

## 3. FILM HANDLING AND INSPECTION

Film is fragile and vulnerable to the many types of damage and decay described in chapter 2. However, with careful handling and a few pieces of specialized equipment, preservationists can look at film safely and determine what further actions are needed to protect the material. This chapter outlines the steps for handling films during viewing and inspection. It also describes procedures for making simple repairs and cleaning film.<sup>1</sup>

### 3.1 BEFORE YOU START

Safe film handling requires specialized equipment and supplies. While several items are already part of the toolbox of library, archive, and museum professionals, others are specific to the motion picture. Film-handling equipment and supplies can be purchased from the vendors listed in appendix D. Institutions without these basics sometimes start by arranging to use equipment at a local film facility, perhaps a campus filmmaking department or a nearby film repository.

Manufacturers make film-handling equipment for every budget. Equipment can also be acquired secondhand. Many larger film and video supply houses offer refur-



Film measuring equipment (clockwise from left): 16mm footage counter, 35mm footage counter, marking pen, shrinkage gauge, loupe, and film rulers.

1. The primary published sources consulted for this chapter were Edward Blasko, Benjamin A. Luccitti, and Susan F. Morris, eds., *The Book of Film Care*, 2nd ed., Kodak Pub. H-23 (Rochester, NY: Eastman Kodak Company, 1992), and *Film Forever: The Home Film Preservation Guide*, [www.filmforever.org](http://www.filmforever.org).

**TABLE 4. EQUIPPING YOUR  
FILM COLLECTION**

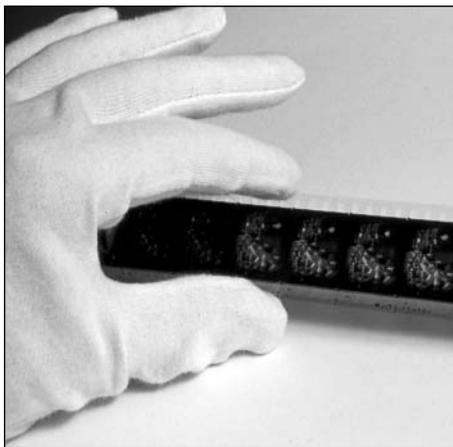
**General archival  
supplies and tools**

Cotton or static-free nylon gloves  
Dust mask  
Lint-free cloth and cotton swabs  
Loupe  
Permanent marking pen or Kohinor pen  
Razor blades (single-edged) or X-acto knife  
Safety glasses  
Scissors

**Specialized equipment  
and supplies**

Film cement  
Film cleaner and solvent-resistant gloves  
Film containers\*  
Film cores\*  
Film leader\*  
Film reels\*  
Film ruler  
Film viewer\* or light box  
Footage counter\*  
Perforated tape\*  
Presstape\*  
Rewinds\*  
Sound reader\*  
Splicer\*  
Splicing tape\*  
Split reel\*

\*Specific to film gauges in your collection

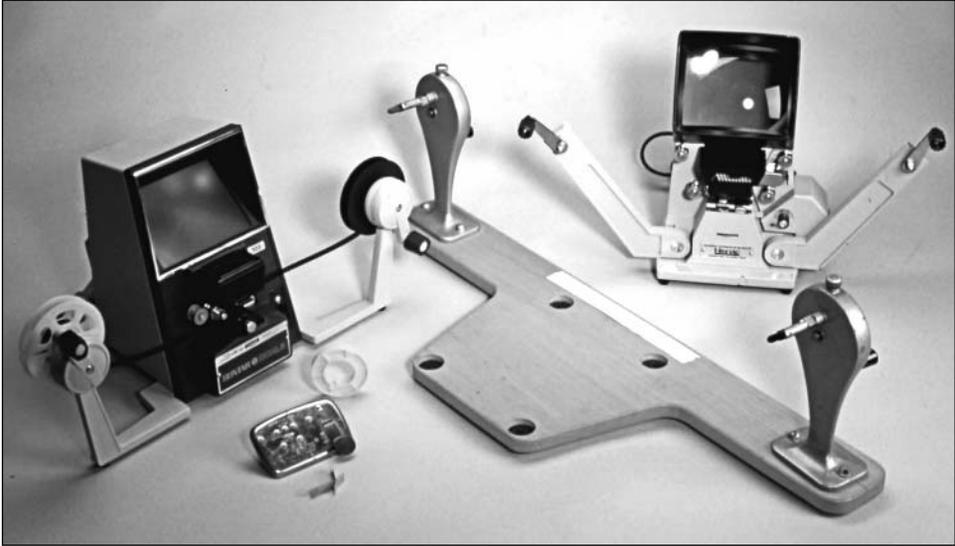


Wear cotton gloves when handling film.

bished equipment, such as portable re-wind units, film and sound readers, and editing tables. Often vendors guarantee used equipment for several months. For small gauge viewers, splicers, and projectors, a number of preservationists have found bargains through nontraditional sources—online auctions, thrift stores, want ads, camera clubs, pawnshops, swap meets, garage sales, and Internet listservs for film hobbyists. If you acquire used equipment without a guarantee, be sure to have it examined carefully before purchase. Some camera shops will perform this service.

To view film safely without damaging the material, preservationists look at it with specialized equipment. Follow these general guidelines:

- Work on an uncluttered table in a well-lit and ventilated area.
- Before starting, clean the worktable. Film easily picks up dirt and dust.
- Wipe metal equipment with a cleaner that does not leave a residue. Rinse plastic tools and counters with distilled water.
- Wear cotton gloves when handling film. However, damaged perforations and splices may snag cotton fabric. If it becomes necessary to remove your gloves while handling damaged film, hold the film along the edges and never touch the sound track or image.
- Above all, resist the impulse to view your film with a projector. Projectors will inflict additional damage to films already weakened by shrinkage, tears, or decay.



Equipment and supplies for 8mm film (from left): Viewer, splicing repair kit, core, portable rewind bench, and viewer.

The following procedures assume the most basic setup—portable rewinds, split reels, and a light box with a magnifying loupe. Larger film repositories generally invest in more sophisticated equipment, such as tabletop film viewers, footage counters, or flatbed editing tables.<sup>2</sup> Most equipment can be purchased new or used. For a comparison of equipment by function and cost, see table 5.

### 3.2 LOOKING AT YOUR FILM

**STEP ONE: OPENING THE FILM CAN.** Film cans, the film’s first line of defense, often bear the marks of past neglect. They can be rusted or dented shut. To open a damaged can, bang it gently on a hard surface (other than that of your clean worktable!). If this fails, as a last resort pry open the can with a screwdriver, being careful to prevent the blade from slipping into the can and damaging the film. When handling rusty cans, be sure to wear safety glasses and a mask for protection from fumes and flying particles.

Prints generally come to repositories on projection reels. However, production elements are often acquired on cores, plastic hubs around which film is wound for storage. Films on cores can be difficult to extract from the can, particularly if wound too loosely or packed too tightly into the can. In removing films from stubborn cans, support the roll with your hand or half of the split reel (see 3.4) so that it does not unspool when lifted. At this point, look for mold, mildew, and fungus and do a “smell check” for vinegar syndrome.

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2. Some pieces of film equipment are often referred to by the name of the manufacturer. A film viewer may be called a Moviola and a flatbed editor called a Steenbeck or a Kem.

*Film Handling and Inspection*



Use a screwdriver to open a difficult can.



When opening the can, tilt the lid away from your face to protect yourself from particles and fumes.



Remove the film roll from the can.



Brace the core with your hand to prevent it from popping out.



If you find mold, mildew, or fungus, you will need to clean the infected film. Dampen a lint-free cloth with film cleaner.



Then gently wipe mold from the film roll with the cloth. For more on cleaning, see 3.6.

**STEP TWO: USING REWINDS.** The rewind is a tool that enables the preservationist to unwind and wind film slowly without stressing the perforations. Rewinds are used in pairs—one for the feed and the other for the take-up. They can be operated left-to-right or right-to-left, depending on preference.<sup>3</sup> Rewinds come in portable units or editing table models. Motorized or hand cranked, they may also be fitted with long shafts, so that several reels can be examined side by side, and include accessories that control the film tension. Most preservationists recommend using manual rewinds for film inspection (see 3.3) and power rewinds for transferring film from reels to cores (see 3.4).

For examination on rewinds, films can be on either reels or cores. If your film is mounted on a core, you will need to use a split reel to put the film on the rewind. (A split reel consists of two flat discs that “split” apart to accommodate the core; see 3.4.) Let’s assume the film is on a reel and has not been examined before. Mount the reel on the rewind, gently unwind some film, and thread the end on the take-up reel.



Portable rewind bench with a 16mm split reel and a film on a core.

**STEP THREE: VIEWING.** Sometimes film may exhibit a slight curl, and it may be necessary to let the film flatten out before viewing. Curl is generally caused by either low humidity (curl toward the emulsion) or extremely high humidity (curl away from the emulsion). If you let the film acclimate under more moderate relative humidity conditions (40% to 60% RH), it will usually flatten out. The key to quick acclimation is to expose as much surface area as possible.

The most basic way to examine a film is on the illuminated surface of a light box. Place the light box between the rewinds and pull the film gently down to the illuminated surface. Use the loupe to examine the film image. Crank the rewind slowly, stopping to sample images with



Cranking the rewind.

3. Some archives use horizontal rewinds instead of vertical ones. With horizontal rewinds, films can be wound on a core without the use of a split reel.



Viewing film on a light box with a loupe.



Viewing film with a tabletop viewer.

the loupe as you hold your gloved fingers along the film edges to keep the film frame flat on the box. Be particularly careful when winding prints with magnetic sound tracks. If the reel has been stored under damp conditions, the stripe can stick to the next layer and peel off. Also take care not to catch your gloves on broken perforations or splices. Film with extreme perforation damage may be handled without gloves.

A more convenient and efficient way to view film is with a tabletop film viewer. New 16mm models cost roughly \$1,500, but the budget minded can often find secondhand viewers at a fraction of this price. To play the sound track of a composite print, you will need an additional piece of equipment, a tabletop sound reader. Flatbed editing tables can also play the sound track.

If the film may be of interest to your institution, it is worth investing time in a more thorough assessment—an inspection.<sup>4</sup>

### **3.3 LEARNING THROUGH THE INSPECTION PROCESS**

Inspection is the single most important way to date a film, identify its technical characteristics, and detect damage and decay. Much can be learned by examining your film carefully, from start to finish.

A standardized inspection work sheet (see appendix B) lists things to check and helps organize notes. This type of written report is the foundation for future preservation actions. Collecting the information during inspection will help you make informed decisions and enable you to document any changes in film condition over time.

Signs of decay and damage may vary across the length of the film. A footage counter provides a precise way of pinpointing the spots where problems occur as well as measuring film length. Without this instrument, you can roughly estimate

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4. Many archives routinely examine films offered as gifts and use visual assessment to determine if the materials should be acquired.

film length using a film ruler. To make such an estimate, put the end of the film ruler on the center of the core. Then estimate the film's length by measuring the roll's radius. Usually the estimate is given in terms of number of feet. Split reels sometimes carry hatch marks that can be used for the same purpose.



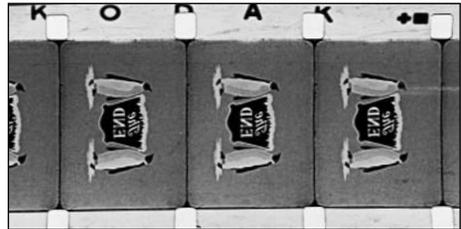
Using a film ruler.

During inspection you should also test older repairs. Remove any paper clips, tape, or paper affixed to the film,<sup>5</sup> and clean off the residue with a lint-free cloth dampened with film cleaner. Do not use film cleaner on magnetic sound film or films with magnetic sound stripes. As you wind the film slowly from feed to take-up reel, gently trail your gloved fingers along the edges to detect rough, torn, or poorly mended perforations. Assess the strength of each splice by gently twisting it in opposite directions. Also look for oozing adhesive that may have leaked from old repairs made with splicing tape.



Footage counter for 16mm film and loupe.

**READING EDGE CODES.** Film dating is facilitated by the manufacturing codes often printed along the film stock edge. Kodak employed a series of standardized symbols to indicate manufacturing year and, until the system was revamped in 1982, repeated the codes in 20-year cycles.<sup>6</sup> The same codes were used for 16mm and 35mm film.



The Kodak edge code **+■** helps date this film as being from 1935 or soon after.

Let's suppose your 16mm film has the Kodak edge code **+■**. As shown in appendix A, Kodak manufactured films with this edge code in 1935, 1955, and 1975. Thus your film is likely to have been photographed during or directly after one of those years. A good detective can narrow the possibilities by looking for datable

5. Markers of this sort are commonly found during the first-time inspection of production elements acquired from filmmakers or filmmaking organizations.

6. For a discussion of date code symbols, search "H1 Film Identification" on the Kodak Web site, [www.kodak.com](http://www.kodak.com). Kodak's 8mm film used different edge codes until 1965, when the symbols were standardized across all gauges. For 8mm edge codes, see the charts at Film Forever: The Home Film Preservation Guide, [www.filmforever.org](http://www.filmforever.org).

visual clues within the film itself, such as styles of dress, buildings, or automobiles. This is how the Alaska Film Archives at the University of Alaska Fairbanks established the date of the 1935 film discussed in the case study concluding chapter 4.

Film copies, however, may carry two or more edge codes, that of the original film stock as well as those of the generations printed from it. In this case the film is likely to have been shot between the first two dates. Edge codes are helpful clues but not the last word.

### **3.4 REPLACING OLD FILM REELS AND CONTAINERS**

Inspection is the ideal time to replace rusty, dented, or chipped reels. Reels are designed to hold films for projection, not long-term storage. For 16mm and 35mm storage, the better choice is an inert plastic core measuring at least three inches in diameter. The core acts as a hub for the film roll. The larger the core, the wider the diameter of the film roll and the less stress on the film. Because of its small size, 8mm film is usually kept on reels. With reels as with cores, the larger the diameter of the hub, the less the film will be encouraged to curl.

**SPLIT REELS AND CORES.** Films are transferred from reels to cores for storage (and back to reels for projection) using a split reel mounted on the vertical rewind. A split reel consists of two flat discs that

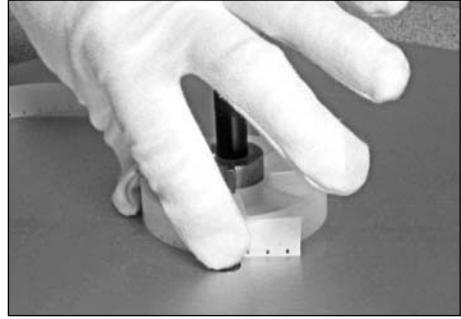
“split” apart to accommodate the core. Providing support as the film is wound, the split reel may be mounted on either the feed or the take-up side.

#### **QUESTIONS TO GUIDE YOUR INSPECTION**

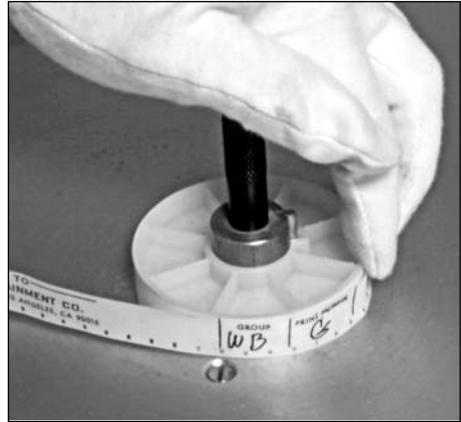
1. How long is the film?
2. What is the gauge?
3. What is the film base?
4. Is the name of the manufacturer printed along the edge? Are there edge codes that might help with identification and dating?
5. Is the film color or black and white?\* If color, does it display some degree of fading?
6. Is it silent or sound?
7. If sound, what type of sound track does it have?
8. Is it positive, negative, or reversal film?
9. Does it have a title or credits?
10. How much mechanical damage exists in terms of splices, scratches, and broken sprocket holes? How many feet from the start does the damage occur?
11. What is the degree of shrinkage as measured by a shrinkage gauge or by comparing to fresh film stock (see 2.6)?
12. Is there observable mold? Has the growth caused lasting damage?
13. Does the film smell of vinegar?
14. Are there other signs of decay or damage?

\*Sometimes films include both black-and-white and color scenes that have been edited together.

To wind a film on a core, select the split reel and core that match the film gauge. Wind the film onto the core inside the open split reel, following the steps illustrated to the right. If the leader is too short or damaged, it might be necessary to replace it (see 3.5) so that there is enough to go around the core at least three times. Screw shut the split reel and mount it on the take-up side.



In transferring a film from a reel to a core, keep the film at an even tension. Be sure that the film edges stay aligned and that none protrude beyond the flat plane of the roll. A correctly coiled film roll should be wound tightly enough so that it looks like a solid disc. For storage, some repositories wind films tail out (with the beginning at the core), so that films will have to be rewound, and presumably reinspected, before they can be viewed from start to finish.



Starting the wind.

Like other library, archive, and museum materials, films generally come to repositories with acquisition information that provides clues to their origins and significance (see chapter 4). Over the years some materials inevitably straggle into repositories without contextual background. The original film container, leader, and reel may hold valuable evidence. Be sure to copy down any titles, dates, or production data found on these items and save notes housed in the can.



The edge of a poorly wound film is uneven and extends above the flat surface of the roll.

The container's label itself may also carry information, but use it with caution. Cans frequently are reused or switched by accident. With new film acquisitions, preservationists generally try to replace damaged or dirty containers as soon as possible.

**LABELING FILM.** Before returning the inspected film to the shelf, check the label on the film leader. The leader protects the film and is the place to write unique identification data for the reel (for more on identification numbers see 7.2).

Leaders come in colors and are customized for different uses. Many preservationists recommend using new white leader or unprocessed black-and-white print stock. Some prefer using different color leader for the head and the tail. Whatever your choice, be sure that the leader provides a readable background for labeling.

For labeling film leader, most organizations stick to the basics, such as

- Short title or accession number
- Location code
- Reel number for a multi-reel work (for example, REEL 1 OF 2)
- Beginning (HEAD) or end (TAIL) of the reel of film

More information, of course, can be written on the film container (see 6.6).

### **3.5 REPAIRING FILM**

It is important to repair film prior to its use on projectors, printers, and other sprocket-driven film equipment. Not every repository has the time, expertise, equipment, or need to make repairs in-house, particularly if it uses videotape or DVD for routine public service requests. Some beginners instead choose to pay commercial laboratories to do repairs, generally for a per-hour fee, as part of the preservation copying process (see chapter 5). Many cost-conscious preservationists take on simple tasks themselves for access copies but defer to laboratory technicians for repair of one-of-a-kind originals and preservation elements. If you are new to film preservation, it is recommended that you receive some hands-on training before undertaking film repairs.<sup>7</sup>

At many repositories, preservationists perform film inspection and repairs on a need-to-use basis. Films required for cataloging, research, loan, screenings, or preservation copying often go to the head of the queue. While films are generally repaired during inspection, tasks can be deferred until expertise is available. With accurate inspection reports serving as a road map, preservationists can return later to complete repairs or to assign them to a laboratory.

**MAKING SPLICES.** Splices join together two separate pieces of film. The pieces are aligned and sealed using a piece of equipment called a splicer. Most noncommercial repositories make splices with either adhesive splicing tape or film cement. The tape method works for all film bases and is reversible. A primary drawback is that, as it ages, tape adhesive sometimes oozes from the seam, leaving a residue on the film surface. Tape splices can also be weakened by ultrasonic cleaning. The cement method results in a more permanent splice; however, the cements now on

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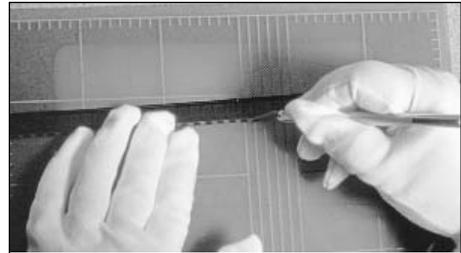
7. The Association of Moving Image Archivists, for example, generally provides training in conjunction with its annual conference. The Society of American Archivists offers a seminar in the preservation of audiovisual collections.



Film repair equipment for every budget (from left): Film cement, 16mm cement splicer, 16mm tape splicer, 35mm tape splicer, repair tape, and 16mm/35mm ultrasonic splicer. Also shown (bottom left): Scissors, X-acto knife, marker, and tweezers.

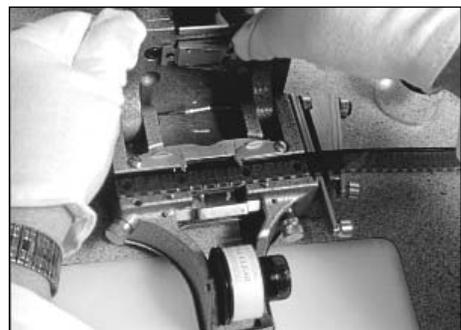
the market do not work with polyester film.

Weak or defective splices identified during inspection must be replaced before a film can be used on sprocket-driven equipment. To loosen the old splicing material, gently apply film cleaner with a lint-free cloth or cotton swab. A razor blade or other sharp tool can be helpful in removing tape. It is essential to remove all visible residue before continuing.



Removing old splicing tape by hand.

**USING SPLICING TAPE.** Depending on the design, tape splicers work with adhesive splicing tape or presstape. Some splicers employ pre-perforated tape, requiring the operator to cut the film ends precisely and carefully align the sprocket holes of the tape with those of the film. Guillotine-style splicers use unperforated tape into which they cut new sprocket holes. The least expensive splicers work



Using a guillotine-style tape splicer.

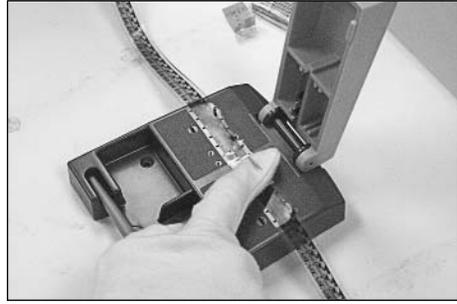
with presstape. Some more sophisticated models have both film and tape cutters built in.

Whatever the splicer design, tape splices require four basic steps:

1. Cut the two ends of the film, generally at the frame line, so that the newly cut edges are parallel. Wipe the ends with a lint-free cloth or swab dampened with film cleaner.
2. Place the two film pieces, ends touching, in the splicer, using the registration pins to align the sprocket holes.
3. Apply the splicing tape or presstape snugly over the ends and pull down the splicer handle to apply pressure to the seal. For prints with magnetic sound tracks, be sure not to cover the magnetic stripe with tape.
4. Turn the film over, apply the tape on the other side of the splice, and complete the seal.

Precut presstape works like a Band-Aid. The adhesive back is pulled off before pressure is applied to set the seal.

**USING FILM CEMENT.** In this type of splice, one film edge is cemented on top of the other, yielding a tiny repair that is almost double thickness. Cement splices are generally made with a special splicer, sometimes called a “hot splicer” when it includes a heater. Cement splices require more practice to execute than tape splices but tend to attract less dirt. They are also more intrusive, since layers of the film are removed to make the repair. Making a cement splice often requires the loss of one or more film frames. When using film cement, always work in a well-ventilated area.



Making a splice using presstape.

### ULTRASONIC SPLICERS

High-end ultrasonic splicers fuse film together without using splicing tape or cement and are used for splicing polyester film. New models cost several thousand dollars. *Never* use an ultrasonic splicer with nitrate film.

The basic steps for making a cement splice:

1. For the bottom half of the splice, carefully remove the film's emulsion from its base using a razor blade or the scraper built into the splicer. Some technicians also scrape the base on the top film as well.
2. For the top half of the splice, clean the underside of the film with a lint-free cloth or swab dampened with film cleaner.
3. Apply a small amount of cement to the prepared surface of the bottom film. Align the top and bottom films.
4. Push down the splicer handle, applying pressure to the seal for 10 to 15 seconds (longer if working in a cold room).
5. Wipe away any cement residue with a lint-free cloth.
6. Wait for the splice to dry (one minute or more) and then test it by giving a gentle twist.

**REPAIRING PERFORATIONS.** Repairing torn or broken sprocket holes is a tedious but important task. Fortunately supply houses sell perforated tape for replacing sprocket holes on 16mm and 35mm film. Isolated breaks can also be fixed with splicing tape. Often for shrunken film, the perforations on the tape will not align with those on the film. For shrunken films slated for preservation copying, it is generally recommended that perforation repair be included as part of the laboratory job.<sup>8</sup>



Perforation damage to 8mm film can be repaired with presstape. Because of the small scale, 8mm and Super 8mm films are difficult to repair.

### 3.6 CLEANING FILM

After inspection, the film can be cleaned to remove mold and projection oil. For this procedure you will need clean, solvent-resistant gloves (not the thin latex kinds used in medical exams) and a face mask. Be sure to work in a well-ventilated area, as mold spores can be harmful to your health. Another concern is the toxicity of the film cleaner. It is important to review the product specifications before use. As mentioned earlier, do not use film cleaner on magnetic sound film or films with magnetic sound stripes.

Mount the film on the rewinds. Sandwich the film between a folded lint-free cloth lightly dampened with film cleaner. Wind the film slowly, gently running it

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8. It is possible to repair shrunken film by salvaging patches of film edge from discarded footage exhibiting a similar level of shrinkage. Splicing tape or cement can be used to affix the replacement edges to the damaged film. This is a difficult task and should be performed only by experienced technicians.



To clean mold from film, gently run the film through a cloth dampened with film cleaner.

through the cloth and allowing the liquid to evaporate from the surface before winding on the take-up reel. As the cloth accumulates dirt, fold it over to expose fresh fabric. Replace the cloth as needed.<sup>9</sup> Do not use this cleaning method on films with perforation damage.

It is important to clean a film before preservation copying. Commercial laboratories generally include cleaning, sometimes on ultrasonic equipment, as part of the preservation copying process.

### 3.7 EQUIPMENT FOR EVERY BUDGET

Table 5 compares film-handling equipment by cost and function. The basic supplies, such as safety glasses and cotton gloves, are constant across collections of every size and budget. The major difference is found in the equipment for viewing, measuring, and splicing film. The more expensive pieces generally have built-in features and are more convenient to use. Equipment can be acquired new or used.

### VOLUNTEERS IN THE FILM ARCHIVE

With training, volunteers and student interns can perform a number of routine film conservation and research tasks.\* The assignments will vary with the volunteer's interests and skills. Volunteers with filmmaking experience can be an especially important asset.

Here are some tasks that can be performed by trained volunteers under the supervision of a preservationist.

- Measuring acetate decay with A-D Strips (see 2.6)
- Transferring film to cores (see 3.2 and 3.4)
- Cleaning access prints (see 3.6)
- Packaging film for frozen storage (see 6.2)
- Preparing shot lists as supplement to catalog record (see 7.2)
- Performing research on events and people shown in films (see 4.2)

\*For more on volunteers, see Laura Daly, *Establishing a Volunteer Program: A Case Study*, Technical Leaflet 170 (American Association for State and Local History, 1990), originally published in *History News* 45 (January/February 1990), and Mary Ellen Conaway, *Student Projects and Internships in a Museum Setting*, Technical Leaflet 184 (American Association for State and Local History, 1993), originally published in *History News* 48 (March/April 1993).

9. Some archives buy rolls of disposable cotton towels for this task.

**TABLE 5. FILM EQUIPMENT BY FUNCTION:  
SAFE HANDLING TOOLS FOR EVERY BUDGET**

<b>Function</b>	<b>Basic Budget</b>	<b>Mid-Level Budget</b>	<b>High-End Budget</b>
<b>Replacing containers</b>	<ul style="list-style-type: none"> <li>• Film cans or boxes</li> <li>• Marking pen and labeling tools</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Film cans or boxes</li> <li>• Marking pen and labeling tools</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Film cans or boxes</li> <li>• Marking pen and labeling tools</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> </ul>
<b>Transferring from reel to core</b>	<ul style="list-style-type: none"> <li>• Vertical rewinds, hand operated</li> <li>• Split reel and regular film reels</li> <li>• Cores of inert plastic</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> <li>• Film cleaner and solvent-resistant gloves</li> </ul>	<ul style="list-style-type: none"> <li>• Portable rewind unit, hand cranked, with built-in light well</li> <li>• Split reel and regular film reels</li> <li>• Cores of inert plastic</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> <li>• Film cleaner and solvent-resistant gloves</li> </ul>	<ul style="list-style-type: none"> <li>• Editorial or comparison table with power rewinds, light well, and other built-in equipment</li> <li>• Split reel and regular film reels</li> <li>• Cores of inert plastic</li> <li>• Gloves, safety glasses, lint-free cloth, and other basic supplies</li> <li>• Film cleaner and solvent-resistant gloves</li> </ul>
<b>Viewing</b>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Light box, portable</li> <li>• Loupe</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Tabletop film viewers for gauges in collection</li> <li>• Tabletop sound reader</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Portable rewind unit, hand cranked, with built-in light well</li> <li>• Tabletop film viewers for gauges in collection</li> <li>• Tabletop sound reader</li> </ul>
<b>Inspecting for damage and collecting technical data</b>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Film ruler</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Footage counter</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Footage counter built into workstation</li> </ul>
<b>Making repairs and replacing leader</b>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Perforated tape</li> <li>• Razor blade and scissors</li> <li>• Film leader</li> <li>• Simple splicer</li> <li>• Presstape</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Perforated tape</li> <li>• Razor blade and scissors</li> <li>• Film leader</li> <li>• More sophisticated splicer, with compatible splicing tape and film cement as appropriate</li> </ul>	<p><i>The above items plus:</i></p> <ul style="list-style-type: none"> <li>• Perforated tape</li> <li>• Razor blade and scissors</li> <li>• Film leader</li> <li>• For polyester film, ultrasonic splicer; for acetate film, sophisticated splicer (with built-in features), with compatible splicing tape and film cement as appropriate</li> </ul>