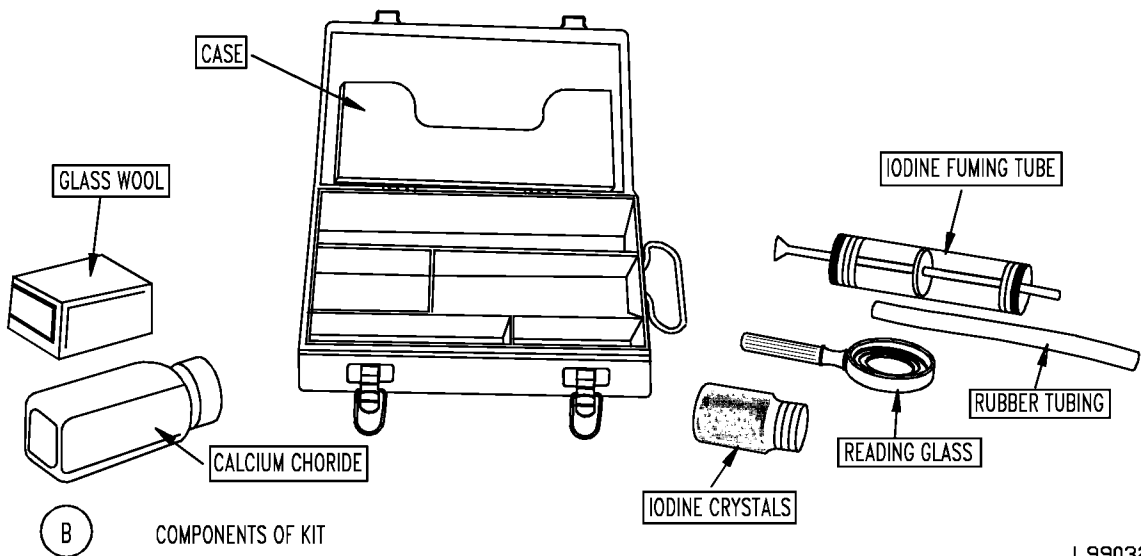
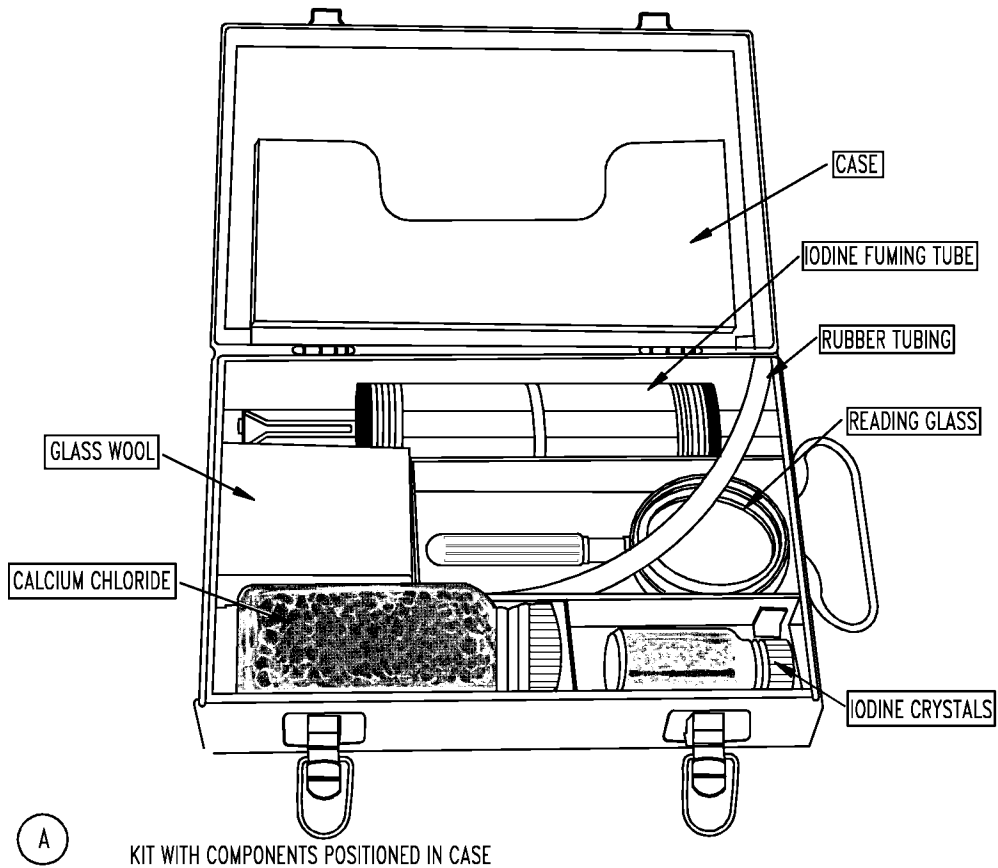
c. Iodine, U.S.P. resublimed, crystals, 4-ounce bottle.

d. Tube, fuming, plastic, kit, fingerprint, resistant to the grade of calcium chloride and iodine crystals used in the iodine fuming process.

e. Tube, rubber, kit, fingerprint, heavy-wall type.

f. Two-ounce plastic container of glass or rock wool.

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Figure 3. Type III kit (iodine fuming).

## Section IV. TYPE IV KIT (CRIMINAL INVESTIGATION)

## 12. Purpose of Type IV Kit

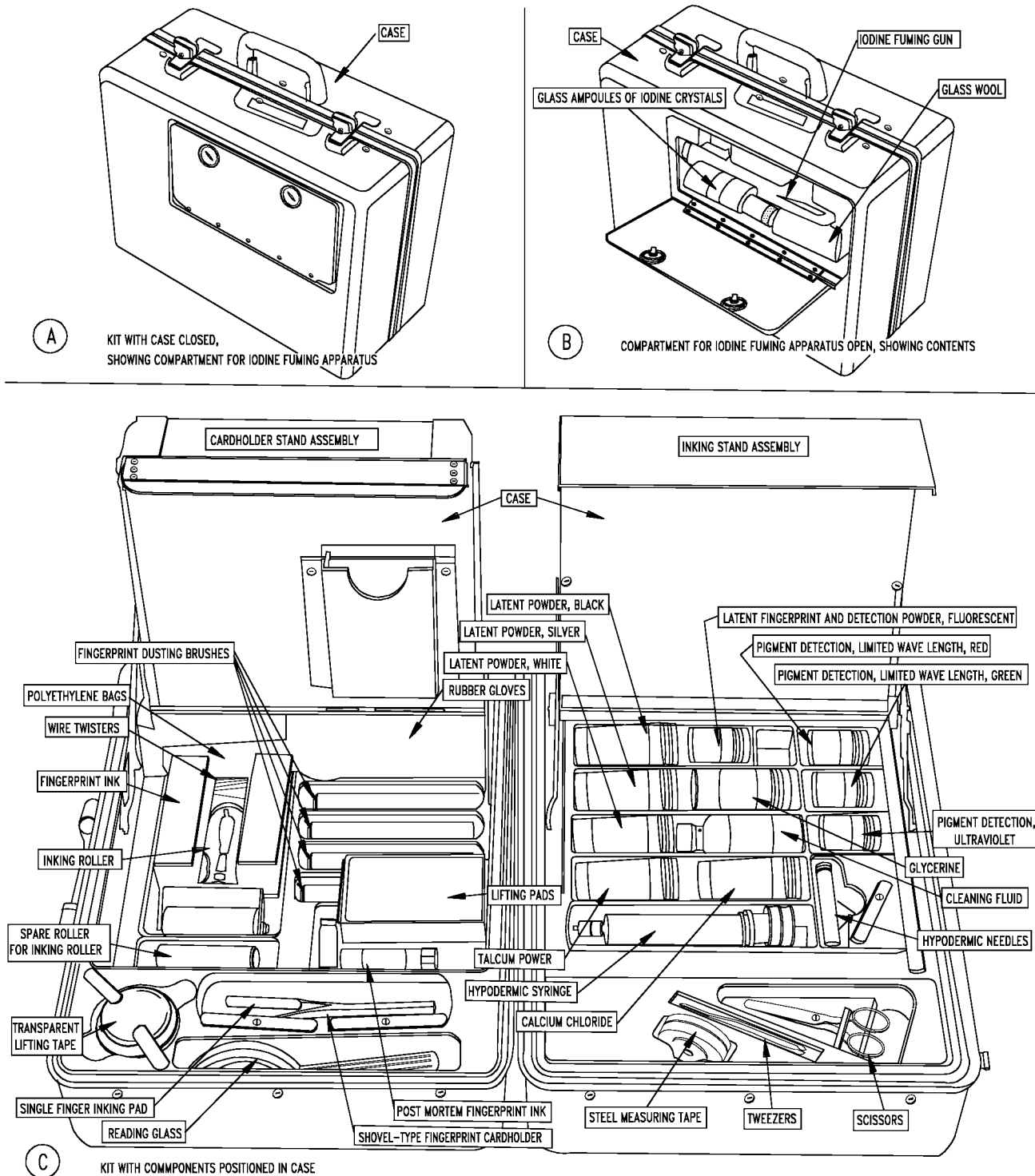
The fingerprint identification kit, type IV (criminal investigation) (fig. 4), is used for taking fingerprints directly from fingers, for developing latent fingerprints, and for thief detection.

## 13. Components of Type IV Kit

The case which contains the fingerprint identification kit, criminal investigation resembles a train case approximately 16 5/16 inches long, 12 5/6 inches high, and 7 5/16 inches wide. It is formed of sheet plastic having a thickness of 3/32 inch. The case is equipped with a polystyrene plastic handle for carrying and with wing-nut latches. There is a separate compartment in one side of the case to keep the iodine fuming apparatus apart from the other components of the kit. An inking stand assembly and a cardholder stand assembly are built into the case. The case contains the following items—

- a. Four brushes, fingerprint dusting, 5-inch.
- b. Twelve bags, polyethelene, 8-inch by 10-inch, with paper-wrapped twist wire sealing devices.
- c. Calcium chloride, anhydrous, 2-ounce plastic vial.
- d. Cleaning fluid, ink, 2-ounce glass bottle.
- e. Glass wool, 2-ounce plastic vial.
- f. Gloves, surgeon's, medium weight, rubber, one pair.
- g. Glycerine, 1-ounce can.
- h. Cardholder, fingerprint, shovel-type.
- i. Ink, fingerprint, black, permanent, two 2-ounce tubes.
- j. Ink, fingerprint, black, post mortem, 1-ounce bottle.
- k. Iodine crystals, glass ampoules, 11 ampoules in plastic vial.
- l. Iodine fuming gun, glass.
- m. Magnifier, reading glass.
- n. Two needles, hypodermic, 18-gage, 1 1/2-inch.
- o. Pads, lifting, 2-inch by 4-inch; six black and six white.
- p. Pad, inking, single finger.
- q. Three 1-ounce plastic vials of pigment detection; one each of ultraviolet (UV) ; limited wave length, red; and limited wave length, green.
- r. Powder latent; one 2-ounce plastic vial each of black, white, and silver.
- s. Powder, latent fingerprint and detection, fluorescent, (UV), 1-ounce plastic vial.
- t. Talcum powder, 2-ounce plastic vial.
- u. Inking roller, hand; one roller complete with handle and one spare roller.
- v. Scissors, pocket, 4-inch.
- w. Syringe, Luer, glass, 20-cc. capacity.
- x. Tape, measuring, steel.
- y. Tape, transparent, lifting, 1 1/2 inches wide, 400 inches long, 1 3/4-inch diameter roll.
- z. Tweezers, 4-inch.

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Figure 4. Type IV kit (criminal investigation).

## CHAPTER 3

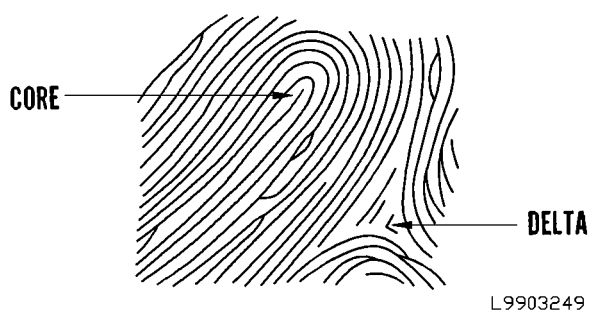
### FINGERPRINTING TECHNIQUES

#### Section I. BASIC INFORMATION

#### 14. Assuring Classifiable Prints

Classification, as it relates to fingerprints, is a system in which numbers, letters, and other symbols are selected to indicate certain pattern characteristics. This system permits a specific set of fingerprints to be filed with similar fingerprints and allows reference to be made to the set of fingerprints by its classification formula.

- a. If fingerprints are to be classifiable, it is absolutely necessary that the fingerprints be clear; that the ridges be distinctly outlined, and that the entire pattern area, including the core and delta (fig. 5), be included in each rolled impression.
- b. Examine completed prints to determine whether or not they can be classified. If a small portion of the pattern area above the first joint of any finger is omitted, classification may be difficult or impossible.
- c. If it appears that any of the impressions cannot be classified, take a new set of prints.



*Figure 5. Core and delta of a fingerprint pattern.*

#### 15. Patterns

The operator must have some knowledge of fingerprint patterns. Information concerning identification of specific fingerprint patterns is available in TB PMG 7.

#### 16. Identification of Fingers

The identification of each finger is shown in figure 6.

#### 17. Forms Used

The following forms are frequently used for recording fingerprints:

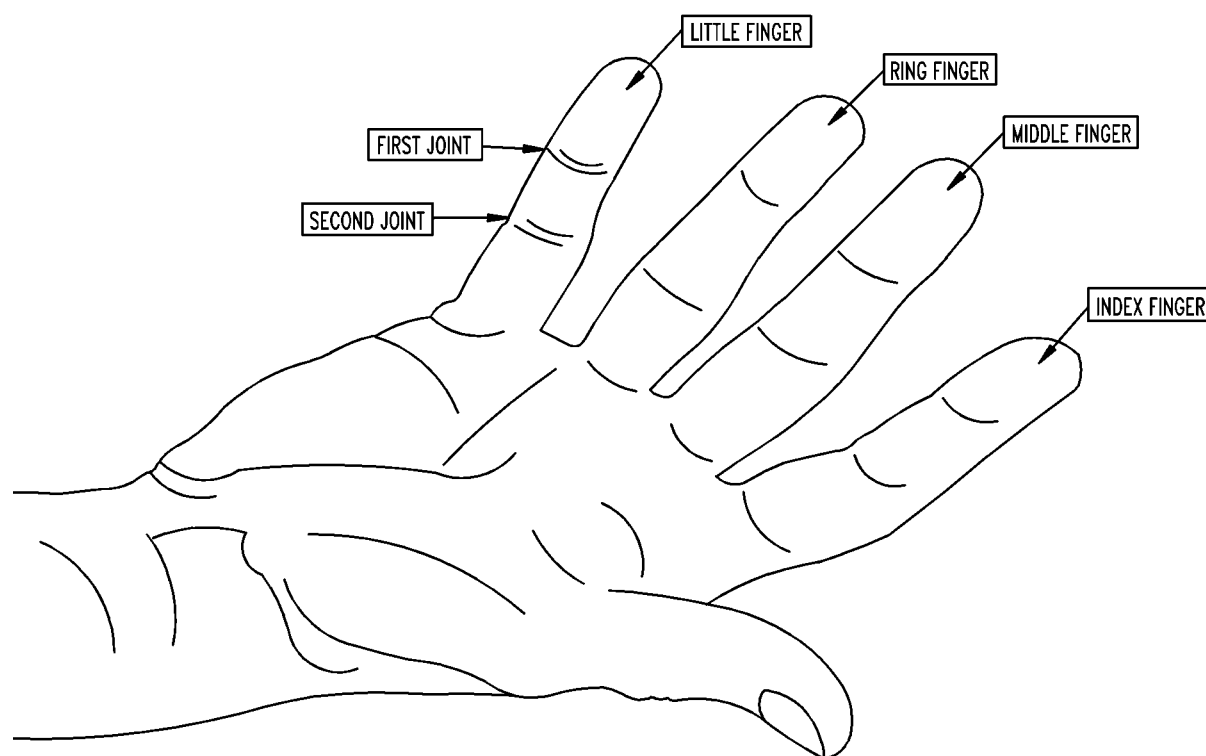
- a. DD Form 2A (Identification Card) requires rolled impressions of index fingers.
- b. DD Form 4 (Enlistment Record—Armed Forces of the United States) requires rolled impressions of the fingers of the right hand.
- c. DD Form 894 (Record of Identification Processing—Fingerprint Chart) is used for recording fingerprints of deceased persons.
- d. FD Form 249 (FBI U.S. Department of Justice Fingerprint—(Criminal Type) (Current Arrest or Receipt), requires a complete set of fingerprints and descriptive information.
- e. FD Form 258 (FBI U.S. Department of Justice Fingerprint) (Applicant), is used in connection with security clearance of personnel. It requires a complete set of fingerprints and other information.

#### 18. Order of Recording Data on Fingerprint Forms

Record data on fingerprint forms in the following order:

- a. Completion of brief (identifying data).
- b. Signature of person being fingerprinted (when subject is living).
- c. Signature of official responsible for preparing form.
- d. Impression of all fingers.

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Figure 6. Identification of fingers.

## Section II. FINGERPRINTING LIVING PERSONS

### 19. General Instructions

To insure identifiable and uniform results in fingerprinting, observe the following rules:

- a. Ink and print each finger so that all of the finger between the tip and the first joint and approximately 1/4 inch of the finger below the first joint are included in the print.
- b. Avoid overinking—too much ink results in smudgy, unclassifiable prints.
- c. Ink each finger on an unused portion of the ink plate. When all available inking space is exhausted, roll the inking plate to a smooth surface of ink before fingerprinting the next person.
- d. Make sure each finger is printed in its appropriate space on the form.

- e. When a finger cannot be printed because of amputation, skin condition, or presence of cast or bandage, note the condition on the form in the space provided for that finger.

- f. Examine each print as it is taken to assure that all prints are classifiable.

### 20. Gripping Methods

Grip the finger to be printed so that the maximum control of finger and minimum discomfort to the subject are assured during inking and printing. Caution subject to relax and refrain from trying to help the operator by exerting pressure, as this prevents the operator from gaging the amount of pressure needed. When inking fingers or taking impressions, in-

struct subject to look at the opposite wall and not at his hands. This will be helpful in effecting the relaxation of subject's hands. Use one of the following methods to grip the fingers—

a. *Gripping First Joint.* With the thumb and middle finger of your right hand, grip the subject's finger at the first joint. Use your left hand to hold subject's other fingers in a cuplike grasp. Use your right index finger to press down on the finger being inked and printed. Figure 7 shows the technique for gripping the first joint.

b. *Gripping Between First Joint and End of Finger.* With the thumb and index finger of your right hand, grip subject's finger below the second joint. With the thumb and index finger of your left hand, reach across and grasp subject's finger at the nail edge between the first joint and the end of the finger. Use other fingers of your right hand to control movement of subject's hand. Figure 8 shows the technique for gripping between the first joint and the end of the finger.

## 21. Printing Procedure

Fingerprint living persons as follows:

a. Place the inking plate on the edge of a table so that no strain or pressure is required to obtain uniform identifiable fingerprints.

b. Place the cardholder to the left of the ink plate. Insert the fingerprint form in the holder so that the spaces for the fingers of the right hand are centered as shown in figures 9 and 10.

### NOTE

Figure 9 shows the inking plates and cardholder from the type II kit arranged for fingerprinting living persons. Figure 10 shows the type IV kit set up for fingerprinting living persons.

c. Squeeze two to four small daubs of ink onto the inking plate, and use the roller to spread the ink thinly and uniformly. Lift the roller at the end of each stroke.

d. Make sure that the subject's fingers are clean and dry. If necessary, have the subject wash his hands in soap and water or clean his fingers by dipping them in solvent.

e. Guide the subject so that he stands in a relaxed position directly in front of, and a forearm's length away from, the inking plate.

f. Stand in front of the subject and slightly to his left. Grasp the thumb of his right hand. It may be helpful to have the subject look at a distant object while he is being fingerprinted, so that he will not tend to "help" with the process.

g. Place the subject's thumb on the inking plate so that the nail faces away from the body. Roll the thumb inward toward the subject until the nail faces the body. Be sure to roll the thumb from nail edge to nail edge.

h. Place the inked thumb in the appropriate space on the fingerprint form and print by rolling as described in g. above.

i. Place the index finger of the subject's right hand on the inking plate with the nail facing the body. Roll the finger outward until the nail faces away from the body.

j. Print the index finger in the appropriate space on the fingerprint form by rolling as described in i. above.

k. To ink and print the middle, ring, and little fingers of the right hand, repeat procedures described in i. and j. above.

l. When each finger of the right hand has been printed, move the form so that spaces provided for fingers of the left hand are centered in the card holder.

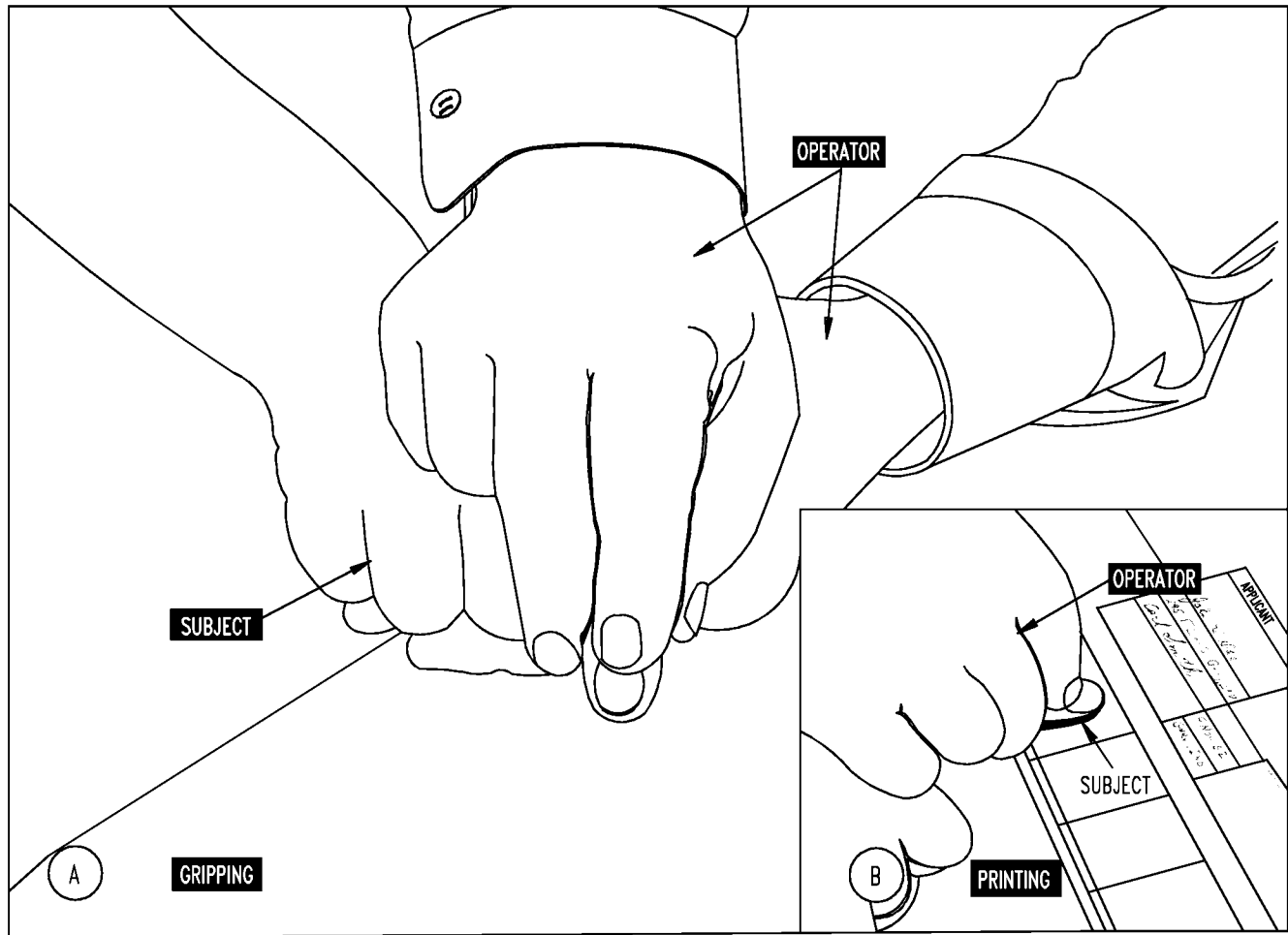
m. Ink and print rolled impressions of the thumb and other fingers of the left hand. Stand in front and slightly to the right of the subject when printing the left hand. Make sure to roll the thumb inward toward the subject and the fingers outward away from the subject.

n. When each finger of the left hand has been printed, move the form so that the spaces provided for plain impressions are centered in cardholder.

o. With your right hand, grasp the subject's right hand across the top, and extend all fingers except the thumb. Press the four fingers down on the inking plate. Do not attempt to roll.

p. Lift the four inked fingers and, holding the subject's hand so that his fingers make an angle of 45° with the bottom edge of the fingerprint form, press down in the appropriate space on the form. Use your left hand to apply light pressure to tops of the subject's fingers (fig. 11).

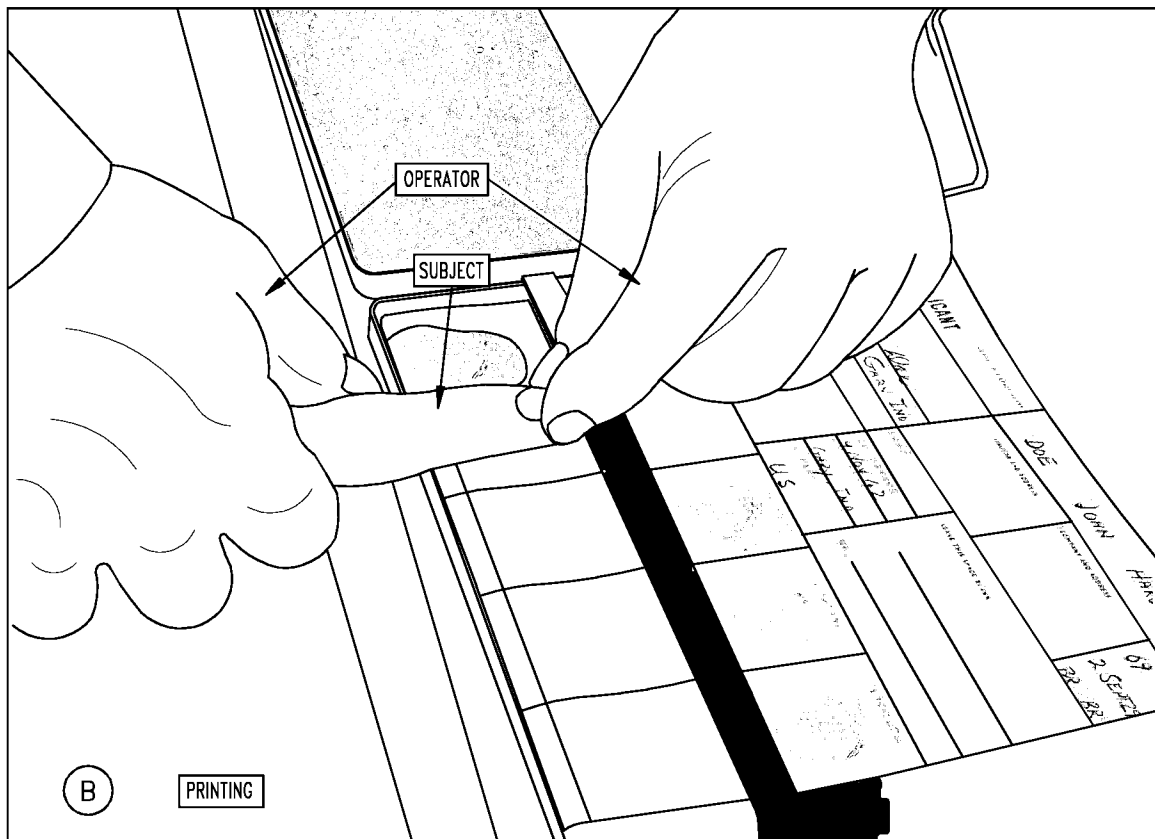
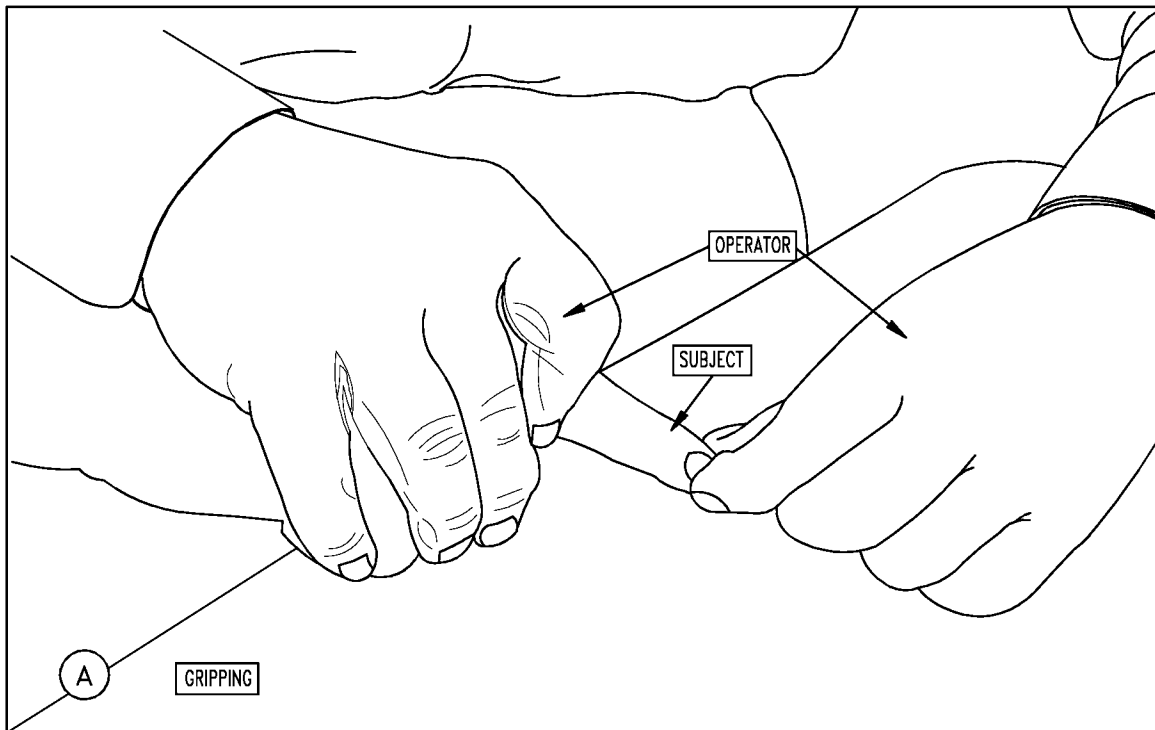
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Figure 7. Technique for gripping the first joint.

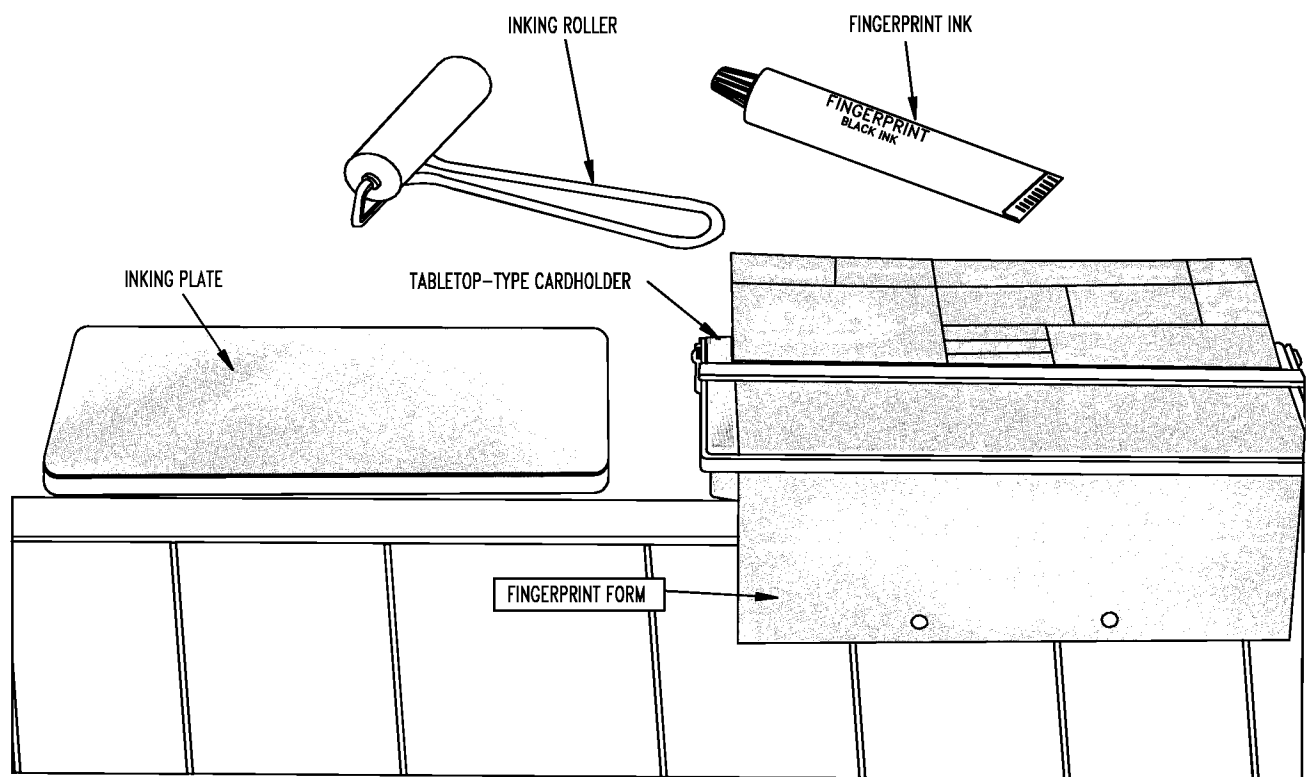




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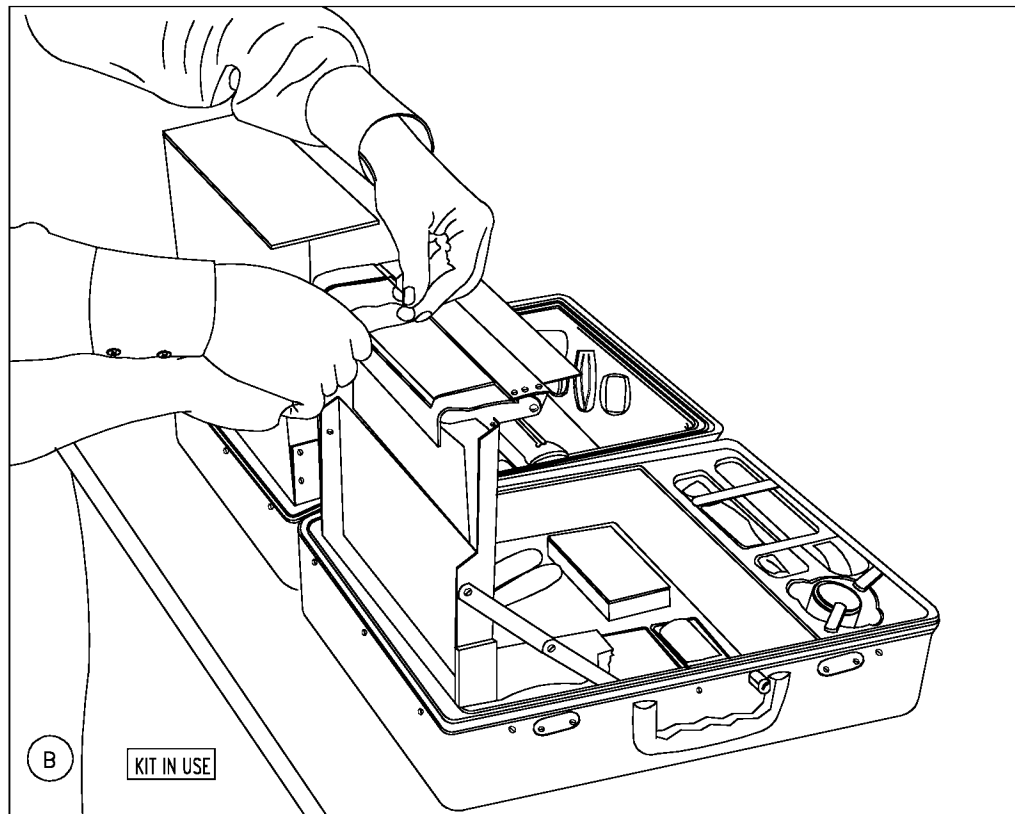
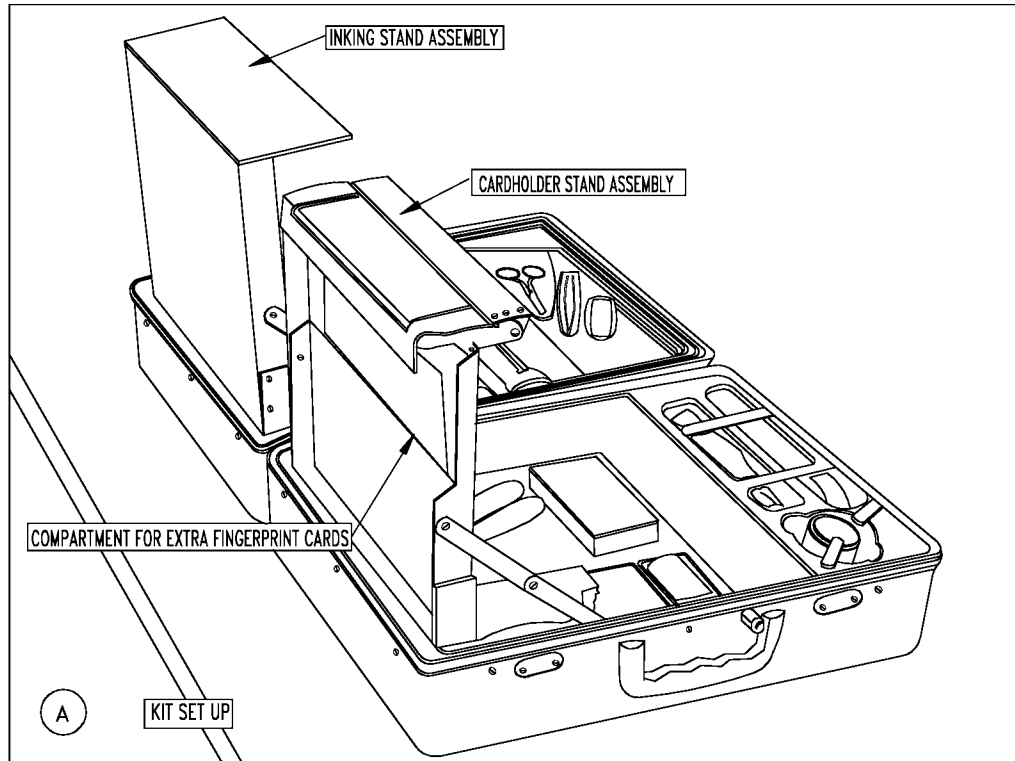
Figure 8. Technique for gripping between first joint and end of finger.

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Figure 9. Components of type II kit arranged for fingerprinting living persons.



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Figure 10. Type IV kit set up for fingerprinting living persons.

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q. Print a plain impression of the fingers of the subject's left hand as described in procedures o. and p.

r. Grasp the subject's right thumb. Holding the thumb so that the nail is on top and horizontal, press straight down onto the inking plate. Do not roll.

s. Print the right thumb, without rolling, in the appropriate space on the fingerprint form.

t. Ink the subject's left thumb and take a plain impression as described in r. and s.

u. When all rolled and plain impressions have been taken, have the subject clean his hands with soap and water, or with solvent and a dry cloth.

v. Remove the fingerprint form from its holder, taking care not to smear the prints.



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Figure 11. Printing a plain impression.

### Section III. FINGERPRINTING DECEASED SUBJECTS

#### 22. Preliminary Examination

As soon as a deceased person is located, examine the condition of the remains to determine procedures required to obtain classifiable fingerprints.

a. Examine the condition of the remains to determine whether movement to a central collecting point will result in damage to the pattern area of the fingers. If the body is badly charred, macerated, or decomposed, take fingerprints on the spot if possible. If it is certain that no damage will result from transportation, the body may be removed to a central point before fingerprinting.

b. If any fingers are missing, determine whether the finger was missing at birth or if loss occurred from amputation during life or from causes at or following death. Enter appropriate information in detail in applicable spaces on the fingerprint form.

c. Examine the condition of fingers to determine any special treatment required.

### 23. Relaxing Rigid Fingers

When stiffening of the muscles (rigor mortis) has set in, the fingers must be relaxed to permit taking of prints. Use the methods described in the following paragraphs progressively as needed. Use d. only when the fingers are fragile and there is evidence that handling will contribute to deterioration.

a. Relax the fingers by lifting the subject's arm above his head.

b. Immerse the hand and lower third of the forearm in warm water for approximately 1 minute. Dry the hand and fingers before printing.

c. Hold the hand of the subject firmly with your left hand. Grasp the finger to be straightened with the four fingers of your right hand. Place the thumb of your right hand against the knuckle of the finger to be straightened. Using your thumb as a lever, use force to straighten the finger (fig. 12).

d. Using an operating knife or a razor blade, make a deep cut at the second joint on the inner side of each of the four fingers. They can now be straightened with the application of force. If the thumb is cramped or bent, straighten it by making a deep cut between the thumb and the index finger.

### 24. Removing Wrinkles

Wrinkles which prevent the taking of classifiable fingerprints may often be eliminated by pulling

the skin tight across the pattern area when printing. When this procedure fails to result in classifiable prints, proceed as follows:

a. Fill a hypodermic syringe with hot water or glycerin.

b. Insert the hypodermic needle at the first joint and up into the tip of the finger (fig 13), taking care to keep the needle below the surface of the skin. Inject sufficient fluid to round out the pattern area. To prevent seepage of injected fluid, tie a piece of string tightly around the finger just above the point at which the needle entered the finger.

c. If injection at one point does not produce desired results, inject the fluid at such other points of the finger as the extreme tip (fig. 14) or the sides until you attain suitable results.

### 25. Printing True Impressions

A true fingerprint impression may be obtained from fingers attached to remains, from amputated fingers, or from skin which has been cut away from fingers, provided the pattern area is intact and reasonably clear. To make prints from fingers attached to remains, proceed as described in a. through g. below. To print amputated fingers, proceed as described in h. below.

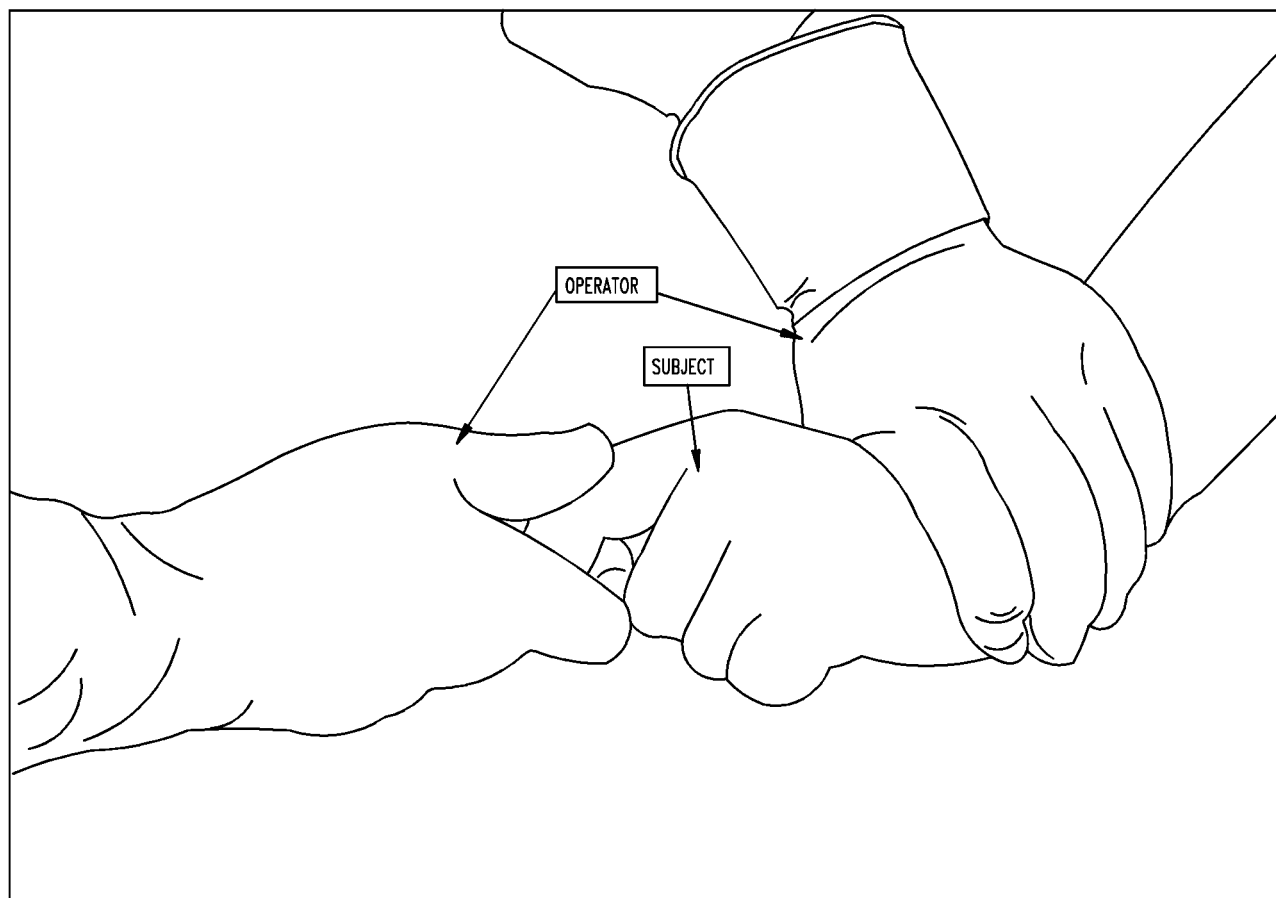
a. Place the subject face up on a table, if available. Extend his arms above his head and turn palms up. If you prefer, place the subject face down with arms above his head and his palms turned down. Extending the subject's arms above his head relaxes the fingers, facilitating printing.

b. Use a clean cloth and soap and water to clean all dirt, silt, grease, and similar foreign matter from the subject's fingers. Where the skin is firm, use a soft brush. Where the skin is not firm, use a cotton swab. Brush or swab strokes should follow the ridge design of the finger to remove all dirt from the grooves.

c. If using the type II kit, ink the inking plate with fingerprint ink. If using the type IV kit, ink the single-finger inking pad with post-mortem ink.

d. Insert a folded fingerprint form or a strip of good quality paper approximately 2 inches wide and 8 inches long into the slots of the shove-type card holder.

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Figure 12. Forcibly straightening rigid finger.

e. From a position near the subject's head, grasp the subject's arm and extend it farther above his head.

f. While holding the arm in an extended position, ink each finger by rolling the inking plate roller or pad against the finger. Be sure to ink the entire area between the first joint and the end of the finger from nail edge to nail edge.

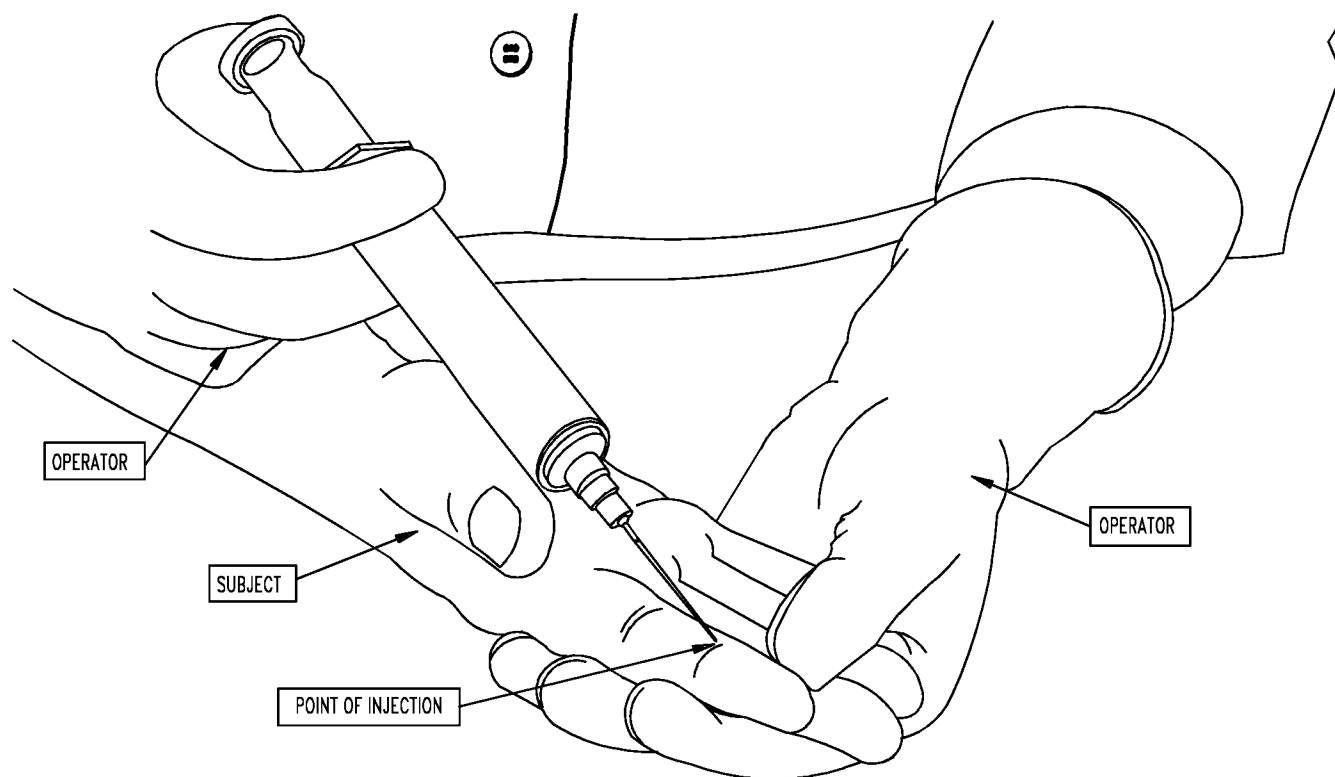
g. The shovel-type cardholder, because of its shape, eliminates the need for rolling the finger. Placing the finger in the hollow of the holder results in a rolled impression. Center the proper space on the form or paper strip in the hollow of the shovel-type cardholder. Grip the cardholder firmly and with the end of operator's right thumb hold the edge of the strip of paper so that it will not move, then press the subject's thumb into the hollow of the holder (fig. 15). Repeat the printing operation with each finger in the proper space on the form or on a new space on the paper strip. When using a paper strip for fingerprinting the

subject, be sure to label each print as soon as it is taken. When the entire set is completed, paste each print in its proper place on the fingerprint form.

h. Ink and print amputated fingers as you would those of a living subject. To print removed skin, place skin over your own thumb or index finger and hold in place with the thumb and index finger of your other hand while inking and printing.

#### NOTE

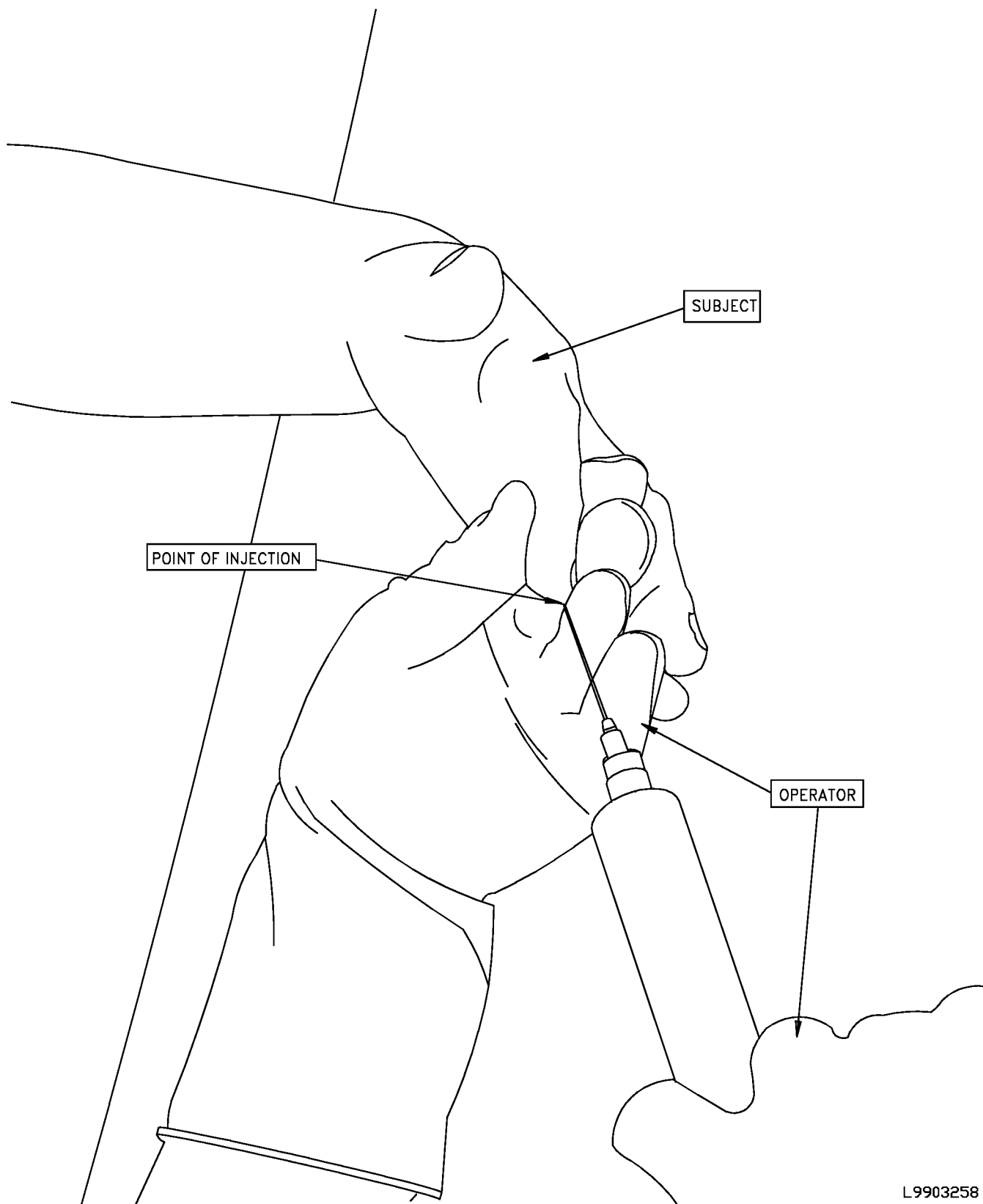
When working with the type II kit, use the included mouth examining mirror to complete a dental chart for each deceased subject subsequent to fingerprinting. Instructions for completing the dental chart are available in FM 10-63 and other appropriate Department of the Army publications.



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Figure 13. Injecting fluid at joint of finger.

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Figure 14. Injecting fluid at tip of finger.



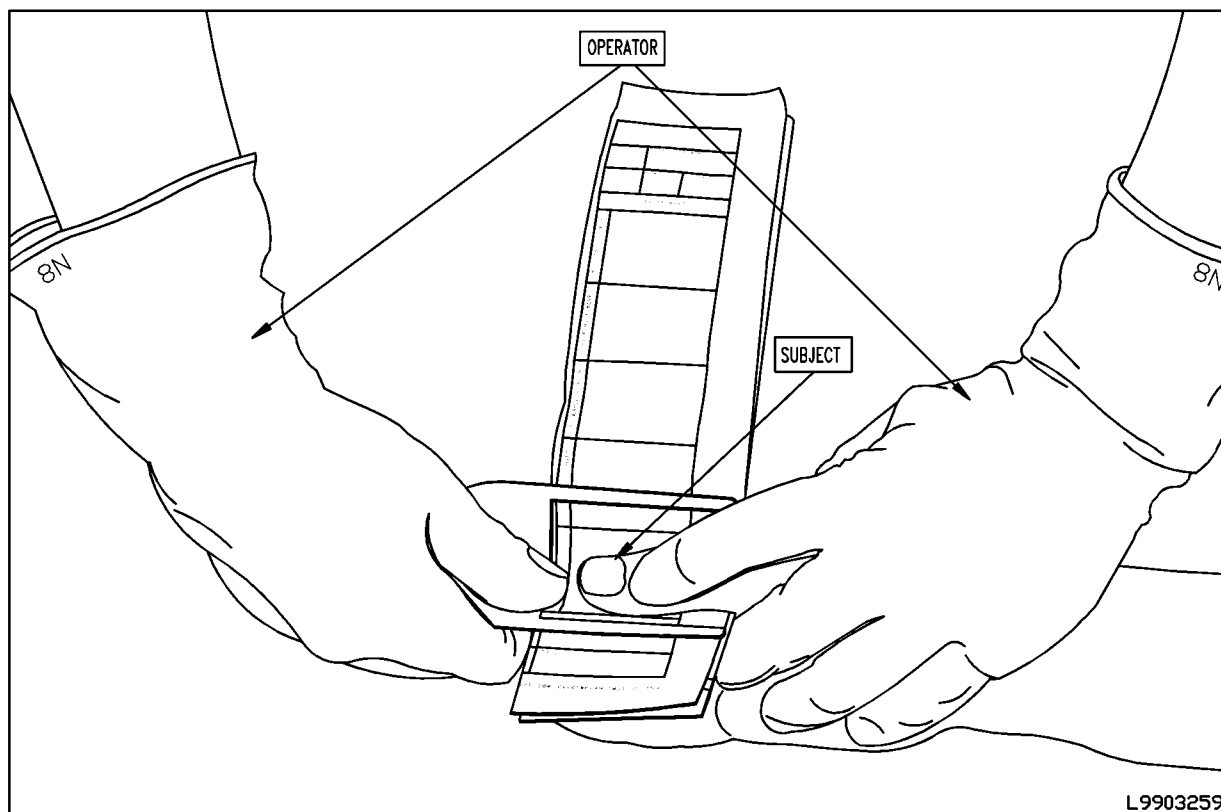


Figure 15. Using shovel-type cardholder.

#### Section IV. DEVELOPING LATENT FINGERPRINT IMPRESSIONS

##### 26. General

A latent fingerprint is a fingerprint left on an object when that object has been handled. It is the result of the ridged surface of the skin coming in contact with another surface and leaving there either a deposit having the same pattern as the ridges of the skin or an indentation conforming to the ridges of the skin. A latent fingerprint may be classified as visible (i.e., distinct to the naked eye), very faint, or invisible.

a. Visible latent fingerprints are usually made by fingers impregnated with such substances as grease, blood, or dirt or by fingers contacting some soft or pliable surface like putty, soap, or wax. Never attempt to develop visible latent fingerprints further. Arrange to have them photographed as they are.

b. Latent fingerprints left by fingers bearing traces of perspiration or body oils are usually

invisible or very faint. These fingerprints can be developed (made visible) by means of chemicals or powders. Arrange to have them photographed as soon as possible.

##### 27. Locating Invisible or Very Faint Latent Fingerprints

The presence of latent fingerprints may be revealed by directing a beam of light at different angles (cross-lighting) toward a surface, or by viewing the surface through a magnifying glass. If fingerprints are not found by cross-lighting or by use of a magnifying glass a "blind search" should always be conducted with brush and powder.

##### 28. Developing Latent Fingerprints by Powdering

Use the material furnished in the appropriate fingerprint kits to develop fingerprints on hard or nonabsorbent surfaces. The technique

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used in the application of powders is usually determined by individual experience. If a method of applying powders produces good results, continue to use that method. There are, however, certain fundamentals which must be followed if the desired results are to be obtained.

a. Use light powders on dark surfaces; dark powders on light surfaces. When not sure which powder is most suitable, touch a finger to an unimportant area of the same surface and determine which powder best develops the ridges and the color contrast.

- (1) Almost all latent fingerprints can be developed either by black or by gray powder. Latent fingerprints can be developed on reflective surface such as mirrors and chromium objects by either black or gray powders. Because such reflective surfaces photograph black, however, gray powder will offer the best contrast.
- (2) A medium gray powder will photograph either black or white, depending upon the background; therefore, it is useful for developing fingerprints on multicolored surfaces.
- (3) Fluorescent powders, too, are useful for developing latent fingerprints on multicolored surfaces. Make sure that fingerprints developed with these powders are photographed with ultra-violet ray equipment. Because fluorescent powder tends to adhere to the background, it is important that an effort be made to brush away all excess powder, lest a developed fingerprint be "fuzzy" or indistinct.

b. To develop the fingerprint, hold the fingerprint brush lightly. Apply powder to the object evenly and smoothly with the tip of the brush. Take care to brush the latents with the tips of the bristles, using short, quick strokes.

c. After the latent fingerprint has become visible, "dress" it by gently brushing away all excess powder adhering between the ridges. This step is extremely important, because the excess powder may destroy the clarity of the ridge detail and render the fingerprint useless for identification purposes. As you work, check the powdering operation carefully with a reading glass to be certain of securing an even distribution of powder and a minimum of alteration.

d. In some cases it is not possible to remove the excess powder by means of a brush. This is particularly true of oily latent fingerprints developed on glass or metal surfaces. When this condition occurs, attempt to remove the excess powder with lifting tape. In many instances the latent fingerprint will not be removed entirely by the lifting tape and the fingerprint remaining on the object will be sufficiently clear and distinct to permit identification.

e. Arrange to have all latent fingerprints which have been developed with fingerprint powder photographed on the original object, if possible. When the latent print cannot be photographed in its original position, it may be lifted and then photographed.

## 29. Lifting Latent Fingerprints

After latent fingerprints developed with fingerprint powder have been photographed, they may be lifted. Latent fingerprints on small movable objects which may be used as exhibits should be left in place without lifting so that their existence and location may be pointed out to a board or court. Only fingerprints that are on such hard nonporous surfaces as glass or metal can be lifted. To lift a fingerprint use either a rubber lifting pad or transparent lifting tape provided in the appropriate fingerprint kit.

a. *Using Rubber Lifting Pad.* To use a rubber lifting pad, proceed as follows:

- (1) Select a lifting pad to contrast with the developed fingerprint impression. Cut a piece of lifting pad large enough to cover the impression amply. If several prints appear to have been made simultaneously by adjacent fingers, lift them on a single lifting pad to facilitate identification.
- (2) Carefully peel the cover from the lifting pad. To do this, insert your thumbnail under a corner of the celluloid and pull it toward the opposite corner. Pull gently and steadily, taking care not to break or tear the celluloid. Do not stop while removing the celluloid, or a line to which the powder will not adhere will be left on the pad.

- (3) Apply the adhesive side of the lifting pad to the fingerprint and press it down gently and evenly, sliding a finger back and forth across the surface of the pad. Take care that the lifter does not slip or wrinkle. If pressure is applied unevenly, air bubbles may form and be retained under the pad, producing a blank area in the lifted fingerprint. When an attempt to lift a fingerprint impression fails, the latent fingerprint is lost and cannot be regained.
  - (4) Peel the pad gently from the surface, and replace the celluloid cover to protect the lifted fingerprint. Throughout the process, be careful not to leave your own prints on the adhesive surface of the lifting pad.
  - (5) Affix an identification tag to every lifted print at the time that it is lifted. Place your initials, the date, and the place of lifting on the tag and insert the tag between the celluloid and the lifting pad at a corner. Keep notes to record the exact place on an object or surface from which the print was lifted.
- b. *Using Transparent Lifting Tape.* To use the transparent lifting tape, proceed as follows:
- (1) Slowly and gently unwind several inches of tape. Do not cut the tape from the roll. Hold the roll in one hand and the tape's free end in the other. Place the tape, sticky side down, about one-half inch in front of the latent fingerprint. Smooth the strip of tape backward over the fingerprint with a firm, even pressure, taking care to expel any air bubbles that may be trapped beneath.
  - (2) Remove the tape from the surface by pulling the roll slowly and steadily away from the surface. Allow a small end or corner of the tape to adhere to the surface. Clip off the unused portion of the tape, fold the loose end back on itself to make a nonadhesive tab, and put the roll of tape away.
  - (3) Finish removing the transparent tape which now bears the lifted fingerprint. Back the tape with a celluloid cover, if available. If a celluloid cover is not available, back the lifted print with smooth, grainless heavy paper or cardboard. Select the backing in either black or white, to contrast with the powder used.

### 30. Developing Latent Fingerprints by Iodine Fuming

Use the iodine fuming tube to develop fingerprints on silk, cotton, paper, or any absorbent surface. Handle all specimens with tweezers or rubber gloves. To use the iodine fuming tube, proceed as follows:

#### NOTE

The iodine fuming apparatus furnished with the type IV kit is called an iodine fuming gun. Although slightly different in appearance, it operates in the same manner as the iodine fuming tube furnished with the type III kit.

- a. Load the tube carefully. Follow the diagram shown in figure 16.
- b. While holding the nozzle about one-half inch from the area to be inspected, blow into the rubber tubing. Shift the position of the nozzle back and forth until the entire area has been fumed for several minutes. As soon as you locate a latent print, further accentuate all ridges by repeated application of the fumes.
- c. When the fingerprint is full developed, photograph it at once. Iodine prints begin to fade as soon as the fuming is stopped. If it is desirable to retain prints developed on paper, place the print between two pieces of glass and bind the edges with adhesive tape to make an airtight container.
- d. After developing and photographing prints, clean the fuming tube and wash your hands. Close the bottles of calcium chloride and iodine crystals tight, clean the exterior of the bottles, and put all equipment away.

#### CAUTION

Iodine fumes may irritate the skin and respiratory tract and may stain clothing. Wear rubber gloves, if available, while using the fuming equipment. Be sure that your hands are free of open cuts, and exercise care to prevent fumes from contacting skin or clothing. To avoid inhaling iodine fumes, remove the rubber tubing from your mouth before taking a breath. When handling iodine crystals, take care not to spill the crystals because they may damage cloth, wood, steel, and other materials.

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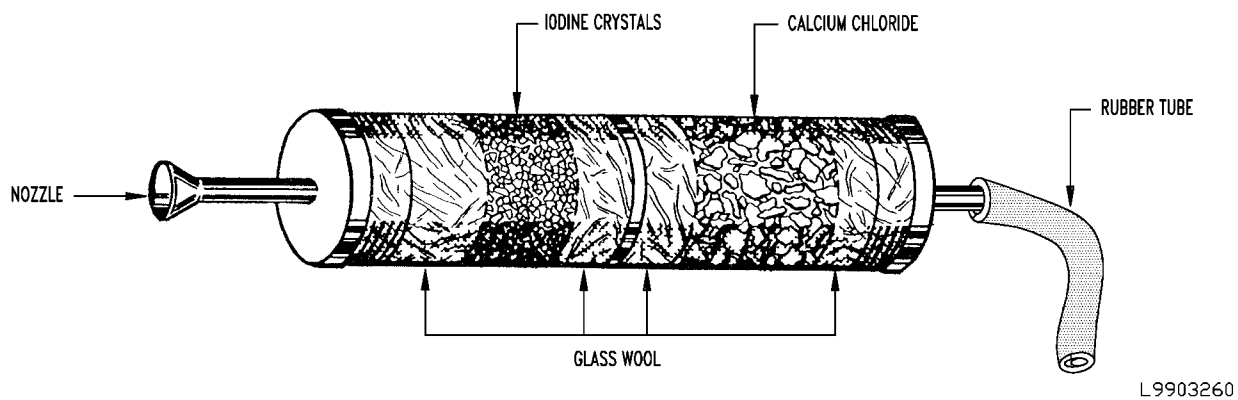


Figure 16. Diagram of iodine fuming tube.

## CHAPTER 4

### PREVENTIVE MAINTENANCE, SHIPMENT, STORAGE, AND DEMOLITION

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#### 31. Preventive Maintenance

Observe the following simple preventive maintenance rules as they apply to your fingerprint identification kit:

a. Keep the case as clean as possible. Remove all grease, dirt, ink, paper, and other foreign matter.

b. Clean the roller and inking pad or inking plates thoroughly with isopropyl alcohol or dry cleaning solvent after each use. Keep the inking plates clean, smooth, glossy, and free of scratches. Keep the tube of ink as clean as possible to avoid staining the kit.

c. Keep bottles of powder tightly capped. Clean brushes after each use.

d. Keep iodine crystals from contact with the kit. Clean the iodine fuming tube after use. Keep the glass wool clean and tightly covered. Do not allow iodine crystals to become mixed with calcium chloride crystals.

#### 32. Packaging for Shipment

The following instructions are recommended as a guide for preparing the fingerprint kits for transportation—

##### a. *Type I Kit.*

- (1) Apply a cellulose strip closure over the screw cap of the fingerprint powder and extend it down on the bottle.
- (2) Other components will not require individual packaging. Place components in the compartments provided in the duck case (fig. 1), fold down the flaps, and close the case securely with the snap fastener.
- (3) Use a snug-fitting two-piece full telescope box conforming to the original shipping container for packaging.

##### b. *Type II Kit.*

- (1) Protect the bottle by wrapping it with cellulose wadding or clean improvised material such as absorbent cotton.
- (2) Protect the mirror end of the mouth examining mirror with several thicknesses of tissue, and fasten securely with tape.
- (3) Other components will not require individual protection. Place components in the kit as indicated in figure 2.
- (4) Package the kit in a snug-fitting fiber-board box.

##### c. *Type III Kit.*

- (1) Apply a cellulose strip closure over the screw cap of the calcium chloride bottle and extend it down on the bottle. Wrap cellulose wadding or clean improvised material such as absorbent cotton around the bottle to provide a snug fit when the bottle is placed in the compartment of the kit.
- (2) Clean outside of the bottle of iodine crystals thoroughly and seal and wrap the bottle as indicated in (1) above.
- (3) Completely inclose the reading glass in two 1/4-inch thicknesses of cellulose cushioning material or improvised material.
- (4) Wrap the plastic fuming tube in a 1/8-inch layer of cellulose wadding or improvised material. Extend the wadding 2 inches beyond the ends of the tube to provide a snug fit when placed in the compartment provided in the kit.
- (5) Other components require no individual packaging. Place components in the kit as indicated in figure 3.

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- (6) Use a snug-fitting fiberboard box to inclose the kit.

d. *Type IV Kit.*

- (1) Components require no individual packaging. Simply assure that all components are clean and that all bottles are tightly capped, then place components in the kit as indicated in figure 4.
- (2) Use a snug-fitting fiberboard box to inclose the kit. Protect the handle and locks of the kit by means of built-up pads or cells made from the same material as the box.

### 33. Packing for Shipment

Pack fingerprint kits in snug-fitting fiberboard boxes or nailed wooden boxes. If the original packing material was saved, use it for repacking. If the original material is not available, use material as similar to the original as possible.

### 34. Limited Storage

When the fingerprint kit is not in use, store it in a clean dry place. Do not place other items on top of it. Position the kit so that no strain is placed on the contents and so that containers are right side up if possible.

### 35. Demolition

Demolition should be carried out only on orders of the commanding officer. The purpose of demolition is to prevent the enemy from using or salvaging this equipment or turning fingerprint records to his advantage.

a. *Kits.* Smash fingerprint kits or destroy them by fire or explosives.

b. *Records.* Although every effort should be made to save fingerprint records and to prevent them from falling into the possession of the enemy, destroy them when necessary by burning.

**APPENDIX  
REFERENCES**

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|               |  |
|---------------|--|
| AR 320-5      | Dictionary of United States Army Terms.  |
| AR 320-50     | Authorized Abbreviations and Brevity Codes.  |
| AR 606-5      | Identification Cards, Tags, and Badges.  |
| AR 606-15     | Preparation of Fingerprint Record.   |
| AR 638-40     | Care and Disposition of Remains.   |
| AR 700-58     | Report of Damaged or Improper Shipment.  |
| DA Pam 108-1  | Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.  |
| DA Pam 310-1  | Index of Administrative Publications.  |
| DA Pam 310-2  | Index of Blank Forms.  |
| DA Pam 310-3  | Index of Training Publications.  |
| DA Pam 310-4  | Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders. |
| DA Pam 310-30 | Index of Supply Manuals—Quartermaster Corps.   |
| FM 10-63      | Handling of Deceased Personnel in Theaters of Operations.  |
| FM 19-20      | Military Police Investigations.  |
| FM 21-5       | Military Training.   |
| FM 21-6       | Techniques of Military Instruction.  |
| TM 10-270     | Repair of Quartermaster Items of General Equipment.  |
| TM 10-286     | Identification of Deceased Personnel.  |
| TM 38-230     | Preservation, Packaging, and Packing of Military Supplies and Equipment.   |
| TM 743-200    | Storage and Materials Handling.  |
| TM 743-200-1  | Storage and Materials Handling.  |
| TB PMG 7      | Fingerprints.  |

