

JIS

JAPANESE INDUSTRIAL STANDARD

**90 mm Flexible Disk Cartridges
(13262/15916 ftprad)**

JIS X 6223—1987

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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90 mm Flexible Disk Cartridges
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1. Scope

This Japanese Industrial Standard specifies the construction and dimensions, physical and mechanical properties and electrical and magnetical characteristics of 90 mm flexible disk cartridges for information interchange which are recorded on both sides at a flux transition density of 13262/15916 flux transitions/rad, and a track density of 5.3 tracks/mm.

2. Definitions

For the purpose of this Standard, in addition to the definitions specified in Japanese Industrial Standards: Glossary of Terms Used in Information Processing⁽¹⁾, the following principal definitions apply:

- (1) flexible disk cartridge A flexible information recording medium which consists of a case and an accommodated disk, and accepts and retains on both recording surfaces of the disk information for data processing and associated systems. Hereinafter referred to as the "flexible disk".
- (2) hub A circular device which is attached to the centre of the flexible disk and drives the disk. The hub ensures centring of the disk on the drive shaft by means of pushing-in the shaft to the hole of a specific angle.
- (3) shutter A mechanism which opens and closes the head windows automatically when a flexible disk is attached to and detached from the disk drive.
- (4) liner A protective sheet positioned between the case and the disk to provide cleaning action and protection from abrasion.
- (5) case A protective enclosure having a shutter mechanism, a write-inhibit hole and an identification hole.
- (6) write-inhibit hole A through hole provided on the case which enable recording of the disk only when the hole is closed.
- (7) identification hole A through hole provided on the case to identify the flexible disk specified in this Standard.

Applicable Standards, Corresponding International Standard and Reference Standards: See pages 28 and 29.

- (8) master standard reference flexible disk A flexible disk to be used as the standard for reference fields, signal amplitudes, resolution, peak shift and overwrite, and the characteristic values of which are specified by the International Organization for Standardization (ISO). Track 00 and track 79 on both sides are declared as reference tracks. The reference tracks are calibrated at a flux transition density of 15916 flux transitions/rad.

Note (1)

JIS X 0001
JIS X 0002
JIS X 0003
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JIS X 0008
JIS X 0009
JIS X 0010
JIS X 0011
JIS X 0012
JIS X 0013
JIS X 0014
JIS X 0015
JIS X 0016

- (9) secondary standard reference flexible disk A flexible disk the deviation of which in the electromagnetic conversion characteristics from the master standard reference flexible disk is clearly stated so that comparison between the flexible disk to be tested and the master standard reference disk in their electromagnetic conversion characteristics is possible.

Informative Reference: Secondary standard reference flexible disks are supplied by the organization shown in appended Informative Reference, the contents are also shown.

- (10) reference field The minimum field by which the average signal amplitude becomes 95% of the maximum output value (satulated value) when a signal is recorded on the specified track of the master standard reference flexible disk at the specified frequency of flux transition and then the record is read back.
- (11) average signal amplitude The average value of the peak-to-peak amplitudes of output voltage reproduced over one revolution of a track in question.
- (12) peak value The crest value of read back output voltage, 0 V being as the reference.

3. Construction

The construction of flexible disk shall be as illustrated in Figs. 1 to 5. That is, a disk equipped with a metallic hub at its centre is contained in a case which has a liner inside, and the headwindows are covered by the shutters.

The case shall be equipped with a hub access hole at the middle part on one side, with a head window, write-inhibit hole and identification hole on each side.

The side of case on which the hub access hole is located, shall be called as side 0 and the other side as side 1.

4. Shape and Dimensions

4.1 Case The reference axes of a case shall be the extended lines of X and Y intersecting at right angles in Fig. 1. The reference plane for thickness direction shall be the plane XY in the dotted area of side 0 given in Fig. 2.

Fig. 1. Flexible Disk (Side 0)

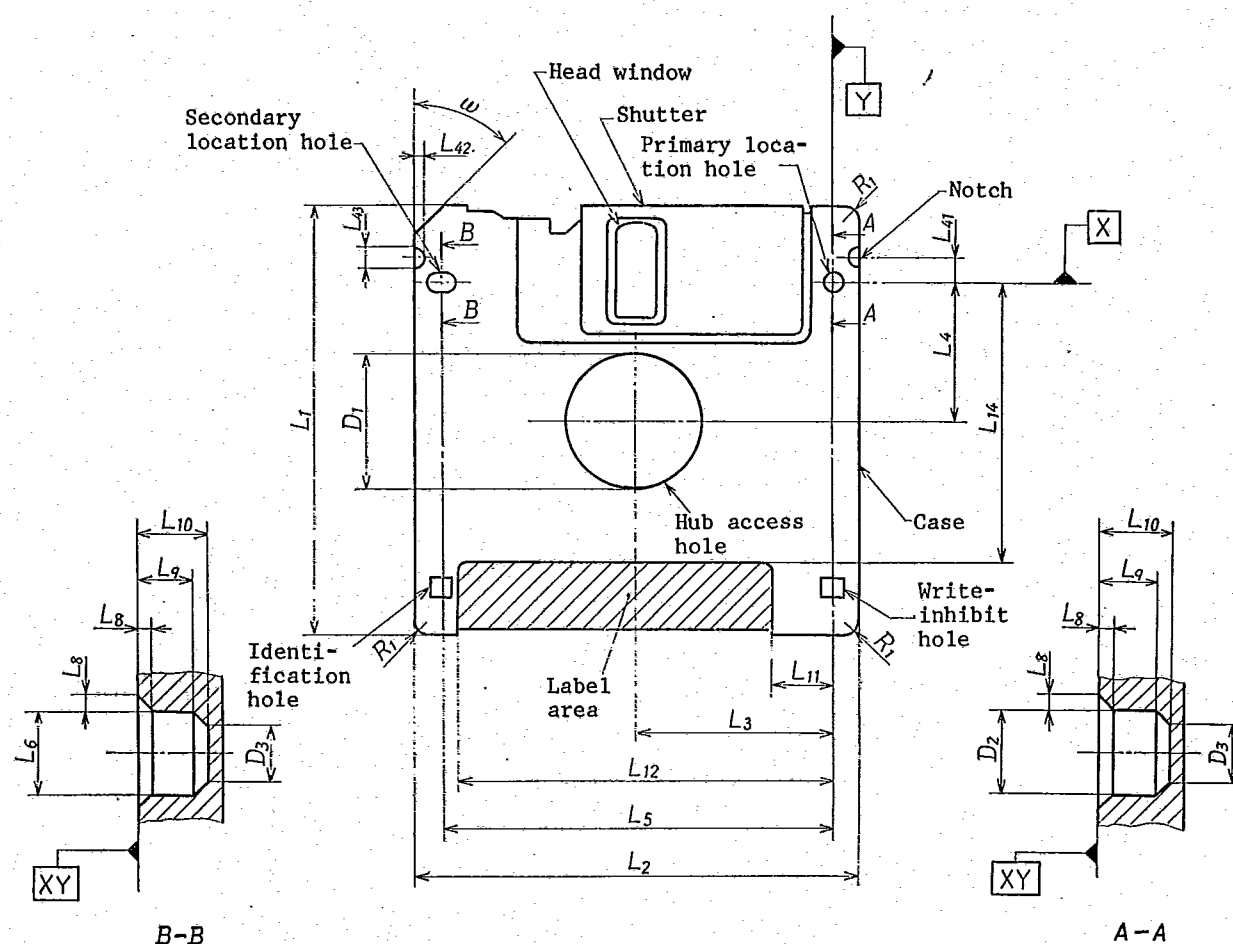
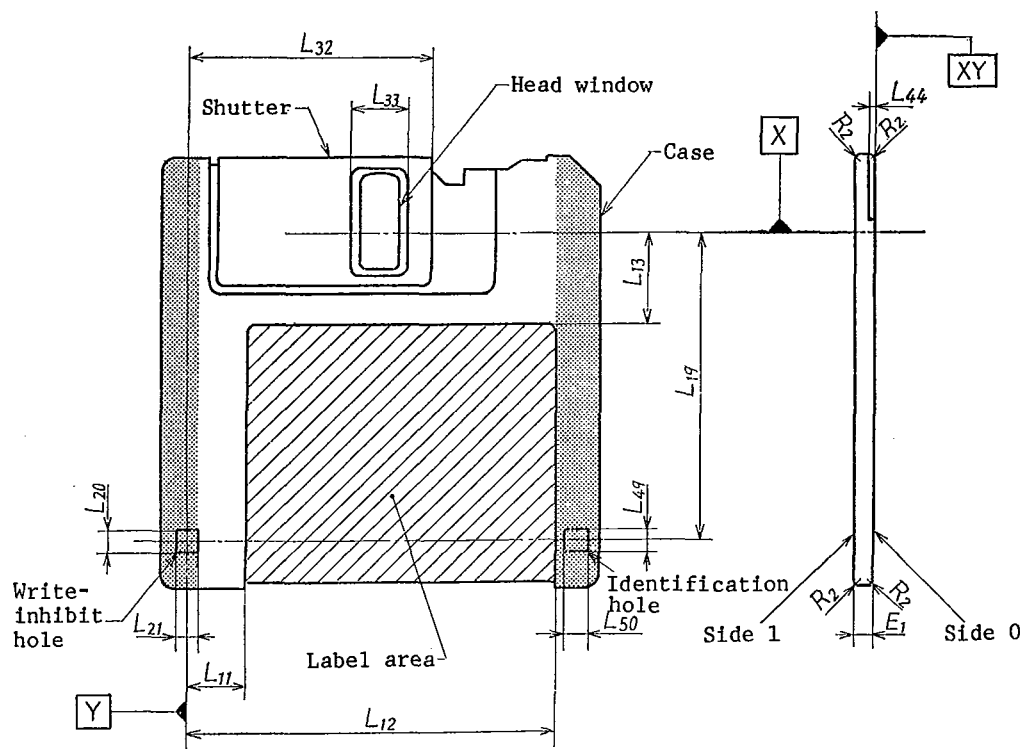


Fig. 2. Flexible Disk (Side 1)



- (1) **Size** The lengths of two sides (L_1 , L_2), the radius of round at three corners (R_1) and the angle of the fourth corner (ω) shall be as given in Fig. 1 and the following:

$$L_1 = 94.0 \pm 0.3 \text{ mm}$$

$$L_2 = 90.0^{+0.4}_{-0.1} \text{ mm}$$

$$R_1 = 2.0 \pm 1.0 \text{ mm}$$

$$\omega = 45 \pm 2^\circ$$

- (2) **Thickness** The thickness in the areas 8.5 mm from each end of case (dotted area shown in Fig. 2) (E_1), the radius of corner (R_2) shall be as follows:

$$E_1 = 3.3 \pm 0.2 \text{ mm}$$

$$R_2 = 0.40 \pm 0.25 \text{ mm}$$

The flexible disk shall fall when inserted in the thickness gauge having vertical walls illustrated in Appendix 1 with a force 0.2 N at the maximum.

- (3) **Hub Access Hole** The position (L_3 , L_4) and the diameter (D_1) of hub access hole shall be as given in Fig. 1 and the following:

$$L_3 = 40.00 \pm 0.15 \text{ mm}$$

$$L_4 = 31.00 \pm 0.15 \text{ mm}$$

$$D_1 \geq 26.50 \text{ mm}$$

(4) Locating Holes

- (a) Primary Locating Hole The centre of primary locating hole shall be at the intersection of reference axes X and Y, and the shape (L_8 , L_9 , L_{10} , D_2 , D_3) shall be as given in Fig. 1 and the following:

$$L_8 = 0.2 \pm 0.1 \text{ mm}$$

$$L_9 \geq 1.0 \text{ mm}$$

$$L_{10} \geq 2.5 \text{ mm}$$

$$D_2 = 3.6 \pm 0.1 \text{ mm}$$

$$D_3 \geq 1.5 \text{ mm}$$

- (b) Secondary Locating Hole The centre of secondary locating hole shall be on reference axis X, and its distance from reference axis Y (L_5), and the dimensions (L_6 , L_7) shall be as given in Figs. 1 and 3, and the following:

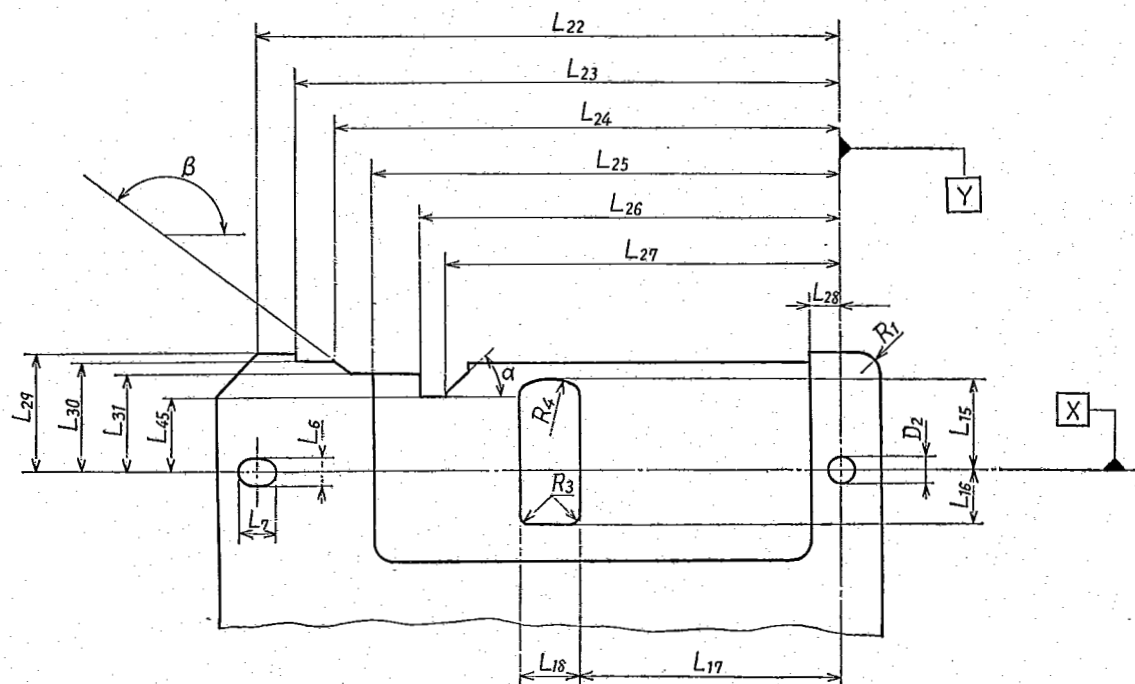
$$L_5 = 80.0 \pm 0.2 \text{ mm}$$

$$L_6 = 3.6 \pm 0.1 \text{ mm}$$

$$L_7 = 4.4 \pm 0.2 \text{ mm}$$

The shape of hole (L_8 , L_9 , L_{10} , D_3) shall be as specified in (a).

Fig. 3. Enlarged Drawing of Flexible Disk (Side 0)



(5) Label Area

- (a) Side 0 The label area on side 0 shall be the hatched part of Fig. 1, and the dimensions showing this area (L_{11} , L_{12} , L_{14}) shall be as follows:

$$L_{11} \geq 3.5 \text{ mm}$$

$$L_{12} \leq 76.5 \text{ mm}$$

$$L_{14} \geq 60.0 \text{ mm}$$

- (b) Side 1 The label area on side 1 shall be the hatched part of Fig. 2, and the dimensions showing this area (L_{11} , L_{12} , L_{13}) shall be as follows:

$$L_{11} \geq 3.5 \text{ mm}$$

$$L_{12} \leq 76.5 \text{ mm}$$

$$L_{13} \geq 20.0 \text{ mm}$$

- (6) Head Window The dimensions showing the location (L_{15} to L_{17}), the width (L_{18}), the radius of lower part (R_3) and the radius of upper part (R_4) of head windows shall be as given in Fig. 3 and the following:

$$L_{15} \geq 12.3 \text{ mm}$$

$$L_{16} \geq 11.5 \text{ mm}$$

$$L_{17} = 35.5 \pm 0.2 \text{ mm}$$

$$L_{18} = 9.00 \pm 0.20 \text{ mm}$$

$$R_3 = 0.5 \pm 0.1 \text{ mm}$$

$$R_4 \geq 8.85 \text{ mm}$$

- (7) Write-inhibit Hole The centre of write-inhibit hole shall be on reference axis Y, and its distance from reference axis X (L_{19}) and the size (L_{20} , L_{21}) shall be as given in Fig. 2 and the following:

$$L_{19} = 67.75 \pm 0.25 \text{ mm}$$

$$L_{20} \geq 3.5 \text{ mm}$$

$$L_{21} \geq 4.0 \text{ mm}$$

- (8) Identification Hole The centre position (L_5 , L_{19}) and the size (L_{49} , L_{50}) of identification hole shall be as given in Figs. 1 and 2, and the following:

$$L_{49} \geq 3.5 \text{ mm}$$

$$L_{50} \geq 4.0 \text{ mm}$$

- (9) Profile of Shutter Part The profile dimensions (L_{22} to L_{31} , L_{45}) and the edge angle (α , β) of the part where the shutter is mounted shall be as given in Fig. 3 and the following:

$$\begin{aligned} L_{22} &= 80.0 \pm 0.2 \text{ mm} \\ L_{23} &= 76.0 \pm 0.3 \text{ mm} \\ L_{24} &= 68.0 \pm 0.3 \text{ mm} \\ L_{25} &= 64.50 \pm 0.35 \text{ mm} \\ L_{26} &= 57.00 \pm 0.35 \text{ mm} \\ L_{27} &= 55.5 \pm 0.6 \text{ mm} \\ L_{28} &\geq 3.5 \text{ mm} \\ L_{29} &= 17.5 \pm 0.2 \text{ mm} \\ L_{30} &= 17.00 \pm 0.15 \text{ mm} \\ L_{31} &= 15.50 \pm 0.25 \text{ mm} \\ L_{45} &= 12.50 \pm 0.25 \text{ mm} \\ \alpha &= 45 \pm 2^\circ \\ \beta &= 135 \pm 2^\circ \end{aligned}$$

- (10) Shutter The distance of shutter from reference line Y (L_{32}) and the width of window (L_{33}) with the shutter opened, shall be as given in Figs. 2 and 3, and the following:

$$\begin{aligned} L_{32} &= 53.75 \pm 1.25 \text{ mm} \\ L_{33} &= 12.0 \pm 0.2 \text{ mm} \end{aligned}$$

The movement of shutter shall be in the extent from L_{25} to L_{28} .

4.2 Liner The liner shall not protrude into the opening of head window by 0.2 mm or more.

4.3 Disk The disk shall be as follows:

- (1) Dimensions The diameter (D_1) and thickness (E_2) of the disk shall be as given in Fig. 4 and the following:

$$\begin{aligned} D_1 &= 85.8 \pm 0.2 \text{ mm} \\ E_2 &= 0.080 \pm 0.008 \text{ mm} \end{aligned}$$

- (2) Effective Area of Magnetic Layer The effective area of magnetic layer shall be the area surrounded by two circles the radii of which are given below:

$$\text{Internal radius} = 20.6 \text{ mm}$$

$$\text{External radius} = 42.0 \text{ mm}$$

- (3) Recording Surface The recording surface of the side where the hub access hole exists shall be side 0 and the other side 1.

