

# ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

---

## STANDARD ECMA-68

REELS FOR 12,7 mm WIDE MAGNETIC TAPES  
SIZE 16 – SIZE 18 – SIZE 22

January 1981

Free copies of this document are available from ECMA,  
European Computer Manufacturers Association  
114 Rue du Rhône – 1204 Geneva (Switzerland)

# ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

---

STANDARD ECMA-68

REELS FOR 12,7 mm WIDE MAGNETIC TAPES  
SIZE 16 – SIZE 18 – SIZE 22

January 1981

## BRIEF HISTORY

ECMA Technical Committee TC17 for Magnetic Tape was instructed by the General Assembly of December 1979 to draft an ECMA standard for empty reels of sizes smaller than that of the reel specified in Standard ECMA-62 for data interchange.

The work was based on industry usage and on German standard DIN 66012. The final figures adopted by TC17 are essentially the same as those in DIN 66012. They only differ from them in some decimal places so as to keep them identical with those of standards ECMA-62 and ISO 1864.

Adopted as Standard ECMA-68 by the General Assembly of ECMA of Dec. 18, 1980.

## TABLE OF CONTENTS

|   | <u>Page</u> |
|---|-------------|
| 1. SCOPE  | 1           |
| 2. FIELD OF APPLICATION   | 1           |
| 3. CONFORMANCE  | 1           |
| 4. DESCRIPTION  | 1           |
| 5. CONSTRUCTION   | 1           |
| 6. SIZES  | 2           |
| 7. DIMENSIONS   | 2           |
| 7.1 Reference Surface   | 2           |
| 7.2 Inside Diameter of the Hub                                  | 2           |
| 7.3 Overall Diameter of the Flanges                             | 2           |
| 7.4 Outside Diameter of the Hub                                 | 2           |
| 7.5 Dimensions of the Groove for the Write-Enable Ring          | 2           |
| 7.6 Distances of the Flange Surfaces from the Reference Surface | 3           |
| 7.7 Relieved Area of the Front Flange                           | 3           |
| 7.8 Relations between Dimensions                                | 4           |
| 8. OTHER PHYSICAL CHARACTERISTICS                               | 4           |
| 8.1 Balance   | 4           |
| 8.2 Moment of Inertia   | 4           |
| 8.3 Rigidity of the Hub   | 4           |
| 9. OWNER IDENTIFICATION   | 4           |
| 10. MANUFACTURER'S REEL IDENTIFICATION                          | 4           |
| 11. INTERCHANGE LABEL   | 5           |
| 12. WRITE-ENABLE RING   | 5           |
| 12.1 Top Surface  | 5           |
| 12.2 Tab  | 5           |
| 12.3 Construction   | 5           |
| TABLE OF ALL DIMENSIONS   | 6           |
| FIGURE  | 7           |
| APPENDIX  | 8           |

1. SCOPE

This Standard ECMA-68 specifies the characteristics of three sizes of reels for 12,7 mm wide magnetic tapes to enable physical interchangeability of such reels. These three sizes differ only by the overall diameter of their flanges. All other requirements of this Standard apply equally to all sizes.

2. FIELD OF APPLICATION

Reels according to this Standard are intended for such applications where the larger reel (Size 27) specified in Standard ECMA-62 is not used.

Reels according to this Standard cannot be used with the self-loading cartridge according to Standard ECMA-56.

3. CONFORMANCE

A reel is in conformance with this Standard when it has one of the three diameters specified in clause 7.3 and meets all other requirements of this Standard.

4. DESCRIPTION

In the enclosed drawing a reel according to this Standard is shown for illustrative purposes. The reel comprises a hub and two flanges. The front flange exhibits a circular relieved area. The rear flange exhibits a circular groove for a write-enable ring.

5. CONSTRUCTION

- 5.1 Reels shall be constructed such, that any cross-section taken through the central axis of the reel conforms to the cross-section shown in the drawing except were taken so as to pass through the relieved portion of the write-enable ring groove. The section shall, in this case, conform to this cross-section with appropriate deviations permitted at the ring groove relief as illustrated in detail X.
- 5.2 Reels shall not be symmetrical, the flanges differing from each other as to the presence or absence of the write-enable ring, which shall be adjacent to the mounting pedestal for correct machine operation.
- 5.3 Hub and flanges need not be integral, but may be separate parts at the manufacturer's option as long as all requirements of this Standard are met.
- 5.4 Bosses, ribs or raised designs are permitted on the outside surface of the flanges, provided that they do not extend beyond the cross-hatched envelope of the cross-section shown in the drawing.

6. SIZES

The three reels specified by this Standard are designated by:

Size 16

Size 18

Size 22

7. DIMENSIONS

The designation of the dimensions used hereafter is the same as that used to identify the dimensions of the larger reel of Size 27 described in Section III of Standard ECMA-62.

7.1 Reference Surface

All axial dimensions are referred to a Reference Surface U. This Reference Surface U shall be used for reel mounting. It is a circular surface defined by diameter A and D on the rear flange (see 7.2 and 7.5.1).

7.2 Inside Diameter of the Hub

The inside diameter A of the hub shall be:

$$A = 93,68 \text{ mm} \begin{array}{l} + 0,13 \text{ mm} \\ - 0,08 \text{ mm} \end{array}$$

7.3 Overall Diameter of the Flanges

The overall diameter B of the flanges shall be:

$$\text{Size 16: } B = 160,5 \text{ mm} \pm 0,5 \text{ mm}$$

$$\text{Size 18: } B = 177,8 \text{ mm} \pm 0,5 \text{ mm}$$

$$\text{Size 22: } B = 215,9 \text{ mm} \pm 0,5 \text{ mm}$$

7.4 Outside Diameter of the Hub

The outside diameter C of the hub shall be:

$$C = 130,18 \text{ mm}$$

The tolerance on this dimension shall be:

$$\text{In Ranges N : } \pm 0,20 \text{ mm}$$

$$\text{In Range W : } \pm 0,13 \text{ mm}$$

7.5 Dimensions of the Groove for the Write-Enable Ring

7.5.1 The inside diameter D of the groove shall be:

$$D = 98,42 \text{ mm} \pm 0,13 \text{ mm}$$

7.5.2 The outside diameter E of the groove shall be:

$$E = 111,46 \text{ mm} \pm 0,13 \text{ mm}$$

- 7.5.3 The angle  $\alpha$  of the wall of the groove with the axis of the reel shall be:

$$\alpha = 4^{\circ} \pm 15'$$

- 7.5.4 The depth F of the groove shall be:

$$F = 6,35 \text{ mm} \begin{array}{l} + 0,25 \text{ mm} \\ - 0,00 \text{ mm} \end{array}$$

- 7.5.5 The radius H of the tab for facilitating removal of the write-enable ring shall be:

$$H = 19,05 \text{ mm} \pm 0,38 \text{ mm}$$

when measured at the distance R which shall be:

$$R = 42,60 \text{ mm} \pm 0,25 \text{ mm}$$

## 7.6 Distances of the Flange Surface from the Reference Surface

- 7.6.1 The distance  $J_f$  of the inside surface of the front flange from the Reference Surface U shall be:

$$J_f = 15,80 \text{ mm} \begin{array}{l} + 0,64 \text{ mm} \\ - 0,13 \text{ mm} \end{array}$$

- 7.6.2 The distance  $J_r$  of the inside surface of the rear flange from the Reference Surface U shall be:

$$J_r = 2,46 \text{ mm} \begin{array}{l} + 0,13 \text{ mm} \\ - 0,64 \text{ mm} \end{array}$$

- 7.6.3 The distance  $K_f$  of the outside surface of the front flange from the Reference Surface U shall be:

$$K_f = 21,54 \text{ mm maximum}$$

- 7.6.4 The distance  $K_r$  of the outside surface of the rear flange from the Reference Surface U shall be:

$$K_r = 2,03 \text{ mm maximum}$$

## 7.7 Relieved Area of the Front Flange

- 7.7.1 The diameter L of the relieved area of the front flange shall be:

$$L = 104,78 \text{ mm minimum}$$

- 7.7.2 The distance M of the bottom surface of the relieved area from the Reference Surface U shall be:

$$M = 18,24 \text{ mm} \pm 0,13 \text{ mm}$$



## 7.8 Relations between Dimensions

### 7.8.1 Relation between dimensions A and C

The outside cylindrical surface of the hub shall be concentric with the bore of the hub within 0,25 mm.

### 7.8.2 Relation between dimension C and the Reference Surface U

Within Ranges N the perpendicularity of the outside cylindrical surface and the Reference Surface U shall be within:

0,100 mm

Within Range W it shall be within:

0,065 mm

The nominal length of Ranges N shall be:

$N = 1,5 \text{ mm}$

## 8. OTHER PHYSICAL CHARACTERISTICS

### 8.1 Balance

The full reel shall be balanced about its normal axis of rotation. Any amount by which the full reel is out of static balance shall not exceed 0,015 g.m.

### 8.2 Moment of Inertia

The moment of inertia of the full reel is not specified by this Standard. The maximum moment of inertia of an empty reel shall not exceed:

0,68 g.m<sup>2</sup> for Size 16

0,68 g.m<sup>2</sup> for Size 18

1,34 g.m<sup>2</sup> for Size 22

### 8.3 Rigidity of the Hub

Dimension A shall not be reduced to less than 93,5 mm when the reel is fully loaded with tape wound at a constant tension of 3,6 N.

## 9. OWNER IDENTIFICATION

An identification area shall be provided on the front flange of the reel for ownership identification.

## 10. MANUFACTURER'S REEL IDENTIFICATION

The manufacturer's identification may be placed on the reel.

11. INTERCHANGE LABEL

A labelling area or card holder may be provided on the front flange. Suitable labels shall be used for marking the contents of the reel of tape. Adhesive labels, if employed, shall be of a type which leave no residue when removed. The use of pencil or similar erasable marking is not allowed.

12. WRITE ENABLE-RING

12.1 Top Surface

When installed in the write-enable ring groove, the top surface of the write-enable ring shall not protrude above the mounting reference surface.

12.2 Tab

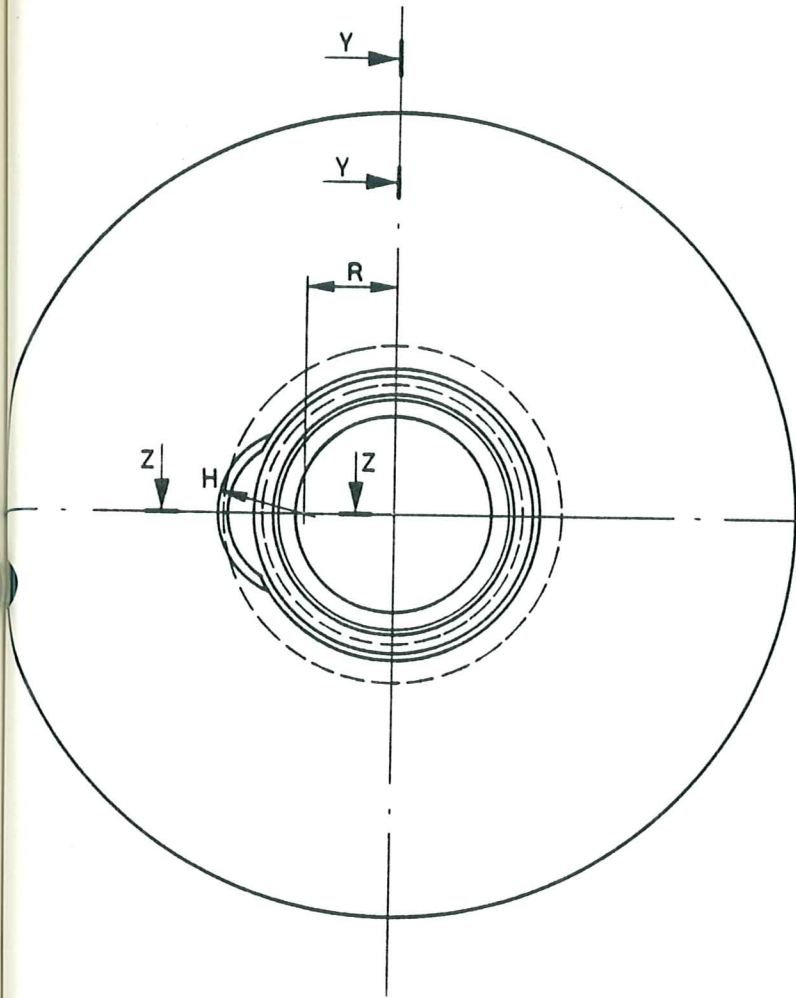
All write-enable rings shall have a tab to facilitate removal from the groove.

12.3 Construction

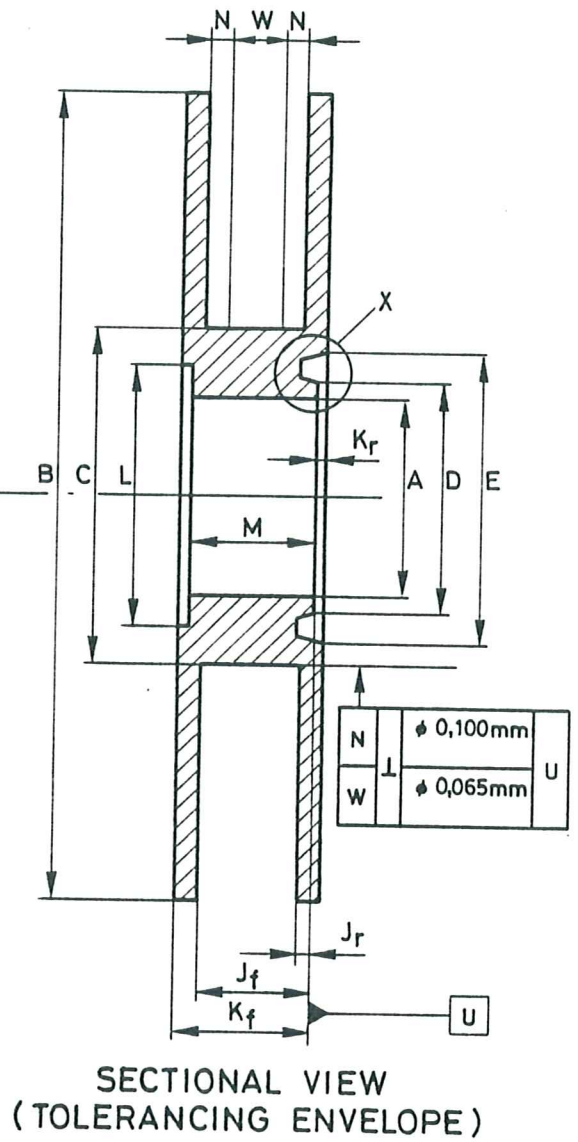
Dimensions and materials used shall be such that the write-enable ring may be inserted and removed with reasonable effort and remains inserted during normal use. Furthermore, the ring shall be constructed so as not to interfere with normal tape transport performance.

TABLE OF ALL DIMENSIONS IN mm

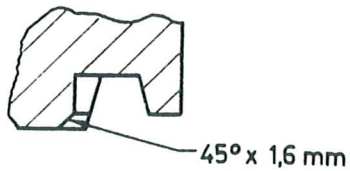
|                | Nominal | Tolerance                        |
|----------------|---------|----------------------------------|
| A              | 93,68   | + 0,13<br>- 0,08                 |
| B<br>Size 16   | 160,5   | $\pm$ 0,5                        |
| B<br>Size 18   | 177,8   | $\pm$ 0,5                        |
| B<br>Size 22   | 215,9   | $\pm$ 0,5                        |
| C              | 130,18  | (N) $\pm$ 0,20<br>(W) $\pm$ 0,13 |
| D              | 98,42   | $\pm$ 0,13                       |
| E              | 111,46  | $\pm$ 0,13                       |
| F              | 6,35    | + 0,25<br>- 0,00                 |
| H              | 19,05   | $\pm$ 0,38                       |
| J <sub>f</sub> | 15,80   | + 0,64<br>- 0,13                 |
| J <sub>r</sub> | 2,46    | + 0,13<br>- 0,64                 |
| K <sub>f</sub> | 21,54   | maximum                          |
| K <sub>r</sub> | 2,03    | maximum                          |
| L              | 104,78  | minimum                          |
| M              | 18,24   | $\pm$ 0,13                       |
| N              | 1,5     |                                  |
| R              | 42,60   | $\pm$ 0,25                       |
| $\alpha$       | 4°      | $\pm$ 15'                        |



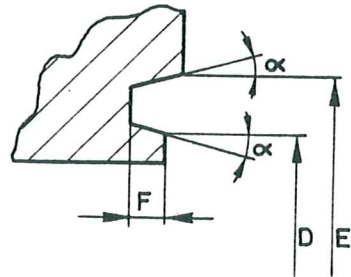
REAR FLANGE VIEW



SECTIONAL VIEW  
(TOLERANCING ENVELOPE)



SECTION Z-Z



DETAIL X

## APPENDIX

Whilst this Standard specifies empty reels, it is recommended to consider the following figures when loading these reels with magnetic tapes.

### 1 A. Length of Tape

The normal minimum lengths of tape recommended are:

Size 16 : 91,5 m

Size 18 : 183 m

Size 22 : 366 m

### 2 A. E-Value

The nominal E-values recommended are:

Size 16 : 5 mm

Size 18 : 6 mm

Size 22 : 10 mm

#### NOTE:

*The E-value is the radial distance by which the tape flanges extend beyond the outermost layer of a tape which has been wound at a tension of 2 N to 3,6 N on the specified reel (ECMA-62, clause 5.7).*

### 3 A. Moment of Inertia

The following moments of inertia of the full reels are recommended:

Size 16 :  $0,86 \text{ g.m}^2 \pm 0,21 \text{ g.m}^2$

Size 18 :  $1,36 \text{ g.m}^2 \pm 0,23 \text{ g.m}^2$

Size 22 :  $3,36 \text{ g.m}^2 \pm 0,27 \text{ g.m}^2$

