



# Standard Guide for Examination of Mechanical Checkwriter Impressions<sup>1</sup>

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## 1. Scope

1.1 This guide provides procedures for examinations that should be used by forensic document examiners (Guide E444) for examinations and comparisons involving mechanical checkwriters and their impressions (exclusive of rubber stamp checkwriter impressions or computer generated checkwriter impressions).

1.2 These procedures are applicable whether the examination(s) and comparison(s) are of questioned and known items or of exclusively questioned items.

1.3 These procedures include evaluation of the sufficiency of the material available for examination.

1.4 The particular methods employed in a given case will depend upon the nature and sufficiency of the material available for examination.

1.5 This guide may not cover all aspects of particularly unusual or uncommon examinations.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

E444 Guide for Scope of Work of Forensic Document Examiners

E1732 Terminology Relating to Forensic Science

E2195 Terminology Relating to the Examination of Questioned Documents

## 3. Terminology

3.1 *Definitions*—For definitions of terms in this Guide, refer to Terminology E1732 and Terminology E2195.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *blemish, n*—a small extraneous spot found near inked regions of checkwriter impressions that is characteristic of machines that use ribbons as their ink source.

3.2.2 *checkwriter, n*—a device manually or electrically powered or computer generated, designed to ink, emboss, print, perforate, or shred a monetary value, along with other peripheral information, onto a document.

3.2.3 *impression, n*—an image formed by pressure on the document.

3.2.4 *impression format, n*—the manner in which the paper is embossed or shredded.

3.2.5 *individual prefix, n*—a prefix especially designed for a particular customer.

3.2.6 *payee perforator, n*—an optional device on a checkwriter that perforates or shreds a pattern above the numeric impression region for the purpose of protecting the payee entry from alteration.

3.2.7 *perforation, n*—penetration through the document.

3.2.8 *platen, n*—a bar-shaped object that pushes the paper stock against the typeface and provides the pressure necessary to obtain an impression.

3.2.9 *prefix, n*—the portion of the checkwriter impression located immediately to the left of the numeric value.

3.2.10 *printing element, n*—the parts of the total checkwriter impression that are not parts of the prefix which may encompass the currency type, decimal points, and commas.

3.2.11 *ribbon shift, v*—the movement of a multi-colored inking ribbon allowing for a change in color to manifest itself in an impressed character.

3.2.12 *segment, n*—a single device on which is forged or attached a set of numerals or symbols which can be set by the operator in establishing an impression value. On some machines a different segment is used for each digit.

3.2.13 *variation, n*—imprecise duplication in multiple impressions from the same machine.

## 4. Significance and Use

4.1 The procedures outlined here are grounded in the generally accepted body of knowledge and experience in the field of forensic document examination. By following these

procedures, a forensic document examiner can reliably reach an opinion concerning whether two or more impressions were created by the same checkwriter, whether a particular checkwriter created the specific impression, or the determination of the make and model of checkwriter that made an impression.

## 5. Interferences

5.1 Items submitted for examination may have inherent limitations that can interfere with the procedures in this guide. Limitations should be noted and recorded.

5.2 Limitations can be due to submission of non-original documents, limited quantity or comparability, or condition of the items submitted for examination (for example, impressions made with over-inked or inadequately inked checkwriters, partially imprinted impressions, or variations in surface texture). Such features are taken into account in this guide.

5.3 The results of prior storage, handling, testing, or chemical processing (for example, for latent prints) can interfere with the examination of certain characteristics. The effects can include, but are not limited to, flattening of the embossment or impression, partial destruction of the paper, stains, and deterioration of the ink. Whenever possible, document examinations should be conducted prior to any chemical processing. Items should be handled appropriately to avoid compromising subsequent examinations.

## 6. Equipment and Requirements

6.1 Appropriate light source(s) of sufficient intensity to allow fine detail to be distinguished.

NOTE 1—Natural light, incandescent or fluorescent sources, or fiber optic lighting systems are generally utilized. Transmitted illumination, side lighting, and vertical incident lighting have been found useful.

6.2 Magnification sufficient to allow fine detail to be distinguished.

6.3 Other apparatus as appropriate.

6.4 Imaging or other equipment for recording observations as required.

6.5 Checkwriter classification reference materials can aid in the determination of a manufacturer.

6.6 Sufficient time and facilities to complete all applicable procedures.

## 7. Procedure

7.1 All procedures shall be performed when applicable and noted when appropriate. These procedures need not be performed in the order given.

7.2 Examinations, relevant observations, and results shall be documented.

7.3 At various points in these procedures, a determination that a particular feature is not present or that an item is lacking in quality or comparability may indicate that the examiner should discontinue or limit the procedure(s). It is at the discretion of the examiner to discontinue the procedure at that point and report accordingly or to continue with the applicable procedures to the extent possible. The reasons for such a decision shall be documented.

7.4 Determine whether the submitted questioned impression(s) were produced by a checkwriter. If not a checkwriter impression (original or copy), discontinue examination and report accordingly.

7.5 Determine whether the examination is a comparison of questioned impressions; a comparison of a questioned impression(s) with a known impression(s); or a comparison of a questioned impression(s) with a checkwriter(s).

7.6 Determine whether the submitted questioned impression(s) is suitable for comparison. If it is not suitable for comparison, discontinue the procedure and report accordingly. Factors that affect the suitability include clarity, detail, degree of inking or condition of the document.

NOTE 2—Examination of the original is preferable and consideration should be given to obtaining the original, if not submitted.

NOTE 3—Limited sufficiency and comparability of known specimens can be a restrictive factor in an examination and its conclusions but does not necessarily require the discontinuation of the examination.

7.7 If no known specimen impressions or checkwriter(s) were submitted, go to 7.13.

7.8 If a known document(s) is submitted, determine whether the known document(s) is suitable for examination, or comparison, or both. If it is not suitable, discontinue the procedure and report accordingly. Factors that affect the suitability include clarity, detail, or condition of the document.

7.9 If the original is not submitted, evaluate the quality of the best available reproduction to determine whether significant details have been reproduced with sufficient clarity for comparison purposes and proceed to the extent possible. If the reproduction is not of sufficient clarity for comparison purposes, discontinue these procedures and report accordingly.

7.10 If a checkwriter(s) is submitted, its condition should be noted.

7.11 Determine if any of the known exemplar impressions are suitable for comparison.

7.12 If none of the known specimen impressions are suitable for comparison and no others are obtained, discontinue these procedures and report accordingly.

7.13 Conduct a side-by-side comparison of the questioned impressions, or the questioned impression to the known impressions and/or to the checkwriter(s).

7.13.1 Compare class characteristics (for example, the impression format, typeface design and size, printing element characters, prefix, payee perforator, platen impressions and inking system.). If different, discontinue and report accordingly.

NOTE 4—Prefixes may be removed and replaced in certain machines. Payee perforator may be inactivated. These factors should be considered in any evaluation of characteristics. Individual prefixes may be unique to one machine. Manufacturers may also have records of the original purchaser of a certain individual prefix.

7.13.2 Compare individualizing characteristics in common such as wear and damage defects, perforation patterns, misalignments, reproducible blemishes, ribbon shift, impression voids, improper inking, extraneous inking, and individual prefix features.

7.14 Evaluate similarities, differences, and limitations. Determine their significance individually and in combination.

7.15 Reach a conclusion and report accordingly.

## 8. Report

8.1 Conclusion(s), opinion(s), or findings resulting from the procedures in this guide may be reached once sufficient examinations have been conducted. The number and nature of the necessary examinations is dependent on the question at hand.

8.2 The bases and reasons for the conclusion(s), opinion(s), or findings should be included in the examiner's documentation and may also appear in the report.

8.3 *Identification*—When the examination reveals no significant, inexplicable differences between two or more items and there is significant agreement in all individualizing characteristics, an identification is appropriate (that is, compared impressions or compared impression and checkwriter contain substantial significant characteristic similarities; there are no significant, inexplicable differences; and no limitations associated with absent characteristics).

8.4 *Elimination*—If significant, inexplicable differences between two or more items are found at any level of the analyses, an elimination is appropriate (that is, the impressions contain substantial significant differences; and there may be limitations associated with absent characters or individualizing characteristics; there may be similarities).

8.5 *Qualified Opinions*—When there are limiting factors and the examination reveals similarities or differences of limited significance between two or more items, the use of qualified opinions can be appropriate (that is, the impressions or observed features contain limited similarities or differences; or limitations associated with absent characters, individualizing characteristics, or distorted impressions are present or; a combination of these). Qualified opinions require explanation of the limiting factors.

8.6 *No Conclusion*—When there are significant limiting factors, a report that no conclusion can be reached is appropriate. This opinion requires explanation of the limiting factors.

## 9. Keywords

9.1 checkwriter impressions; checkwriters; forensic sciences; questioned documents

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