

Specification for

**Helical-scan digital
component video
cassette recording
system using 19 mm
magnetic tape
(format D-1)**

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Equipment Standards Policy Committee (EEL/-) to Technical Committee EEL/22, upon which the following bodies were represented:

- Association of Professional Recording Studios
- Audio Engineering Society
- British Broadcasting Corporation
- British Kinematograph, Sound and Television Society
- British Tape Industry Association
- Independent Broadcasting Authority
- Independent Television Association
- National Council for Educational Technology
- Royal Photographic Society
- Royal Television Society
- Sound and Communication Industries Federation

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Publication(s) referred to	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Electronic Equipment Standards Policy Committee and is identical with IEC 1016:1989 “*Helical-scan digital component video cassette recording system using 19 mm magnetic tape (format D-1)*”, published by the International Electrotechnical Commission (IEC).

Cross-references

International Standard	Corresponding British Standard
IEC 461:1986	BS 6865:1987 <i>Specification for time and control codes for video tape recorders</i> (Identical)
IEC 735:1982	BS 6412:1983 <i>Methods for measurement of video tape properties</i> (Identical)
IEC 958:1989	BS 7239:1989 <i>Specification for digital audio interface</i> (Identical)

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

NOTE *Typographical error.* When adopting the text of the International Standard the following typographical error was discovered.

The title for Figure 39 should be read as “Audio block sync”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to vi, pages 1 to 76, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Foreword

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

Preface

This standard has been prepared by IEC Sub-Committee 60B: Video Recording, of IEC Technical Committee No. 60: Recording.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting	Two Months' Procedure	Reports on Voting
60B(CO)88	60B(CO)92	60B(CO)93 60B(CO)97	60B(CO)96 60B(CO)108

Full information on the voting for the approval of this standard can be found in the Voting Reports indicated in the above table.

The following IEC publications are quoted in this standard:

- Publications Nos. 461:1986: *Time and control code for video tape recorders.*
735:1982: *Measuring methods for video tape properties.*
958:1989: *Digital audio interface.*

Other publications quoted:

CCIR publications:

- Recommendation 601: *Encoding parameters of digital television for studios.*
Recommendation 656: *Interfaces for digital component video signals in 525-line and 625-line television systems.*

Report 624: *Characteristics of television systems.*

CCITT publication:

- Recommendation J.17: *Pre-emphasis used on sound-programme circuits.*

Section 1. General

1 Scope

This standard is applicable to magnetic recording of one digital video and four digital audio signals using 19 mm tape cassettes. It is valid for TV signals in digital component form, generated according to the rules of the CCIR Recommendations 601 and 656 and for digital audio signals according to IEC Publication 958.

This standard also describes the digital recording of ancillary data and the analog recording of one cue track and the control track.

2 Object

The object of this standard is to define the electrical and mechanical characteristics of equipment which will provide for the interchangeability of recorded cassettes.

The requirements given relate to 525/60 and 625/50 TV systems.

3 Environment and test conditions

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

temperature: 20 ± 1 °C

relative humidity: 50 ± 2 %

barometric pressure: 86 kPa to 106 kPa

tape tension: 0.8 ± 0.05 N

tape conditioning: not less than 24 h

Section 2. Videotape cassette

4 Mechanical parameters

4.1 Cassette dimensions

The dimensions of the three different cassettes used for recording shall be in accordance with Figure 1 to Figure 15, pages 3 to 18.

4.1.1 Mechanical tolerances

General tolerances for dimensions, except those for which tolerances are otherwise specified, shall be as follows:

Table 1 — Mechanical tolerances

Over	to	mm
0	4	± 0.2
4	16	± 0.3
16	63	± 0.4
63	250	± 0.5
250		± 0.7

4.2 Identification of cassettes

The three sizes of cassettes shall be identified as:

Small: D-1S

Medium: D-1M

Large: D-1L

4.3 Tape lengths, thickness and play times

Table 2 — Tape lengths of S, M, L cassettes

Tape Cassette	16 µm		13 µm	
S	190 m	11 min	225 m	13 min
M	587 m	34 min	708 m	41 min
L	1 311 m	76 min	1 622 m	94 min

4.4 Face of magnetic coating

The magnetic coating on the tape shall face out of the cassette as specified in Figure 1 to Figure 3, pages 3 to 5.

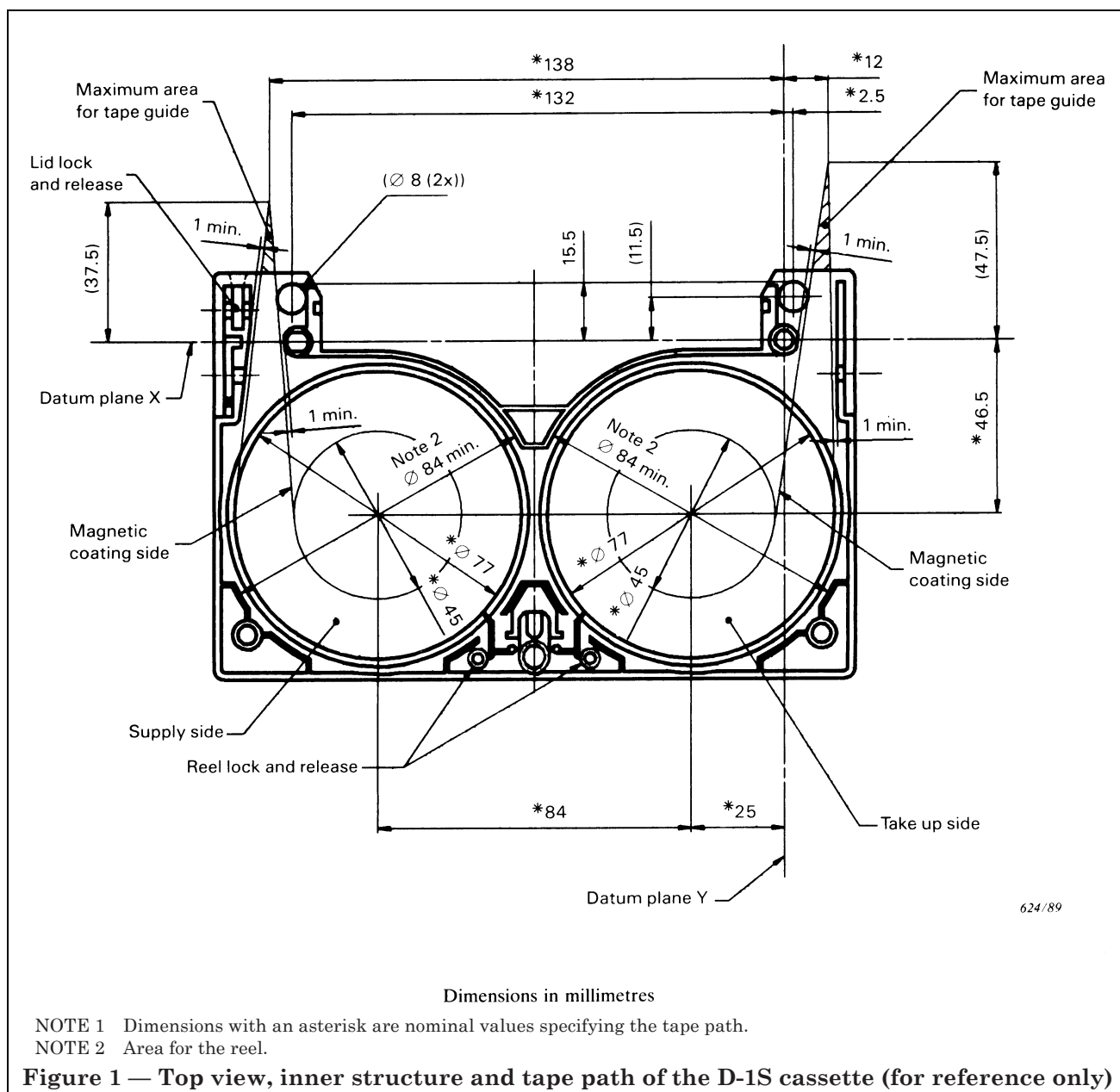
4.5 Datum planes

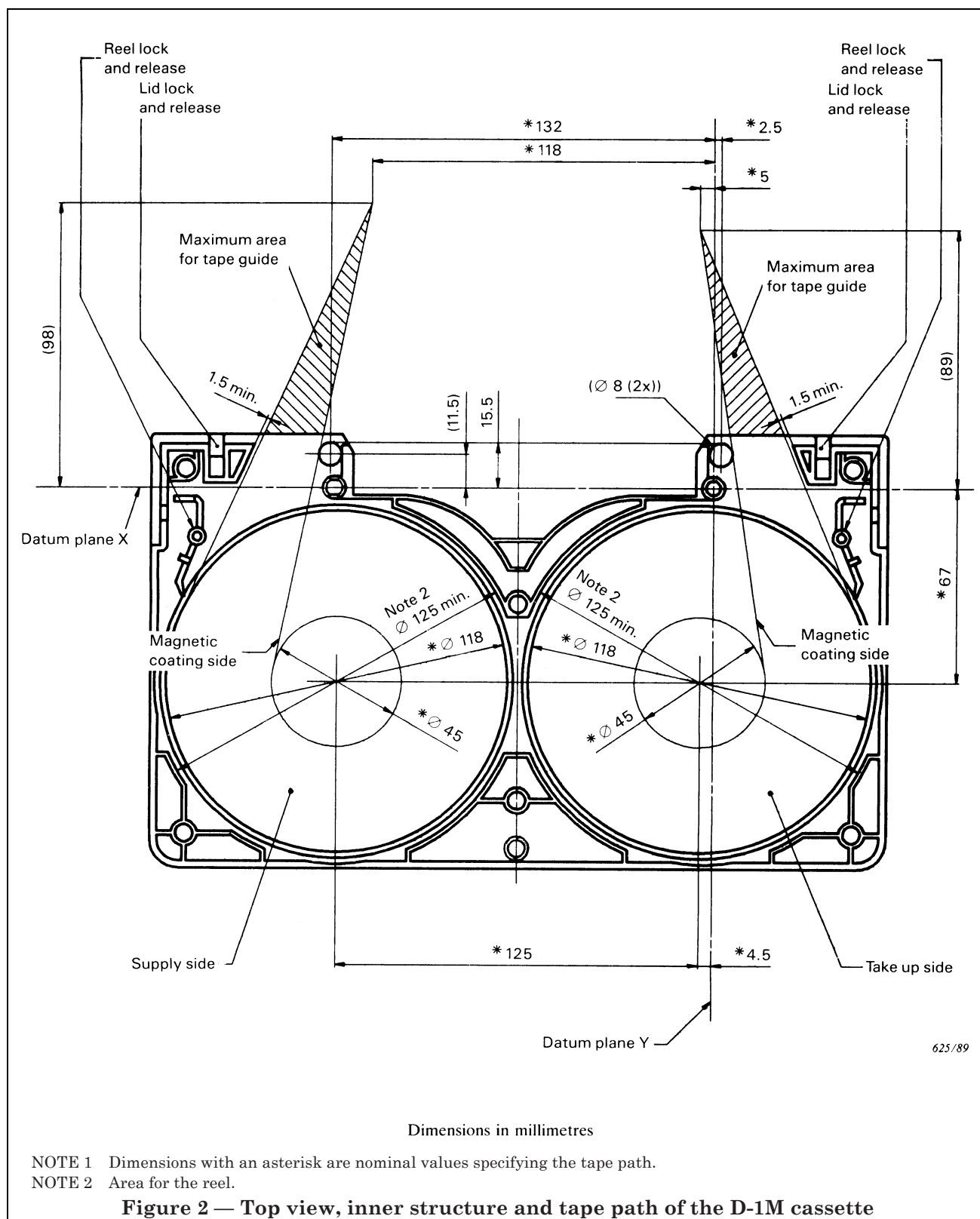
4.5.1 Datum plane Z is determined by datum areas A, B and C as specified in Figure 4 to Figure 6, pages 6 to 8.

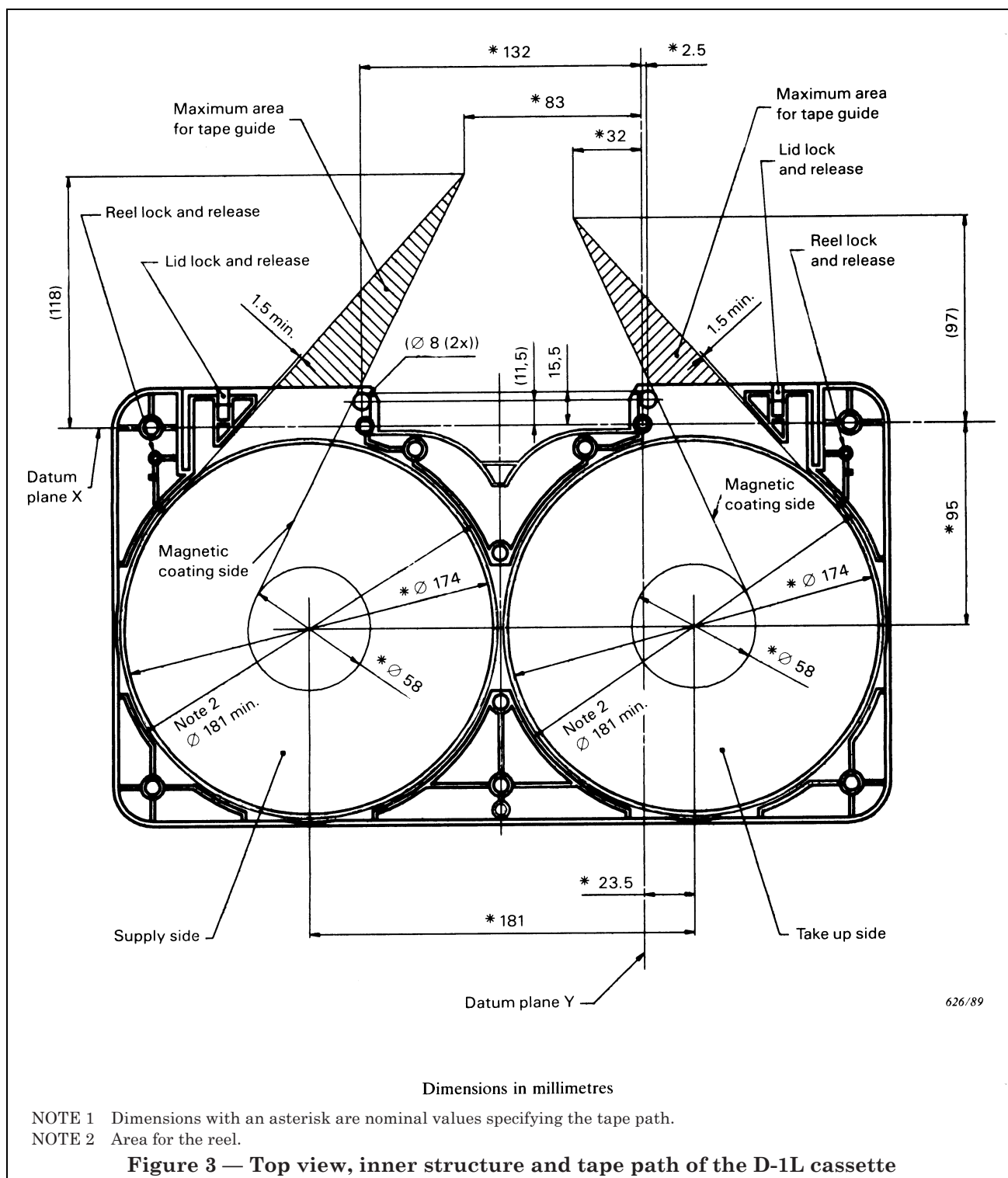
4.5.2 Datum C does not need to correspond to a fastener.

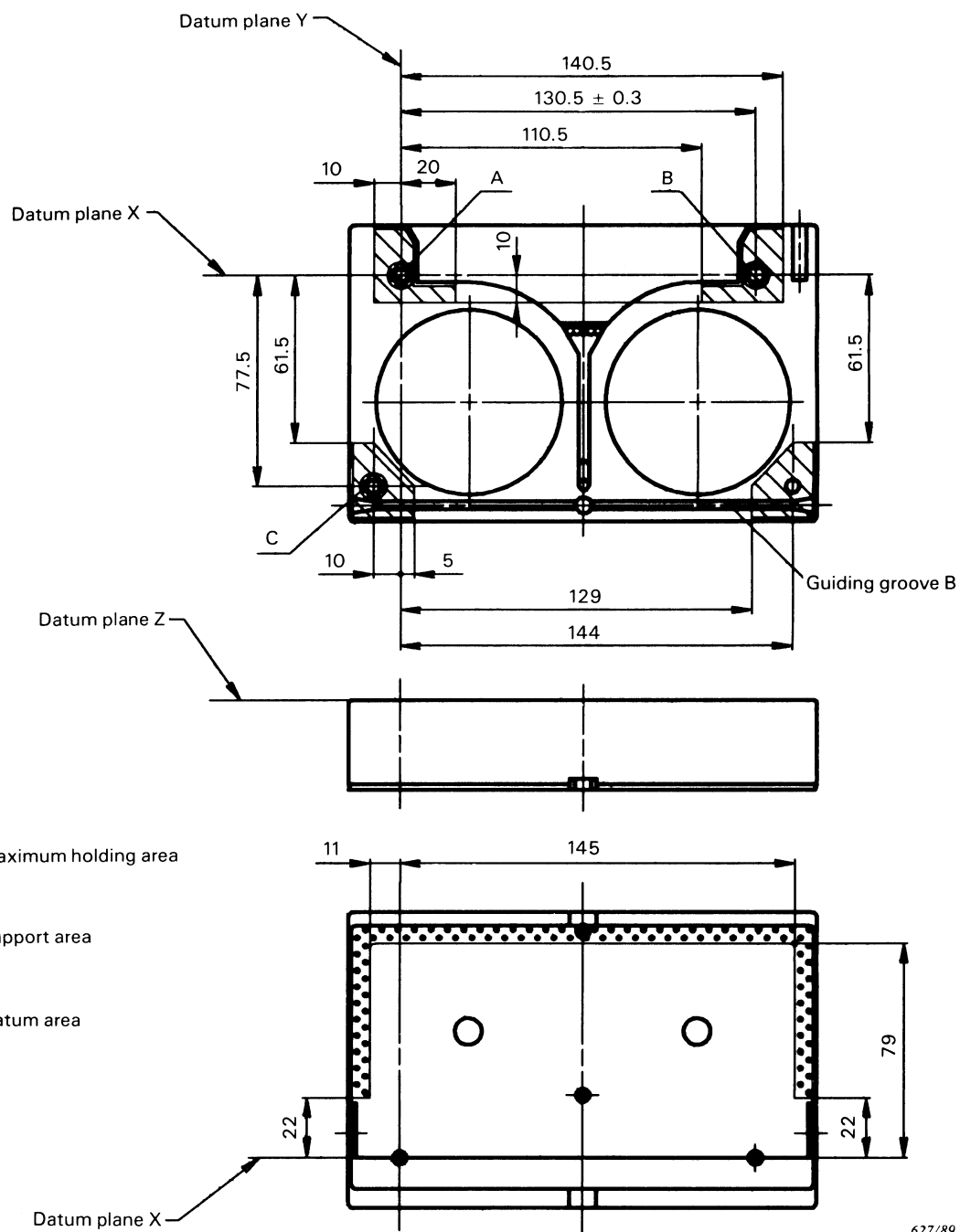
4.5.3 Datum plane X shall be orthogonal to datum plane Z and shall run through the centre of datum hole (a) and datum hole (b) as specified in Figure 7 to Figure 9, pages 9 to 11.

4.5.4 Datum plane Y shall be orthogonal to both datum plane X and datum plane Z and shall run through the centre of datum hole (a) as specified in Figure 7 to Figure 9.









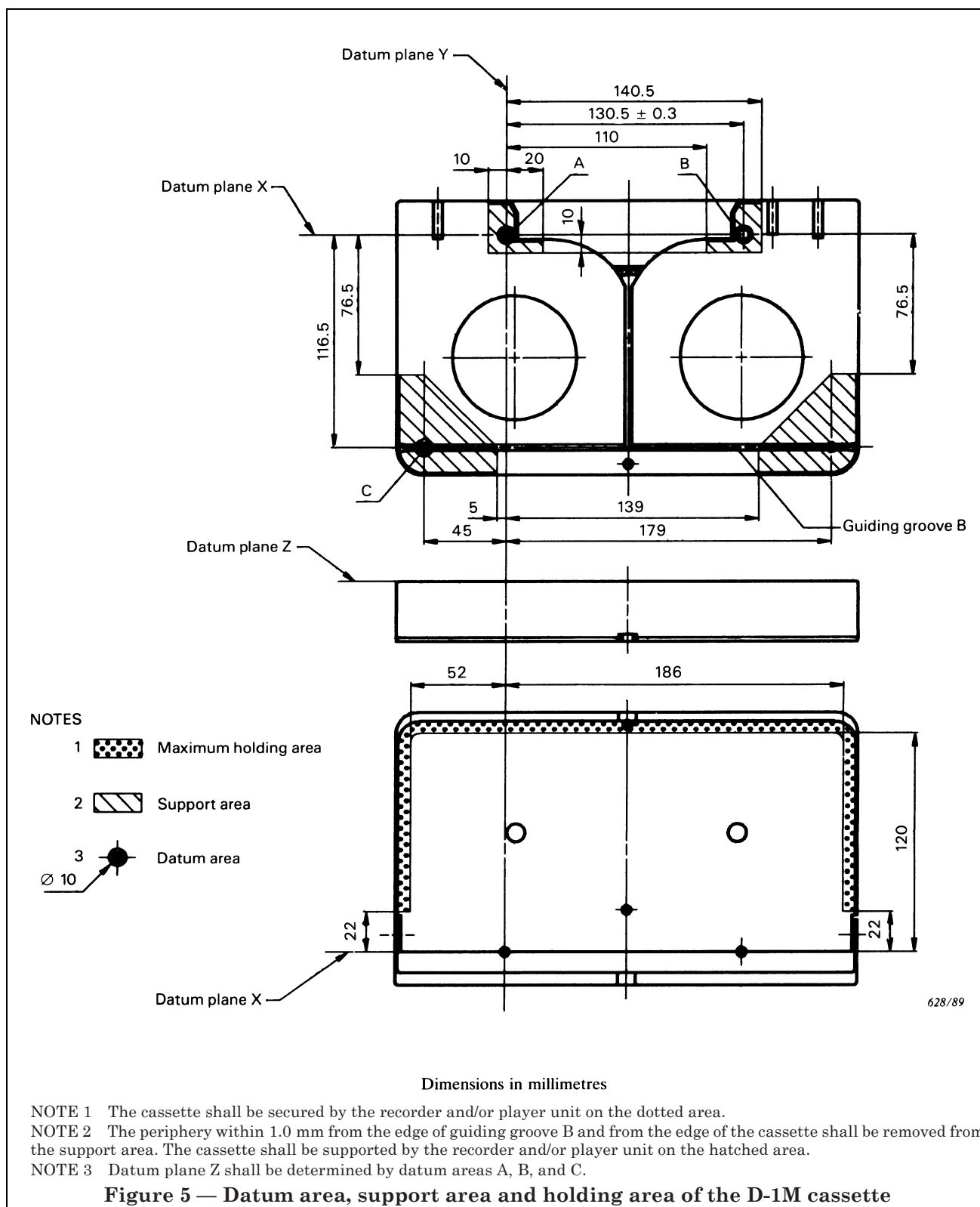
Dimensions in millimetres

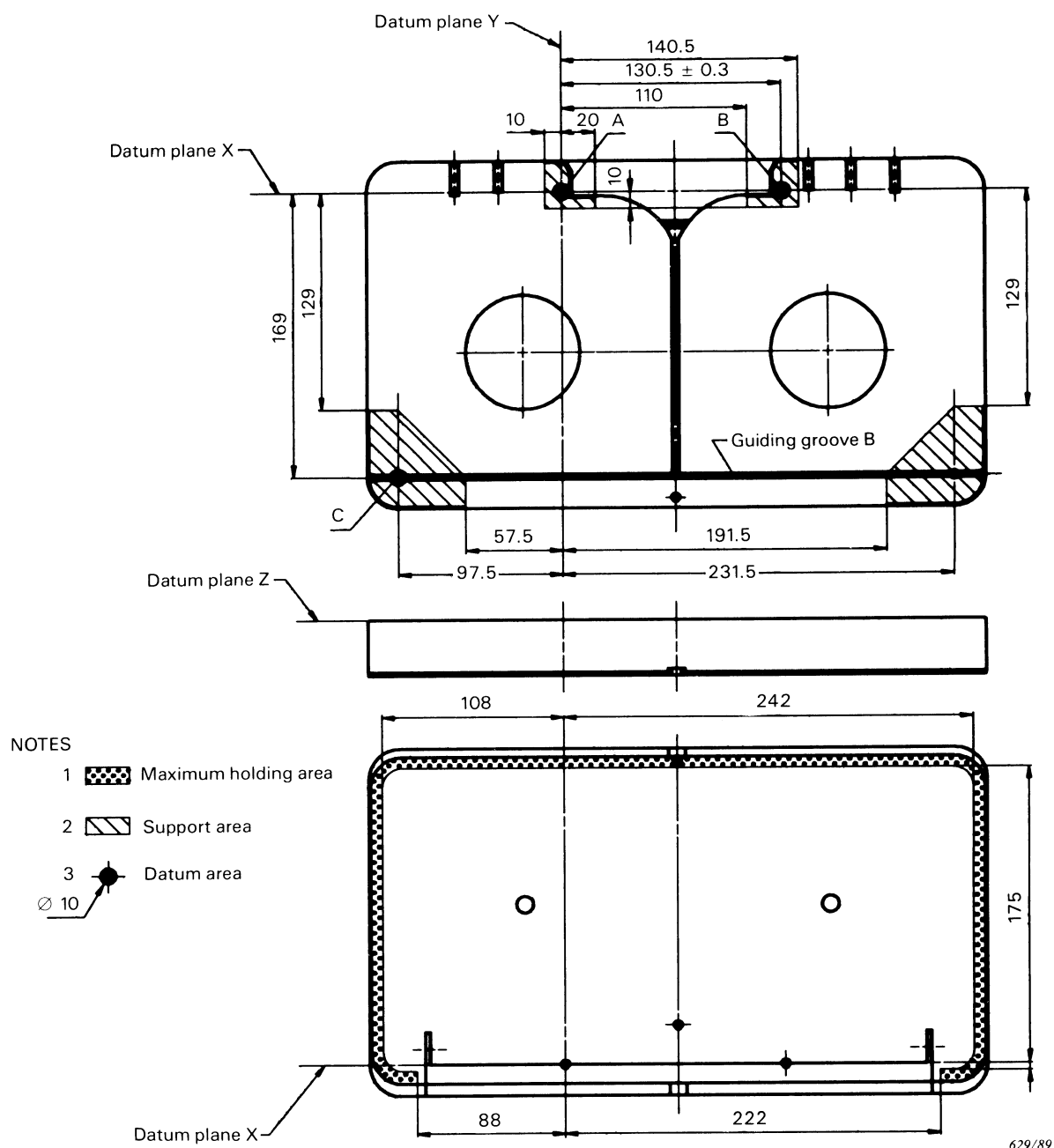
NOTE 1 The cassette shall be secured by the recorder and/or player unit on the dotted area.

NOTE 2 The periphery within 1.0 mm from the edge of guiding groove B and from the edge of the cassette shall be removed from the support area. The cassette shall be supported by the recorder and/or player unit on the hatched area.

NOTE 3 Datum plane Z shall be determined by datum areas A, B, and C.

Figure 4 — Datum area, support area and holding area of the D-1S cassette





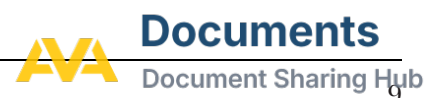
Dimensions in millimetres

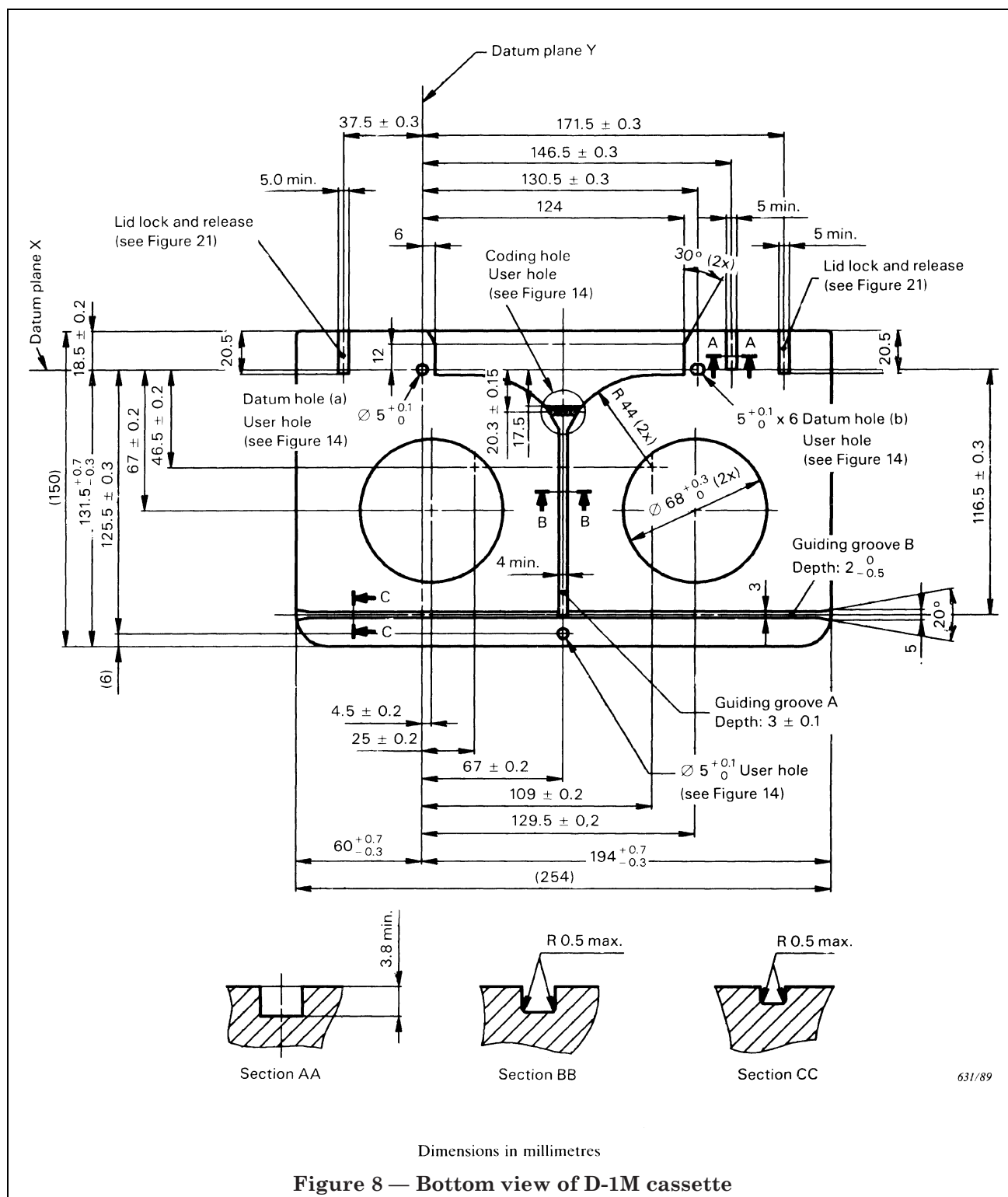
NOTE 1 The cassette shall be secured by the recorder and/or player unit on the dotted area.

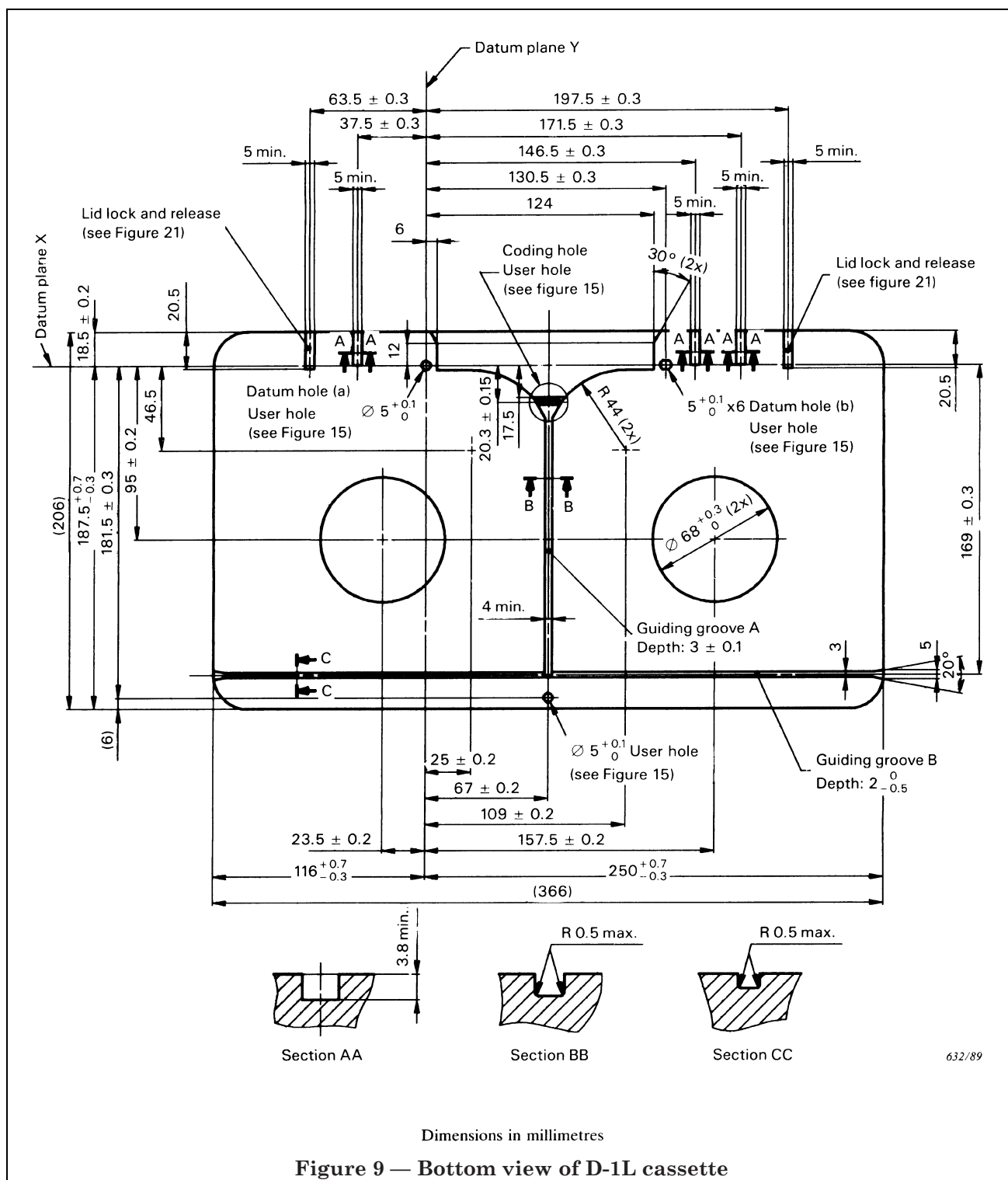
NOTE 2 The periphery within 1.0 mm from the edge of guiding groove B and from the edge of the cassette shall be removed from the support area. The cassette shall be supported by the recorder and/or player unit on the hatched area.

NOTE 3 Datum plane Z shall be determined by datum areas A, B, and C.

Figure 6 — Datum area, support area and holding area of the D-1L cassette







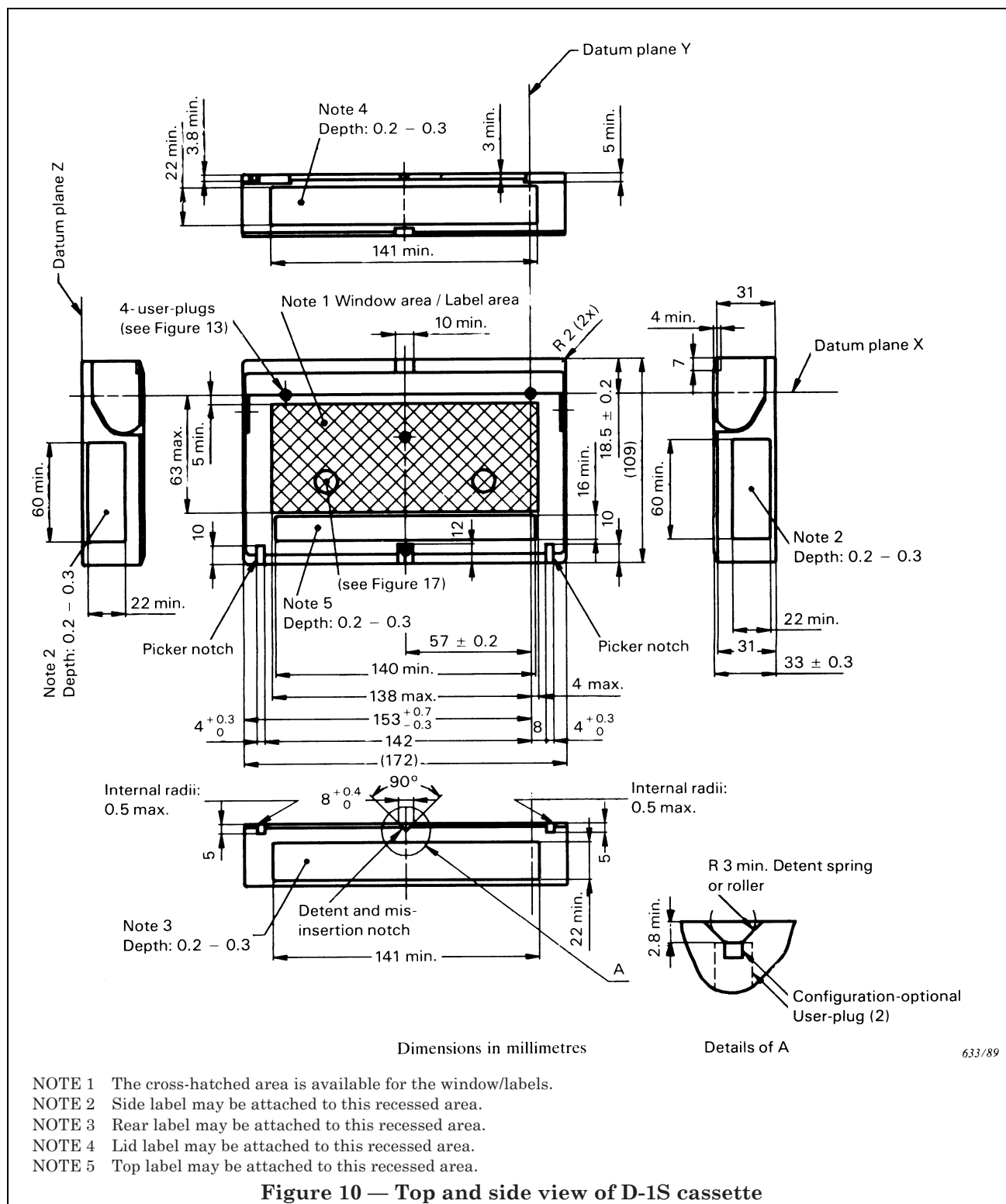
4.6 Window and labels

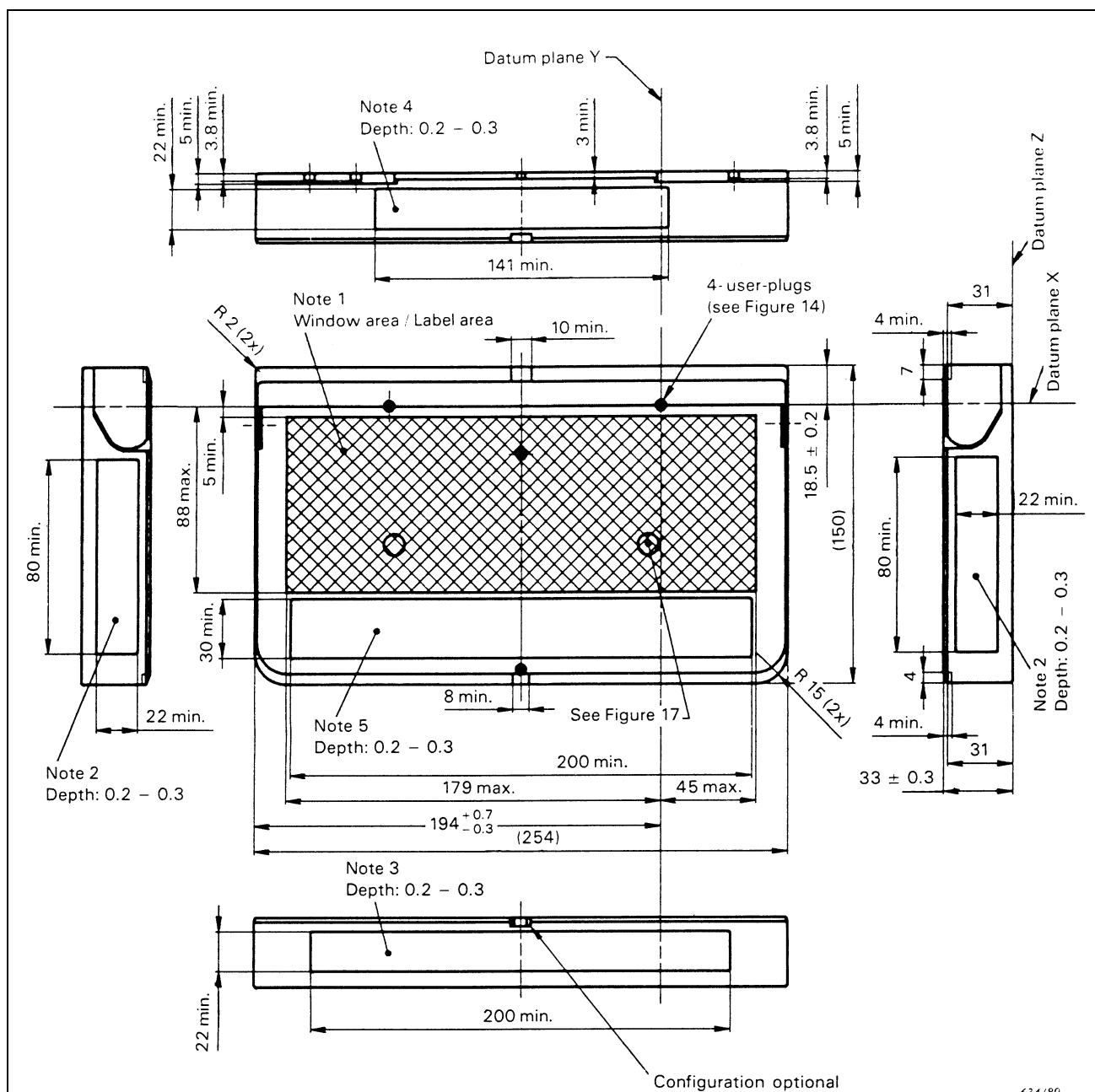
4.6.1 Window and label areas shall be as specified in Figure 10 to Figure 12, pages 12 to 14.

4.6.2 Labels attached to the cassette shall not extend beyond the external dimensions as shown in Figure 10 to Figure 12, pages 12 to 14.

4.6.3 Labels shall not interfere with users' or manufacturers' identification holes.

4.6.4 Labels shall not interfere with the hub drive and support mechanism.



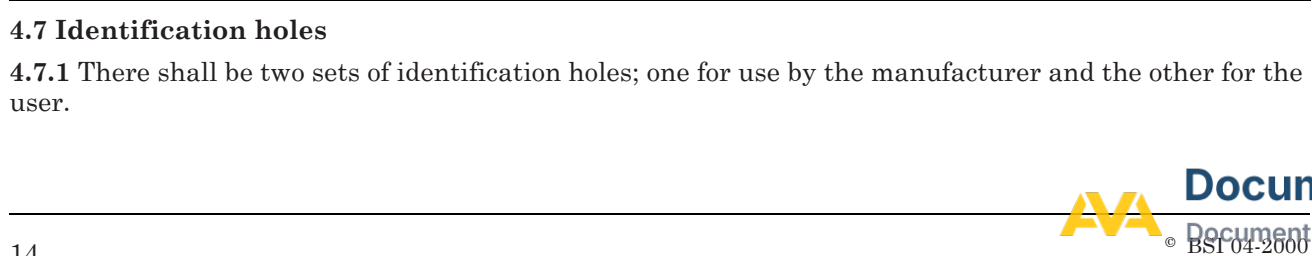


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Dimensions in millimetres

- NOTE 1 The cross-hatched area is available for the window/labels.
 NOTE 2 Side label may be attached to this recessed area.
 NOTE 3 Rear label may be attached to this recessed area.
 NOTE 4 Lid label may be attached to this recessed area.
 NOTE 5 Top label may be attached to this recessed area.

Figure 11 — Top and side view of D-1M cassette



4.7.2 Manufacturers' coding holes, detailed in Figure 13 to Figure 15, pages 16 to 18, shall be defined as follows:

Holes 1 and 2 shall be used in combination to indicate tape thickness according to the following logic table:

Hole numbers: 1 2

- 0 0 = 16 μ m tape
- 0 1 = 13 μ m tape
- 1 0 = Undefined/reserved
- 1 1 = Undefined/reserved

4.7.3 Holes 3 and 4 shall be used to indicate the coercivity of the magnetic recording tape.

Hole numbers: 3 4

- 0 0 = Class 850
- 0 1 = Undefined/reserved
- 1 0 = Undefined/reserved
- 1 1 = Undefined/reserved

4.7.4 A «0» in the above tables indicates that the indicator tab is removed or open, an undetected state by the recorder/player sensor mechanism.

4.7.5 The dimension and location of the users' holes specified in Figure 13 to Figure 15 shall be defined as follows:

4.7.6 When a «0» state exists, the user holes shall identify the following conditions:

- 1) total record lock out (audio, video, cue, time code, control track);
- 2) reserved and undefined;
- 3) reserved and undefined;
- 4) reserved and undefined.

4.7.7 The user plug mechanism shall withstand an axial force of 0.5 N.

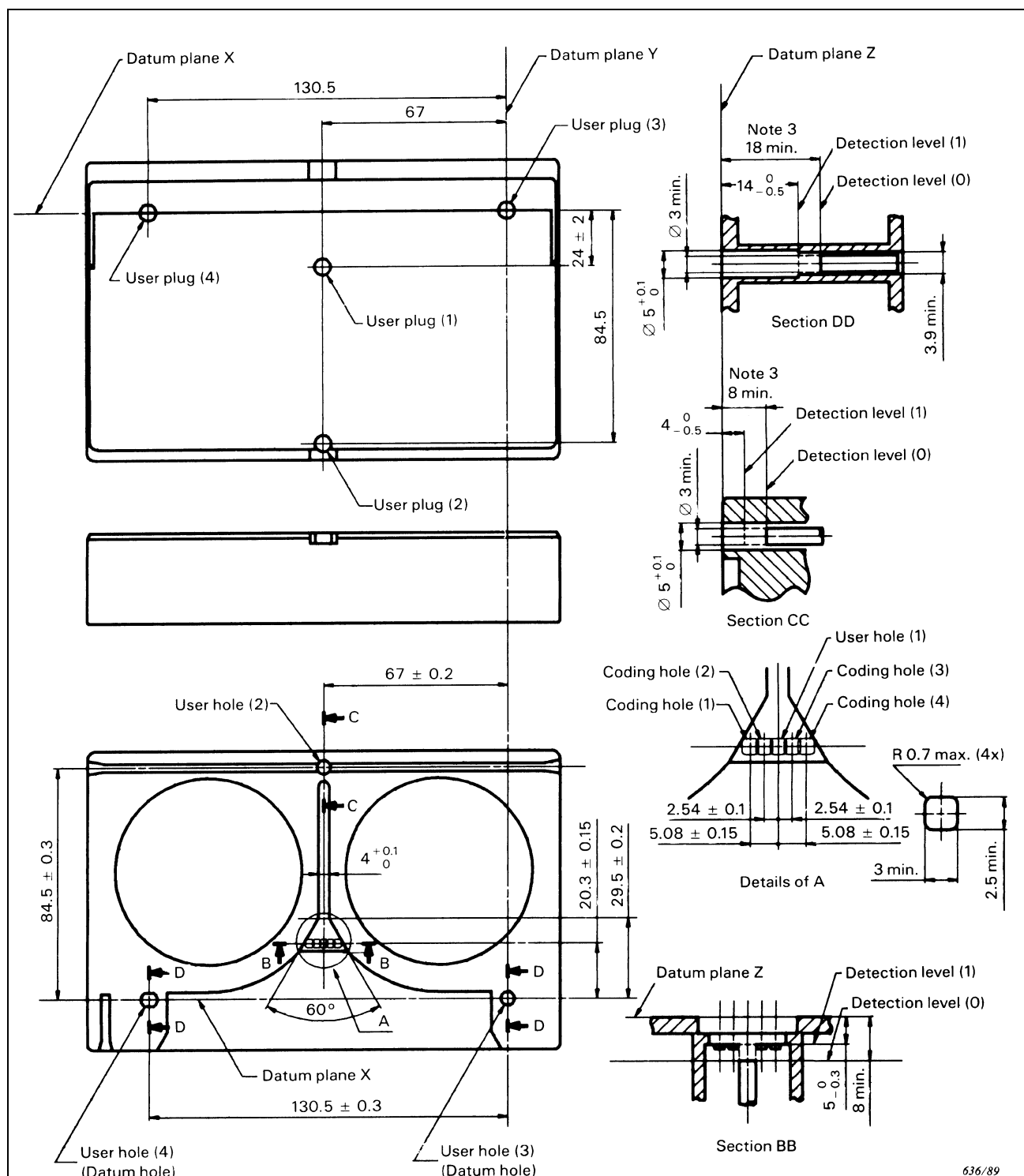


Figure 13 — D-1S cassette coding holes and user holes

