RP 130-2004
Revision of RP 130-1995

SMPTE RECOMMENDED PRACTICE

Dimensions of Tape Splices on 16-mm and 8-mm Type R Motion-Picture Film, Projection Type

1 Scope

1.1 This practice specifies the significant dimensions of mated cut splices for 16-mm and 8-mm type R motion-picture film made with an adhesive tape and intended for projection and exhibition.

1.2 There are a number of methods for splicing triacetate or polyester motion-picture film that have found practical and commercial acceptance and that meet the operational requirements for the physical strength of the bond. This practice is not intended to recommend one method over another, but rather to emphasize the requirements common to all tape splices.

2 Application

Inasmuch as the film is usually a print, the primary objective is for the splice to be unobtrusive in the projected image area and the reproduced sound. Film guiding and positioning are usually achieved through the film seeking an equilibrium position through edge guiding for lateral positioning, and perforation reference against a loose fitting tooth or claw for vertical positioning. Splices used for projection applications may have slightly broader width tolerances than those used for laboratory applications.

3 Dimensions

3.1 The dimensions shall be as given in the figures and table 1 and apply to freshly-made splices on processed films and leaders having a nominal shrinkage of not more than 0.2%.

3.2 The transverse cut to provide the mated pairs of film for the tape splice shall fall within the area defined by dimensions A, C, and D. However, if the mated cut is not a straight cut made on one frameline, the cut configuration shall intrude into only one of the two adjoining picture frames and the splice shall be as inconspicuous as possible (see annex A.6).

3.3 Edges of the two spliced films shall not be offset laterally by more than 0.002 in (0.05 mm [dimension G]) unless a difference in the lateral shrinkage of the two strips makes it impossible to maintain the tolerance (see annex A.2).

3.4 The angle between the respective edges of the spliced film shall be 180° ± 4'. Thus, the spliced film shall be aligned to the extent that, when one portion of the film is placed against a straightedge, the other portion will not deviate more than 0.006 in (0.15 mm) in 6 in (152 mm).

3.5 The splice should have a negligible gap between the mated cuts of the film ends to prevent hinging and there should not be any film overlap at the splice. Films joined by tape splices are not acceptable for use as originals in commercial printing operations or those intended for magnetic striping (see SMPTE RP 149).

Approved November 8, 2004

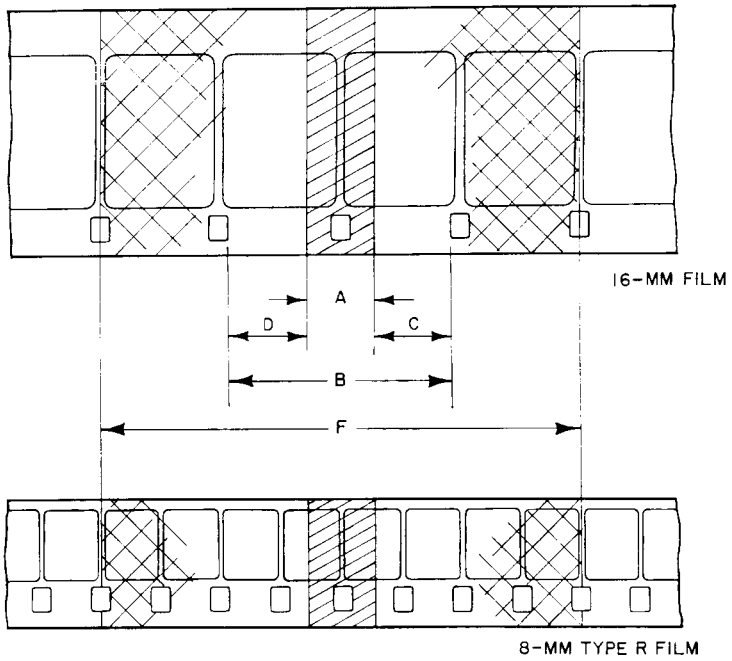

Figure 1 – Splice and tape area

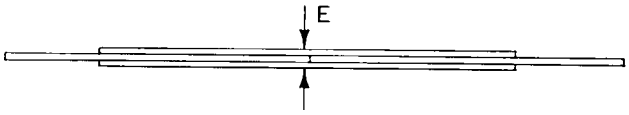

Figure 2 – Overall thickness

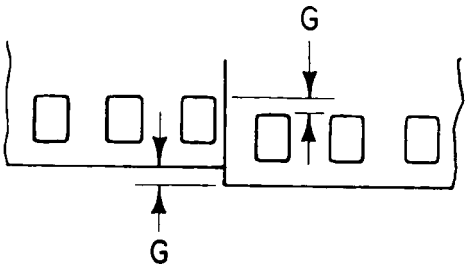

Figure 3 – Alignment dimension

Table 1 – Specifications

Dimensions	Inches	Millimeters
A	0.150 max	3.81 max
B	0.548 ± 0.002	13.92 ± 0.05
C	0.349 min	8.86 min
D	0.349 min	8.86 min
E	0.010 max	0.25 max
F	1.198 ± 0.002	30.43 ± 0.05
G	0.002 max	0.05 max

3.6 The width of the tape used shall encompass the full width of the film on one side, and may exclude the perforation area and the area of the magnetic records and balance stripes on the opposite side. Splices with tape on one side only are not functional in projection and are unacceptable.

3.7 Except as described in 3.9, the dimensions of the tape applied to secure the splice shall be such as not to interfere with film dimensions (especially perforations) as specified in SMPTE 109 and SMPTE 239, and shall fall within the area described by dimension F.

3.8 The tape shall be wide enough to cover at least a frame on each side of the splice. For esthetic considerations, tape ends should not intrude into the picture area. Tape splices shall be made with an optically clear, transparent tape resulting in a splice capable of withstanding tension at least 50% greater than projector gate tension for that film width. The tape shall adhere uniformly to the film and be applied in such a manner as to prevent corrugations or entrapped air bubbles.

3.9 Splices made with tape wrapped around either edge of the film are not recommended since they interfere with guiding. However, if the perforated edge is used to form the wrap-around tape splice, it is recommended that the splice add no more than 0.002 in (0.05 mm) to the film width. The overall width of the spliced area should not exceed 0.632 in (16.05 mm) on 16-mm motion-picture film and 0.319 in (8.10 mm) on 8-mm type R motion-picture film. If the film is trimmed after the wrap-around splice has been made, the film width shall not be less than 0.626 in (15.90 mm) on 16-mm motion-picture film and not less than 0.312 in (7.92 mm) on 8-mm type R film, and shall not affect the perforated edge of the film.

Annex A (informative)
Additional data

A.1 Maintaining continuity of pitch across the splice requires that the perforation interval within which the splice lies be equal to the perforation intervals in the unspliced portions. This may be difficult to measure, however, inasmuch as forming the bond may slightly distort perforation walls in those perforations nearest the bond (because of mechanical action) and, therefore, introduce uncertainty into the measurement. Dimension B controls the longitudinal registration of the two films being spliced. It is measured to the perforations that are most commonly used for registration on splicing blocks, and to the nearer edges of these perforations because they are the edges generally used.

A.2 The lateral alignment that is most significant for the projection and exhibition mode of film use is the avoidance of any offset of the film edges before and after the splice, Dimension G. Therefore, for projection applications, this is the most convenient control parameter (see figure 3).

A.3 When spliced film is bent into an arc of approximately 2-in (50-mm) diameter, it should flex smoothly, with no excessive stiffness or tendency to fold. Tape should always be applied to both sides of the film.

A.4 When tape splices are used, care should be taken to keep perforations clear of foreign matter. This requires careful alignment of pre-perforated tape, or clean, precise perforating of the tape by the splicer.

A.5 Splices should be inspected frequently for defects including dirt, discoloration, edge lifting, etc. With tape splices, it is important to inspect for stretching, hinging, oozing of adhesive, and widthwise expansion which can cause a hangup in projection. Currently available perforated or unperforated transparent polyester tape with pressure-sensitive adhesive is recommended.

A.6 The transverse cut may be made in numerous configurations. Figure A.1 shows some typical configurations.

A.7 Visual disruption of the projected image caused by the splice will be minimized if the length of the splicing tape, dimension F, is kept as short as possible within the requirements of splice performance and strength. It is anticipated that, as adhesives are improved, the length of the splicing tape may be reduced to one or two frames. Ideally, the ends of the tape should fall on the framelines to minimize visual disruption.

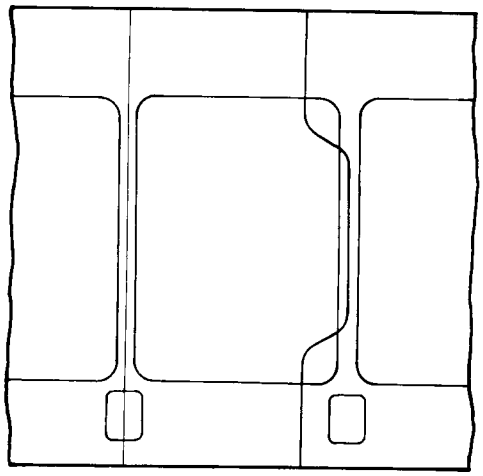

Figure A.1 – Typical splice cut configurations

Annex B (informative)
Bibliography

SMPTE 109-2003, Motion-Picture Film (16-mm) — Perforated 1R and 2R

SMPTE 239-2004, Motion-Picture Film (16-mm) — Perforated 8-mm Type R, 2R

SMPTE RP 149-1992 (R2003), Dimensions of Transverse Cemented Splices on 16-mm and 8-mm Type R Motion-Picture Film