

SMPTE RECOMMENDED PRACTICE

RP 5-1988



Dimensions of Patch Splices in 2-in Video Magnetic Tape

1. *Scope*

This practice specifies the dimensions and location of patch-type splices in magnetic video tape of 2-in (50.8 mm) width. The recommendations are intended primarily for application in recording and reproducing studio practice.

2. *Location of the Splice*

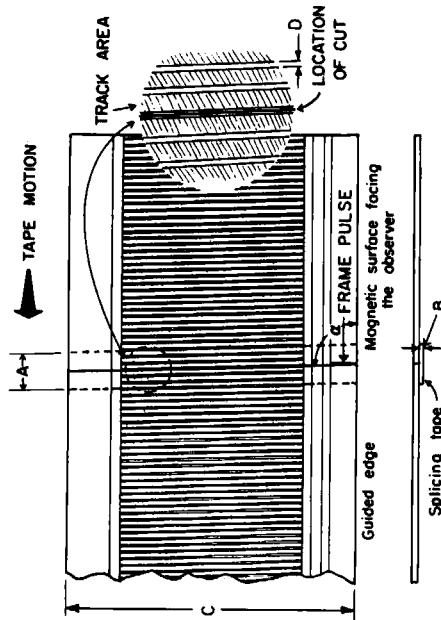
2.1 The angle of the cut with respect to the guided edge of the tape shall be as given in the figure and table.

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2.2 The cut shall be centered between two recorded video tracks and so located as to maintain continuity of video synchronizing pulse timing (See Note).

2.3 The separation between the two cut edges after splicing shall not exceed 0.001 in (0.03 mm) at any point along the cut.

2.4 The longitudinal distance between corresponding points on the recorded transverse video tracks immediately preceding and following the splice shall



Drawing not to scale

Dimensions	Inches		Millimeters	
	7.5 in/s	15 in/s	19.05 cm/s	38.1 cm/s
A Width of splicing tape	0.25 nom	0.25 nom	6.4 nom	6.4 nom
B Thickness of splicing tape	0.0007 max	0.0007 max	0.018 max	0.018 max
C Width of magnetic tape	2.00 ref	2.00 ref	50.8 ref	50.8 ref
D Distance between recorded tracks	0.0028 ref	0.0056 ref	0.071 ref	0.142 ref
α Angle of cut	90° 17' ± 3'	90° 33' ± 3'	90° 17' ± 3'	90° 33' ± 3'

4. *Characteristics of the Splice*

4.1 The splicing tape on a finished splice shall not extend beyond the edges of the magnetic video tape.

4.2 The guided edge of the magnetic tape on the two sides of the splices shall lie on a common straight line when the tape surface is constrained to lie in a plane.

Note: Sections 2.2 and 2.4 apply only to recorded tapes.

3. *Splicing Tape*

not depart from the average distance between successive tracks by more than ± 0.0005 in (0.013 mm). (See Note below and Section 5.1 of American National Standard for Video Recording — Video, Audio and Tracking-Control Records — 2-in Quadruplex Tape, ANSI/SMPTE 6:1988.

The dimensions of the splicing tape shall be as given in the figure and table.

Specifications of Tracking Control Record for 2-in Quadruplex Video Magnetic Tape Recordings



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shall be as specified in Figs. 1a and 1b and the table.

2.2 Dimensions pertaining to the video, audio, and control records on 2-in magnetic tape shall be as specified in American National Standard for Video Recording — Video, Audio and Tracking Control Records — 2-in Quadruplex Tape, ANSI/SMPTÉ 6-1988.

3. Magnetic Coating

With the direction of tape motion shown, the magnetic coating is on the surface facing the observer.

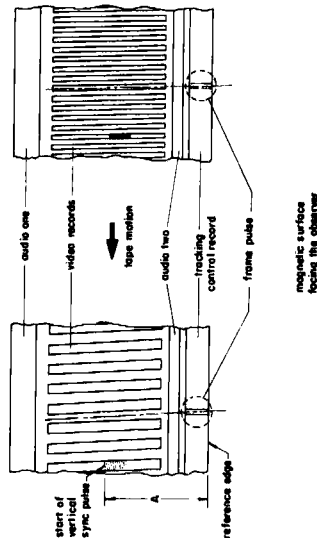


Fig. 1a. 15 in./sec

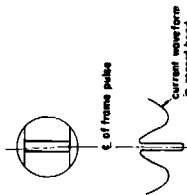


Fig. 1b. 7.5 in./sec of Frame Pulse Area

Dimension	Inch		Millimeter	
	Minimum	Maximum	Minimum	Maximum
A	1.195	1.165	28.83	29.59

4. Frame Pulse

- 4.1 A pulse to identify the position of the vertical synchronizing pulse shall be superimposed on the tracking-control signal.
- 4.2 One pulse shall be recorded per television frame to identify the vertical blanking interval that is preceded by a full horizontal line when the tape is recorded at 15 in/s (381 mm/s) and to identify

the vertical blanking interval that is preceded by a half horizontal line when the tape is recorded at 7.5 in/s (190.5 mm/s). (See Appendix A.5.)

To assist in certain restricted types of color editing, alternate frame pulses may be omitted. Since omission of alternate frame pulses may result in slightly lengthened lock-up time in tape replay, users may wish to obtain prior agreement before distributing such tapes.

4.3 The pulse shall be positioned so that the centerline of the recorded pulse and the extended centerline of the area between the second and third video tracks after the track containing the vertical synchronizing pulse shall intersect within ± 0.002 in (± 0.05 mm) at the reference edge of the tape when the recording is made at 15 in/s tape speed (Fig. 1a). The pulse shall be positioned so that the centerline of the recorded pulse and the extended centerline of the fifth video track after the track containing the vertical synchronizing pulse shall intersect within ± 0.002 in at the reference edge of the tape when the recording is made at 7.5 in/s tape speed (Fig. 1b).

4.4 The amplitude of the frame pulse shall be 150 \pm 25 percent of the peak-to-peak value of the sinusoidal tracking control signal current in the record head.

4.5 The polarity of the pulse with respect to the tracking control signal shall be as shown in Fig. 1c.

4.6 The pulse shall be 150 ± 30 μ sec wide at the 50 percent amplitude points of the current waveform in the record head. The rise and fall times of the pulse shall be 15 ± 10 μ sec measured between the 10 and 90 percent points on the waveform.

Widths observable and measurable on developed tape will vary with recording level and properties of the developing solution. (See Appendix A4.)

Appendix

(This Appendix is not part of the SMPTÉ Recommended Practice, but is included for information only.)

A1. The transfer characteristic of magnetic tape is nonlinear. The B₁ curve of the tape as recorded has a shape indicated in Fig. 2a. When a sinusoidal record current (Fig. 2c) is applied to the record head, the resulting recorded flux density is as shown in Fig. 2b. The playback voltage waveform (Fig. 2d) is the first derivative of the recorded flux. Thus, the zero axis crossing region of the reproducing signal corresponds to the maximum recorded flux region. The verge of saturation is considered to be the condition where the recorded flux waveform is just noticeably flattened on its peaks. This flattening of the flux peaks results in an inflection in the reproducing signal waveform in the zero axis crossing region. The verge of saturation can thus be determined by increasing the record current until a barely perceptible inflection occurs in the zero axis crossing region of the reproducing signal.

A2. Areas to which a compass is attracted (see Sec. 5.4) do not coincide with point of maximum record current. The compass will be attracted to two areas (X, as shown in Fig. 2) adjacent to the point where the record current crosses the zero axis. The two areas will appear as bars when the track is developed with carbonyl iron or an equivalent material.

A3. The location of vertical sync and the frame pulse, as specified herein, will apply only if the recorder video head and capstan servos are referenced to a synchronizing signal that is in time coincidence with the video at the recorder.

A4. Recordings made in accordance with this frame pulse specification will reproduce satisfactorily on equipment presently in use without requiring equipment modification. However, modification of existing recording equipment to meet this specification may be made by users or

5. Tracking Control Signal

5.1 The frequency of the tracking control signal shall be four times the field frequency of the television video signal.

5.2 The amplitude of the tracking control signal current in the recording head shall be such that the tape is driven to the verge of saturation. This amplitude can be established by the method described in Appendix A1.

5.3 The tracking control signal shall be positioned so that a point of maximum record current and the extended centerline of the area between the second and third video tracks after the track containing the vertical synchronizing pulse shall coincide within ± 0.001 in (± 0.03 mm) at the reference edge of the tape when the recording is made at 15 in/s tape speed.

The tracking control signal shall be positioned so that a point of maximum record current and the extended centerline of the fifth video track after the track containing the vertical synchronizing pulse shall coincide within ± 0.001 in (± 0.03 mm) at the reference edge of the tape when the recording is made at 7.5 in/s tape speed.

5.4 The point of maximum record current coinciding with the frame pulse shall be one that immediately follows an area on the control record to which a south-seeking pole of a compass will be attracted.

5.5 The wave shape of the tracking control signal current in the record head should be sinusoidal.

manufacturers in order to increase the overall reliability of the frame pulse recovery. Recordings made according to earlier versions of RP 16 contain less energy in the recorded frame pulse and this fact should be taken into account in the design of new equipment.

A5. In present practice, this pulse is derived from the vertical sync signal that is preceded by a half horizontal line, for both the 15 in/s case and the 7.5 in/s case. The placement on the tape specified by Sec. 4.2 is a consequence of the displacement between the video head wheel and the control track head which records this pulse.

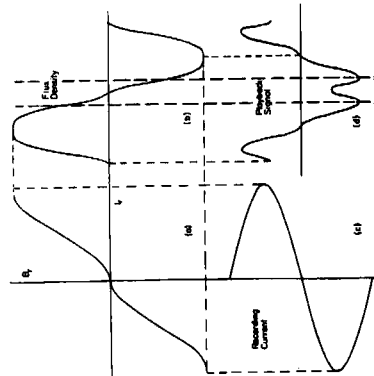


Fig. 2