

	<b>QD-PM 7.0 Typewriter Ribbon Examinations</b>	
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## 7.1 Overview

Examinations of typewriter ribbons can involve many facets. Limitations can be placed upon these examinations by influences such as the type of ribbon, type of machine, or other factors. Information provided in this procedure gives an overview of the process, considerations and instrumentation used. Analysis schemes for each case will be implemented depending upon the type of evidence presented.

## 7.2 N/A

## 7.3. Instrumentation

### 7.3.1 Microscopes

[Leica Comparison Microscope](#)  
[Lumina FO-150 Illuminator](#)

### 7.3.2 Ribbon Readers

Various laboratory-built and a commercially-built items designed to allow for the transcription of text on typewriter ribbons, such as:

[RAW-1 - Validity Study of the RAW-1 Ribbon Analysis Workstation](#) - by Robin Hunton and James Puckett  
 - AAFS presentation (1993)

[Nelson \(1\) - The No Strain, No Pain Rapid Ribbon Reader](#) - by Thomas Nelson - MAFS presentation

[Nelson \(2\) - Home-Built Bench Tips](#) - by Thomas Nelson - AAFS presentation

## 7.4 Method

Typewriter Ribbon examinations are performed per [ASTM E2287-09 Standard Guide for Examination of Fracture Patterns and Paper Fiber Impressions on Single-Strike Film Ribbons and Typed Text](#)

## 7.5 Additional Guidance and Considerations

### 7.5.1

In most cases, the suspect machine itself should be submitted for examination.

- a) The machine should be confiscated as soon into the investigation as possible, before the ribbon can be discarded or subjected to additional typing.

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- b) Delay taking standards from the submitted ribbon until after it is examined.
- c) Mark the position of the ribbon in the machine so that sample typing can be distinguished from earlier typing.
- d) Ask the investigator to search for and submit any spare ribbon reels or cartridges that might be associated with the suspect typewriter.

## 7.5.2

Study the questioned document to ascertain what should be found on the suspect ribbon.

- a) Note the type style.
- b) Determine the type of ribbon used:
  - (1) Cloth or fabric.
  - (2) Single-use carbon film ribbon or tape.
  - (3) Cover-up or lift-off correction tape.
- c) Search for and record the locations of punctuations, typist errors, and corrections.

## 7.5.3

Examine the suspect ribbon(s).

- a) Determine the typing pattern on the ribbon:
  - (1) Left to right or right to left.
  - (2) Horizontal.
  - (3) Vertical/horizontal combination.
- b) Attempt to locate and record the questioned text in the ribbon.
  - (1) If found, determine that it is not there by accident or design (by the earlier production of typing samples, etc.)
  - (2) Make note of errors and corrections.
- c) Considerations when examining multiple-use cloth or fabric ribbons:
  - (1) Multiple-use ribbons are usually of little value.
  - (2) If new, can sometimes observe and determine the text of typing.
  - (3) Can sometimes determine the thread count.
  - (4) Can do ink comparison/differentiation tests.
- d) Considerations when examining single-use carbon film ribbons or tapes:
  - (1) These types of ribbons tend to exhibit the most significant types of identification characteristics.
  - (2) Making a photographic "contact print" can aid in the examination of a single-use ribbon.

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- (3) Using transmitted light and magnification, cross-match paper fiber impressions that have been transferred from the questioned document to the ribbon.
- (4) Using magnification, attempt to make "fracture matches", where a portion of the carbon medium breaks off from the character impressed onto the questioned document and stays on the ribbon or tape.
- (5) Locate and record typeface and ribbon escapement defects.
  - (a) Most common on typebar machines.
  - (b) Occurs when a second letter types through a portion of the ribbon which has already been used to print the letter just prior.
  - (c) The second letter (on the questioned document) will exhibit a portion of the outline of the letter prior to it.
- (6) Can attempt routine pigment (ink) comparison/differentiation tests.

#### 7.5.4

Examine lift-off and cover-up correction tapes from the suspect machine.

- a) Attempt to identify and match the sequence of corrections as found on the questioned document.
  - (1) Must be numerous and unique beyond the point of coincidence.
  - (2) Must be able to determine that the same sequence is not there by accident or design (by the earlier production of samples, deliberate intent to mislead the examiner, etc.).
- b) Using magnification, attempt to make "fracture matches" of incomplete lift-offs, i.e., where a portion of the incorrect character remaining on the questioned document matches the portion on the correction tape.
- c) Using magnification, cross-match paper fibers from the questioned document with impressions of those fibers in the backside of characters removed from the document by the lifting tape.
- d) Using magnification, attempt to make "fracture matches" of cover-up material on the questioned document with the areas where it flaked off from the cover-up type tape.

### 7.6 Photography

Photographic techniques employed in this type of examination are based upon separate instruction in the area of photography and the use of various types of photography, which is included in the examiner's initial training and ongoing during the course of their career. This includes keeping abreast of photographic technology and forensic photography techniques.

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## 7.7 References

[Paper Fiber Impressions on Carbon Tape Ribbons](#) - by G.H. Hahn, Journal of Forensic Sciences Vol. 19 No. 1 (1974)

[IBM Correcting Selectric Typewriter: An Analysis of the Use of the Correctable Film Ribbon in Altering Typewritten Documents](#) - By Casey-Owens & Purtell, Journal of Forensic Sciences Vol. 21 No. 1 (1976)

[Reading Carbon Ribbons From Typewriters Made Easy](#) - by Thomas Van Valkenburgh

[Identification of Indented Typewritten Entries with Characters Present on a Lift-Off Correction Ribbon](#) - by Steven Grantham (FBI) (1992 - ASQDE Meeting)

ASTM International: **E2287-09 Standard Guide for Examination of Fracture Patterns and Paper Fiber Impressions on Single-Strike Film Ribbons and Typed Text**