SMPTE 16M-1998
Revision of
ANSI/SMPTE 16M-1992

SMPTE STANDARD

for Television Analog Recording — 1-in Type B Helical Scan — Records

1 Scope

This standard specifies the dimensions and location of the video, audio, and tracking-control records and the longitudinal separation of the simultaneously recorded information of the video and audio records, as recorded on 1-in type B helical-scan television tape recordings.

2 General specifications

2.1 The dimensions in the metric system are primary. The English equivalents are derived and may deviate from established conversion practices.

2.2 The reference edge for dimensions in this standard shall be the lower edge as shown in figure 1.

2.3 Tests and measurements made on the recorder to check the requirements of this standard shall be made under the following atmospheric conditions:

– temperature	23°C±1°C (73°F± 2°F)
– relative humidity	(50 ± 2)%
– barometric pressure	86 to 106 kPa (860 to 1060 mbar)
– conditioning before testing	24 h

3 Dimensions and position of the recorded records

3.1 The lateral location and dimensions of the video, audio, and control tracks shall be in accordance with figure 1 and table 1.

3.2 The nominal width of audio records 1, 2, and 3 shall be 0.8 mm (0.031 in).

3.3 The audio and cue recordings shall be downstream from the associated video information (see dimension J in figure 1 and table 1).

3.4 The audio recording shall be made so that the azimuth of the recorded record is at an angle of 90° ± 5′ to the reference edge of the tape. Audio 1 and 2 head gaps shall be in line.

3.5 The position of the field synchronizing signal on the video record shall be 7.609 mm ± 0.024 mm (0.29957 in ± 0.00094 in) from the intersection of L_t and X, in the direction of tape travel as measured along the video track.

3.6 The cue signal and time code shall be recorded on the audio 3 track.

Approved
September 1, 1998

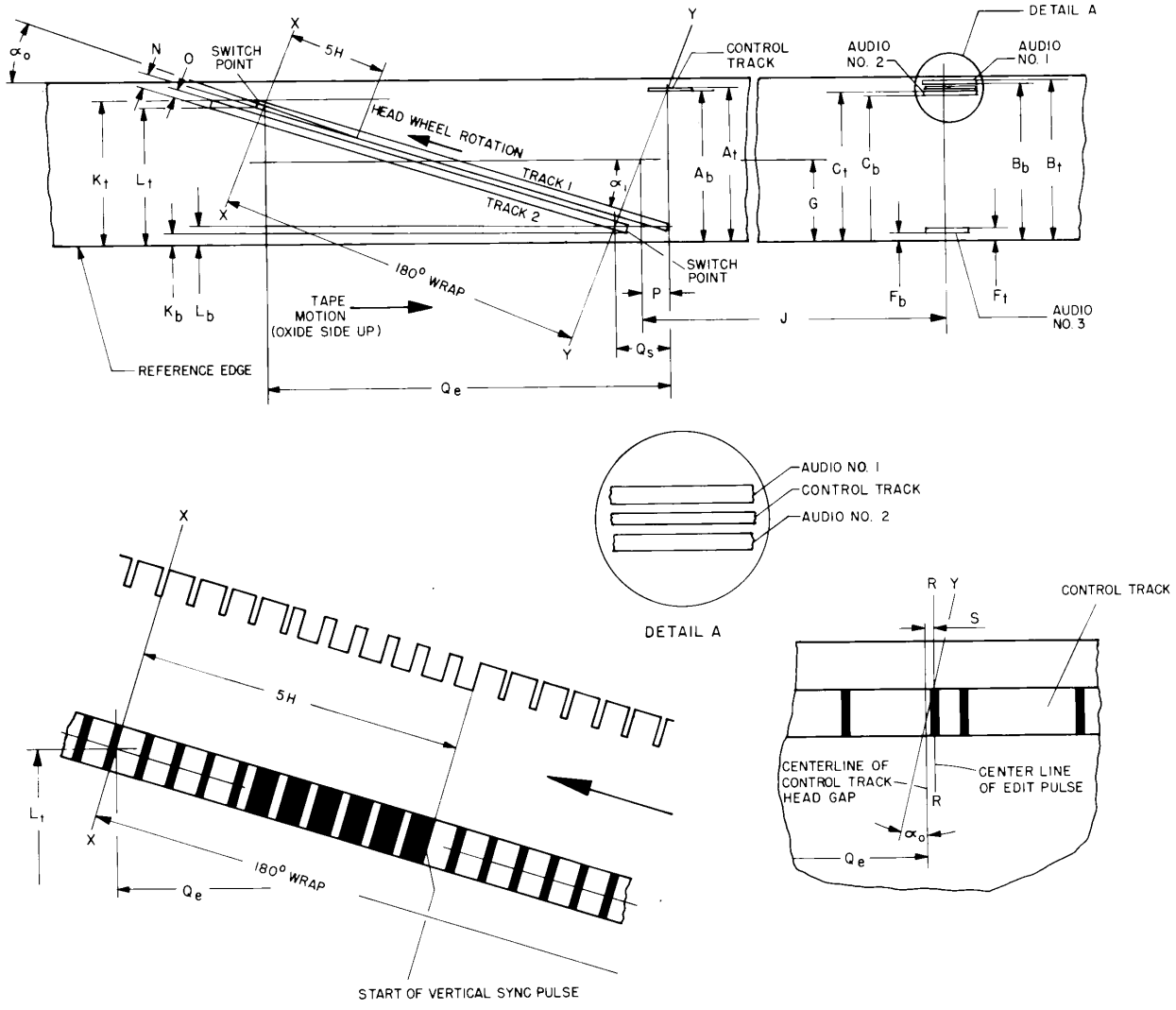

Figure 1 – Record location and dimensions

Table 1 – Dimensions

Dimensions		Millimeters	Inches
A_b [1)]	Control track bottom edge	23.55 min 23.65 max	0.9272 min 0.9311 max
A_t [2)]	Control track top edge	23.95 min 24.06 max	0.9429 min 0.9472 max
B_b	Audio 1 track bottom edge	24.35 min 24.45 max	0.9587 min 0.9626 max
B_t	Audio 1 track top edge	25.15 min 25.26 max	0.9902 min 0.9945 max
C_b	Audio 2 track bottom edge	22.35 min 22.45 max	0.8799 min 0.8839 max
C_t	Audio 2 track top edge	23.15 min 23.26 max	0.9114 min 0.9157 max
F_b	Audio 3 track bottom edge	0.15 min 0.25 max	0.0059 min 0.0098 max
F_t	Audio 3 track top edge	0.95 min 1.05 max	0.0374 min 0.0413 max
G	Center of video tape	12.70 ref	0.5000 ref
J	Position of audio heads	232.0 min 233.0 max	9.134 min 9.173 max
K_b	Full video width bottom edge	1.18 min	0.0465 min
K_t	Full video width top edge	22.19 max	0.8736 max
L_b	Video width (180°) bottom edge	1.82 min	0.0717 min
L_t	Video width (180°) top edge	21.55 max	0.8484 max
N	Video track pitch	0.200 ref	0.00787 ref
O	Video track width	0.155 min 0.165 max	0.00610 min 0.00650 max
P	Position of control track head	2.84 min 2.88 max	0.1118 min 0.1134 max
Q_e	Switch point distance video track 2	82.096 min 82.121 max	3.23213 min 3.23311 max
Q_s	Switch point distance video track 1	5.523 min 5.533 max	0.21744 min 0.21783 max
S	Distance between control track head gap and center edit pulse at 180° switch point	0.040 ref	0.00157 ref
α_0	Scanning angle	14.434°	
α_1	Video track angle (525/60)	14.288°	

NOTES

[1)] $_b$ is the dimension from the reference edge to the bottom of the record.
[2)] $_t$ is the dimension from the reference edge to the top of the record.

Annex A (informative)
Bibliography

SMPTE 15M-1998, Television Analog Recording — 1-in Type B Helical Scan — Basic System Parameters