
British Standard Specification for

Helical-scan video-tape cassette system using 19 mm ($\frac{3}{4}$ in) magnetic tape, known as U-format

Système à cassette à bande vidéo à balayage hélicoïdal utilisant la bande magnétique
de 19 mm ($\frac{3}{4}$ in), d'appellation format-U — Spécifications

Schrägspur-Videoaufzeichnungssystem für 19 mm ($\frac{3}{4}$ in) Magnetband in Kassetten,
bekannt als U-Format

National foreword

This British Standard has been prepared under the direction of the Electronic Equipment Standards Committee and is identical with IEC 712 : 1982 'Helical-scan video-tape cassette system using 19 mm ($\frac{3}{4}$ in) magnetic tape, known as U-format' published by the International Electrotechnical Commission (IEC).

Terminology and conventions. The text of the international standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

For the purposes of this British Standard clauses 1, 2 and 16 should be regarded as constituting the scope of the standard.

Wherever page numbers are quoted with reference to figures, they are IEC page numbers.

The notes to the following clauses and figures contain mandatory material and for the purposes of this British Standard should therefore be regarded as being part of the main text:

- notes to 10.5 and clause 14;
- notes 2 and 3 to figure 2;
- note 1 to figure 3;
- notes 1 and 2 to figure 5;
- note to figure 7.

Cross-references

International standard	Corresponding British Standard
IEC 94*	BS 6288 Magnetic tape sound recording and reproducing systems
IEC 94-1 : 1981	Part 1 : 1982 Specification for general conditions and requirements (Identical)
IEC 94-2 : 1975	Part 2 : 1982 Specification for calibration tapes (Identical)
IEC 94-3 : 1979	Part 3 : 1982 Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape (Identical)

Copies of the International Radio Consultative Committee (CCIR) Report 624, referred to at the foot of pages 11 and 25, are available from CCIR, 1211 Geneva 20, 2, Rue de Varembe, Switzerland.

NOTE. In 4.10.2 the words 'shall be shown' should read 'shall be as shown'.

In note 3 to figure 3 the word 'raltionship' should read 'relationship'.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

*IEC 94, referred to in 13.1, is a multi-part standard. When other Parts of IEC 94 are published consideration will be given to implementing them as British Standards.

Amendment No. 1
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Specification for helical-scan
video-tape cassette system using
19 mm (3/4 in) magnetic tape,
known as U format

NOTE. This amendment is being published to effect the implementation of CENELEC HD 447 S1.

Revised text

AMD 6235
December 1990

Front cover
Underneath the title insert
'(Implementation of CENELEC HD 447 S1)'.

MD 6235
December 1990

National foreword

Delete the existing text including the footnote and substitute the following:

This British Standard has been prepared under the direction of the Electronic Equipment Standards Policy Committee. It is identical with IEC 712 : 1982 'Helical-scan video-tape cassette system using 19 mm (3/4 in) magnetic tape, known as U-format', published by the International Electrotechnical Commission (IEC). This standard is also in agreement with Harmonization Document HD 447 S1, published by the European Committee for Electrotechnical Standardization (CENELEC).

For the purposes of this British Standard, clauses **1**, **2** and **16** should be regarded as constituting the scope of this standard. References to page numbers in the text relate to the IEC page numbers given in brackets at the bottom of each page.

The notes to the following clauses and figures contain mandatory material and for the purposes of this British Standard should therefore be regarded as being part of the main text:

- notes to **10.5** and clause **14**;
- notes 2 and 3 to figure 2;
- note 1 to figure 3;
- notes 1 and 2 to figure 5;
- note to figure 7.

Cross-references

International standard	Corresponding British Standard
IEC 94 (Parts 1 to 11)	BS 6288 Magnetic tape sound recording and reproducing systems (All Parts identical)

Copies of CCIR documents may be purchased from BSI Sales Dept., Linford Wood, Milton Keynes, MK14 6LE.

Additional information

Textual errors. In **4.10.2** the words 'shall be shown' should read 'shall be as shown'. In note 3 to figure 3 the word 'relationship' should read 'relationship'.

Compliance with a British Standard does not of itself confer immunity from legal obligations.'

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Helical-scan video-tape cassette system using 19 mm ($\frac{3}{4}$ in) magnetic tape, known as U-format

INTRODUCTION

This standard provides specifications for a helical-scan video-tape cassette recording and reproducing system which makes use of tape 19 mm ($\frac{3}{4}$ in) wide. The system is widely used in educational and industrial television facilities and is suitable for both 50 Hz/625-line and 60 Hz/525-line television signals. The parameters for different systems are given in the specifications which follow. This cassette system is also used in some broadcasting facilities in conjunction with special equipment designed to stabilize the reproduced signals to meet broadcasting requirements.

CHAPTER I: SPECIFICATIONS FOR BASIC SYSTEM

SECTION ONE — GENERAL

1. Scope

This standard applies to magnetic video recording and/or playback with 19 mm ($\frac{3}{4}$ in) tape cassettes on two-head helical-scan videocassette recorders, suitable for recording and/or playback of monochrome as well as colour television programmes.

2. Object

This standard gives dimensional and other characteristics necessary to permit the interchangeability of cassettes. For some parameters, the specification is only possible through the description of recorded tapes which implies making reference to the television system or standard in use. In such cases, the reference made for instance to 525 line-60 Hz or 625 line-50 Hz systems shall be considered as an example.

3. Environment

3.1 Testing environment

Tests and measurements made on the system to check the requirements of this standard shall be carried out under the following conditions:

temperature:	20 $\pm$ 1 °C;
relative humidity:	48% to 52%;
air pressure:	86 kPa to 106 kPa;
conditioning before testing:	24 h.

3.2 Operation environment

The system shall operate under the following conditions:

temperature (in recorder):	15 °C to 50 °C;
relative humidity:	45% to 75%.

SECTION TWO — VIDEO TAPE CASSETTE

4. Mechanical parameters

4.1 *Dimensions of cassette*

The dimensions necessary to permit interchangeability of cassettes shall be in accordance with Figures 1 to 5, pages 29 to 37, and Table I.

4.2 *Tape path and guidance*

The tape path and guidance are given in Figure 6, page 39.

4.3 *Tape winding*

The magnetic coating on the tape shall face out of the cassette. The direction of tape travel is from left to right when the coated side is facing the observer, i.e., from supply reel and outside on the take-up reel (see Figure 6).

4.4 *Label and window area*

The label and window area shall be in accordance with the dimensions given in Figure 1. The label as well as the window shall not protrude beyond the surface of plane A in Figure 1.

4.5 *Withdrawal force*

The leader tape and trailer tape which are spliced to each end of the magnetic tape shall be so attached to the reels that they can withstand a withdrawal force of 20 N.

4.6 *Guiding groove*

The cassette shall be provided with a guiding groove for correct insertion into the record/playback equipment as shown in Figure 1.

4.7 *Safety cap and safety hole*

The safety hole to prevent accidental erasure is shown in Figure 2. Recording shall be possible only when the hole is covered by the safety cap as shown in the figure.

4.8 *Automatic stop*

The optical transmittance of the leader and the trailer tape shall be at least 30% to ensure that the automatic stopping device of the machine functions properly at both ends of the magnetic tape.

4.9 *Cassette support areas*

The cassette shall be supported by the record/playback equipment only on the four datum points at the locations shown in Figure 5. (The supports are on the record/playback machine.)

4.10 *Reel*

4.10.1 *Arrangement of reels*

The supply reel shall be placed in the shell with its larger flange side down and the take-up reel is placed with its larger flange side up.

4.10.2 *Dimensions of reels*

The dimensions of the reels shall be shown in Figure 3, page 33. Choice of hub diameter is as shown below.

	Type I (playing time: 60 min) (mm)	Type II (playing time: 30 min) (mm)
Flange diameter	121	121
Hub diameter (supply reel)	38	80

SECTION THREE – VIDEOCASSETTE RECORDERS

5. **Mechanical parameters**

5.1 *Type of videocassette recorder*

The videocassette recorder shall be of the helical-scan type with two video heads.

5.2 *Reel spindle of videocassette recorder*

Dimensions and other characteristics are given in Figure 4, page 35, and Table I.

5.3 *Back tension*

Back tension at the maximum amount of tape on the supply reel shall be between 0.60 N and 0.80 N at the entrance of the drum as indicated in Figure 6, page 39. The range of tension between the maximum and minimum amount of winding shall be set as follows:

$$\frac{\text{tension at minimum amount of winding (38 } \varnothing \text{)}}{\text{tension at maximum amount of winding (118 } \varnothing \text{)}} = 1.3$$

5.4 *Audio and control head position*

The distance on the tape pattern from the end of the 180° scan of video head (So) to the audio and control head position is 74.0 ± 0.5 mm, dimension (X) as shown in Figure 8, page 43.

5.5 *Audio and control head dimensions*

Audio and control head dimensions and tolerances shall be in accordance with Figure 7, page 41.