

JIS

JAPANESE INDUSTRIAL STANDARD

**90 mm Flexible Disk
Cartridges (7958 ftprad)**

JIS X 6221—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 (7958 ftprad)

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1. Scope

This Japanese Industrial Standard specifies the construction, dimensions, physical, mechanical, electrical and magnetic characteristics of the 90 mm flexible disc cartridge for information exchange, hereinafter referred to as the "flexible disc", to be recorded in the track density 5.3 track/mm for the magnetic flux reversal density 7958 magnetic reversal/rad.

2. Definitions

For the main terms used in this Standard the definitions in JIS X 0001 apply, and the rest of the terms shall be as follows:

- (1) flexible disc A disc built in a case, itself a flexible type medium for magnetically recording and keeping on both recording surfaces information about the information treatment system and related information.
- (2) hub A circular plate for driving a disc installed in the centre of the disc. A hub shall make the concentric rotation of the disc secure when a driving shaft is inserted into the hole having a specified angle of inclination.
- (3) shutter A mechanism which automatically opens and closes the head window part whenever the flexible disc is connected or disconnected with the drive.
- (4) liner A protection-purpose sheet installed between the disc and the case for the purpose of cleaning and warding off abrasion.
- (5) case A disc-protecting container with a shutter mechanism and a write-inhibit hole.
- (6) standard flexible disc A flexible disc which is used as the standard for the standard magnetic field, signal amplitude, dissolution ability, peakshift, and overlapping writing, and the characteristic values of which are specified by ISO.

Tracks 00 and 79 on both sides are the standard. The standard track is calibrated by 600 rpm but can be effective in 300 rpm, too.

Applicable Standard, Corresponding International Standard and Reference Standards: See page 15.

- (7) substandard flexible disc A flexible disc which makes possible the comparison between the sample flexible disc and the standard flexible disc in terms of electrochangeover characteristics by virtue of clarification of deviations of the electromagnetic conversion characteristics from the standard flexible disc.

Substandard flexible discs are available from the organization and description given in the Reference 1.

- (8) standard magnetic field In a specified track of the standard flexible disc, when reproducing after a recording by the normal testing frequency, the minimum recording magnetic field that shall make the reproducing output voltage equivalent to 95 % of the maximum output voltage (saturated value).
- (9) average signal amplitude The average value of the reproducible output voltage (P-P) to go round a specific track.

3. Construction

The construction of the flexible disc shall be as shown in Figs. 1 to 5. The disc which has metal hub installed in its centre is enclosed in a case. Inside the case is a liner, the head window is covered by a shutter. The hub-operating hole is situated in the central part on one side, and the head window and the write inhibit hole are provided on both sides. Of the recording surfaces, the hub-side shall be termed 0-plane, and the other side 1-plane.

4. Shape and Dimensions

4.1 Case The standard line of the case is the extension line of the point where X and Y in Fig. 1 intersect each other at right angles (90°). The standard surface in the direction of thickness is the surface XY in the shaded area in 0-plane in Fig. 2.

- (1) Size The lengths of the 2 sides of the case (L_1 , L_2), the radius of curvature in 3 corners (R_1) and the angle in the 4th corner (ω) shall be as shown in Fig. 1 and as follows:

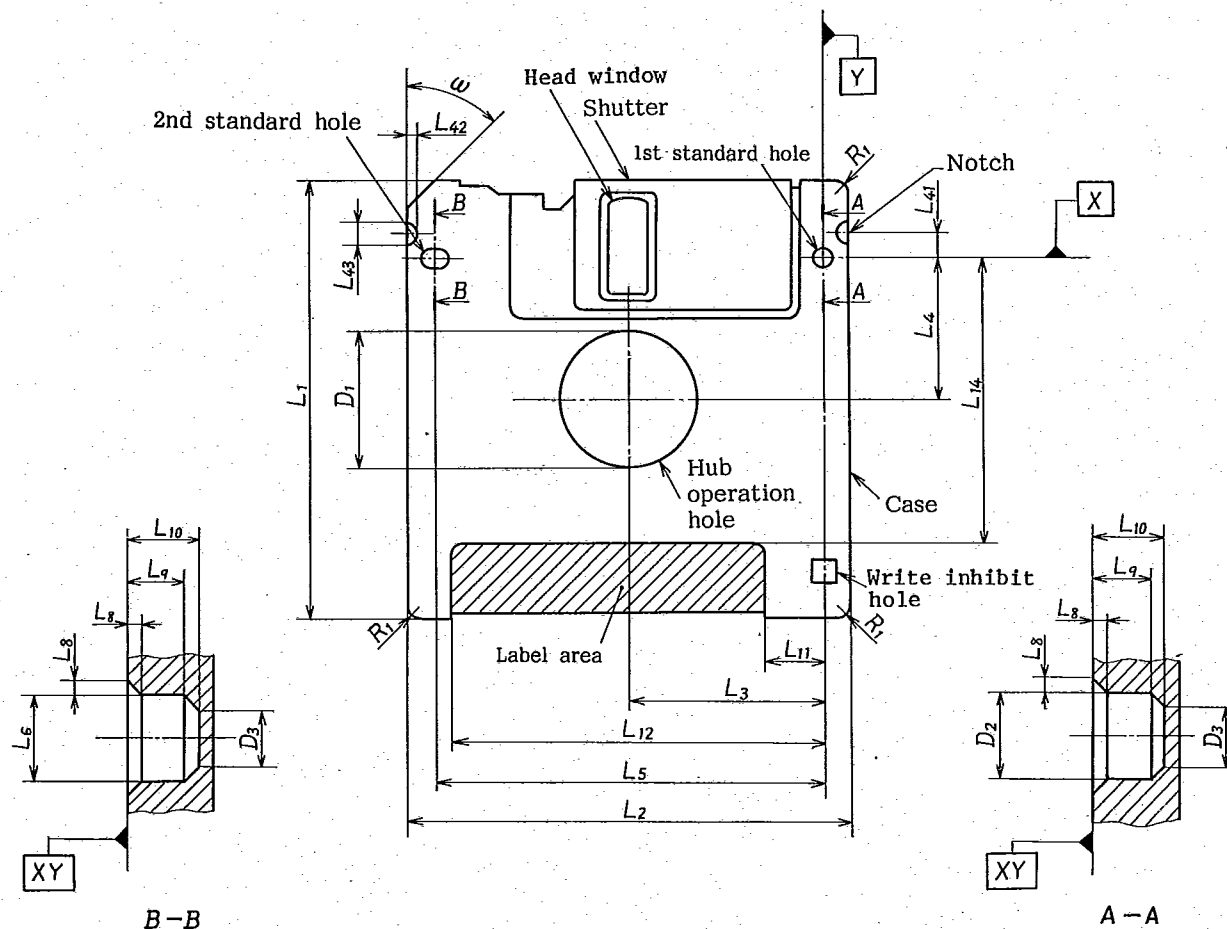
$$L_1 = 94.0 \pm 0.3 \text{ mm}$$

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

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

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

Fig. 1. Flexible Disc (0-plane side)



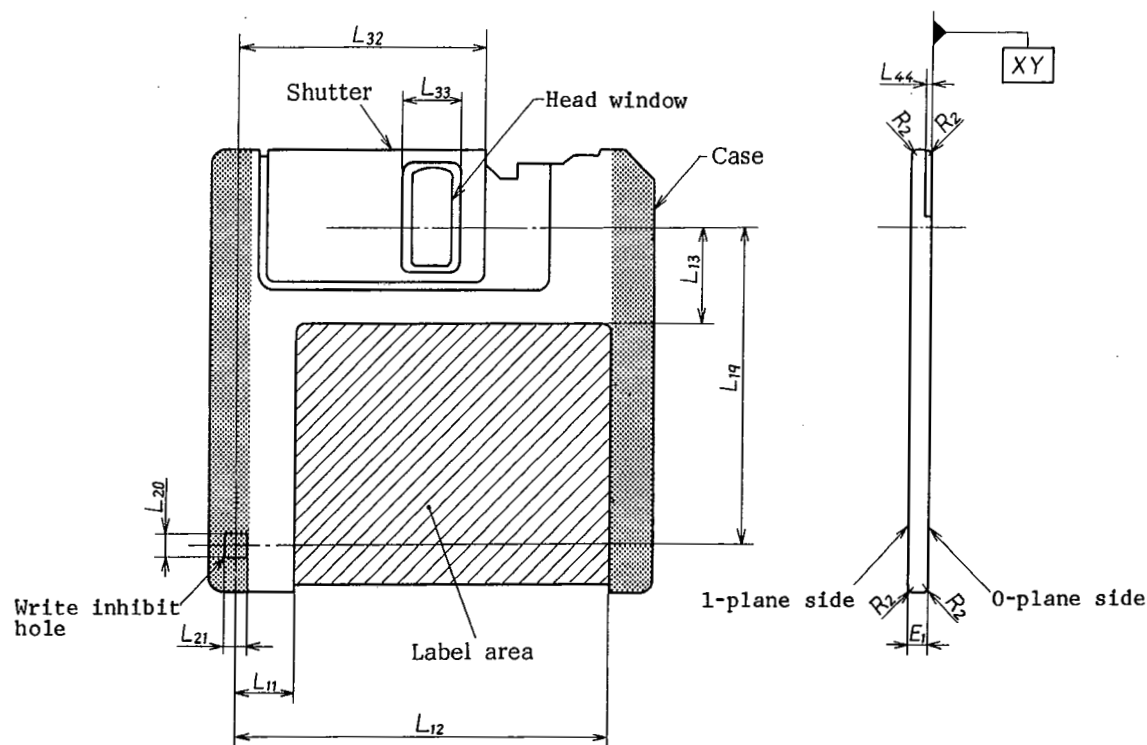
- (2) **Thickness** The thickness (E_1) of the case in the area 8.5 mm from both ends of the case (the shaded area in Fig. 2) and the radius (R_2) of the corner shall be:

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

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

When the flexible disc is inserted into the thickness gauge which has a vertical wall as shown in Appendix 1 Fig. 1, it shall drop down with the force of max 0.2 N.

FFig. 2. Flexible Disc (1-plane side)



- (3) **Hub Operating Hole** The positions of hub operating hole in the 0-plane (L_3 , L_4) and the diameter (D_1) shall be as shown in Fig. 1 and as follows:

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

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

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

- (4) **Standard Hole**

- (a) **The First Standard Hole** The centre of the first standard hole is the intersecting point of the standard lines X and Y, the shape of which (L_8 , L_9 , L_{10} , D_2 , D_3) shall be as shown in Fig. 1 and as follows:

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

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

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

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

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

- (b) The 2nd Standard Hole The centre of the 2nd standard hole shall be on the standard line X, and the position (L_5) from the standard line Y, and the dimension (L_6 , L_7) shall be as shown in Figs. 1 and 3 and also as follows:

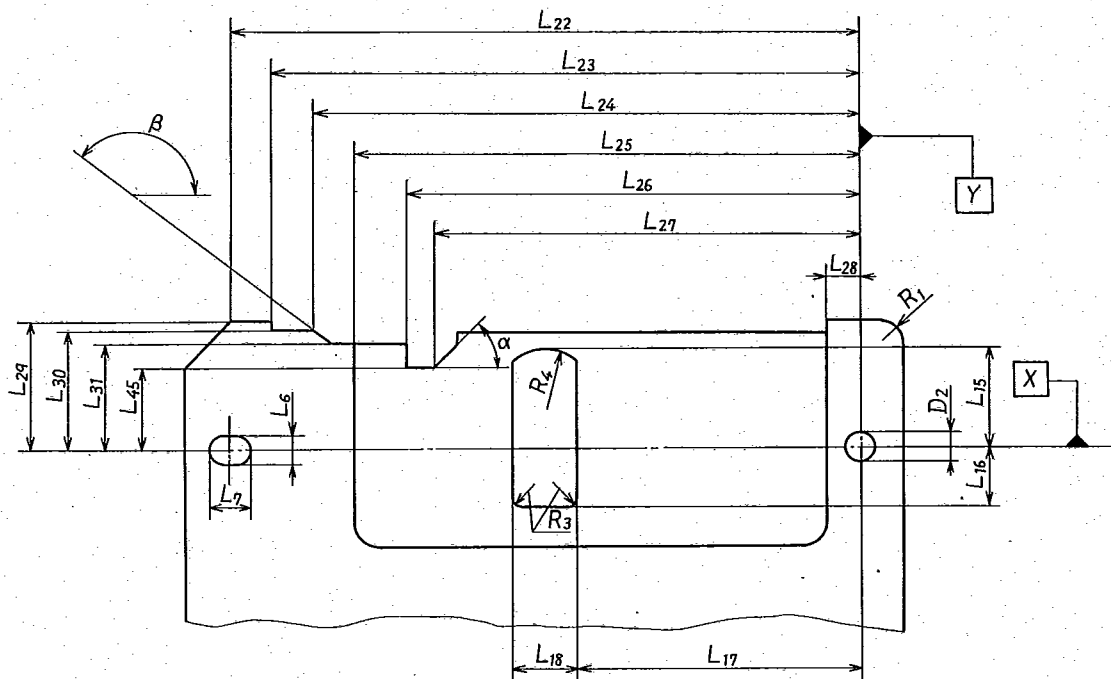
In addition, the shape of the holes (L_8 , L_9 , L_{10} , D_3) shall be as given in 4.1 (4) (a).

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

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

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

Fig. 3. Enlarged Drawing of the Flexible Disc (0-plane side)



(5) Label Area.

- (a) 0-Plane The label area of 0-plane shall be the part shown in Fig. 1, the area of which shall be as follows (L_{11} , L_{12} , L_{14}):

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

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

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

- (b) 1-Plane The label area of the 1-plane shall be the part shown in Fig. 2, the area of which (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 position (L_{15} to L_{17}), width (L_{18}), the radius of the lower part (R_3) and the radius (R_4) of the upper part shall be as shown in Fig. 3 and as follows:

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

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

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

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

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

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

- (7) Write Inhibit Hole The centre of the write inhibit hole shall be on the standard line Y, and the position from the standard line X (L_{19}) and the size (L_{20} , L_{21}) shall be as shown in Fig. 2 and as follows:

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

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

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

- (8) Shape of Shutter Part The shape and dimensions of the parts where the shutters are attached (L_{22} to L_{31} , L_{45}) and the bevel angles (α , β , ω) shall be as shown in Figs. 1 and 3 and as follows:

$$L_{22} = 80.0 \pm 0.2 \text{ mm}$$

$$L_{23} = 76.0 \pm 0.3 \text{ mm}$$

$$L_{24} = 68.0 \pm 0.3 \text{ mm}$$

$$L_{25} = 64.50 \pm 0.35 \text{ mm}$$

$$L_{26} = 57.00 \pm 0.35 \text{ mm}$$

$$L_{27} = 55.5 \pm 0.6 \text{ mm}$$

$$L_{28} \geq 3.5 \text{ mm}$$

$$L_{29} = 17.5 \pm 0.2 \text{ mm}$$

$$L_{30} = 17.00 \pm 0.15 \text{ mm}$$

$$L_{31} = 15.50 \pm 0.25 \text{ mm}$$

$$L_{45} = 12.50 \pm 0.25 \text{ mm}$$

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

$$\beta = 135 \pm 2^\circ$$

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

- (9) Shutter The distance (L_{32}) from the standard line Y in the state where the shutter is open and the width of the window (L_{33}) shall be as shown in Figs. 2 and 3 and as follows:

$$L_{32} = 53.75 \pm 1.25 \text{ mm}$$

$$L_{33} = 12.0 \pm 0.2 \text{ mm}$$

In addition, the movement of the shutter shall be in the range from L_{25} to L_{28} .

4.2 Liner A liner shall not jut out from the opening of the head window by 0.2 mm or over.

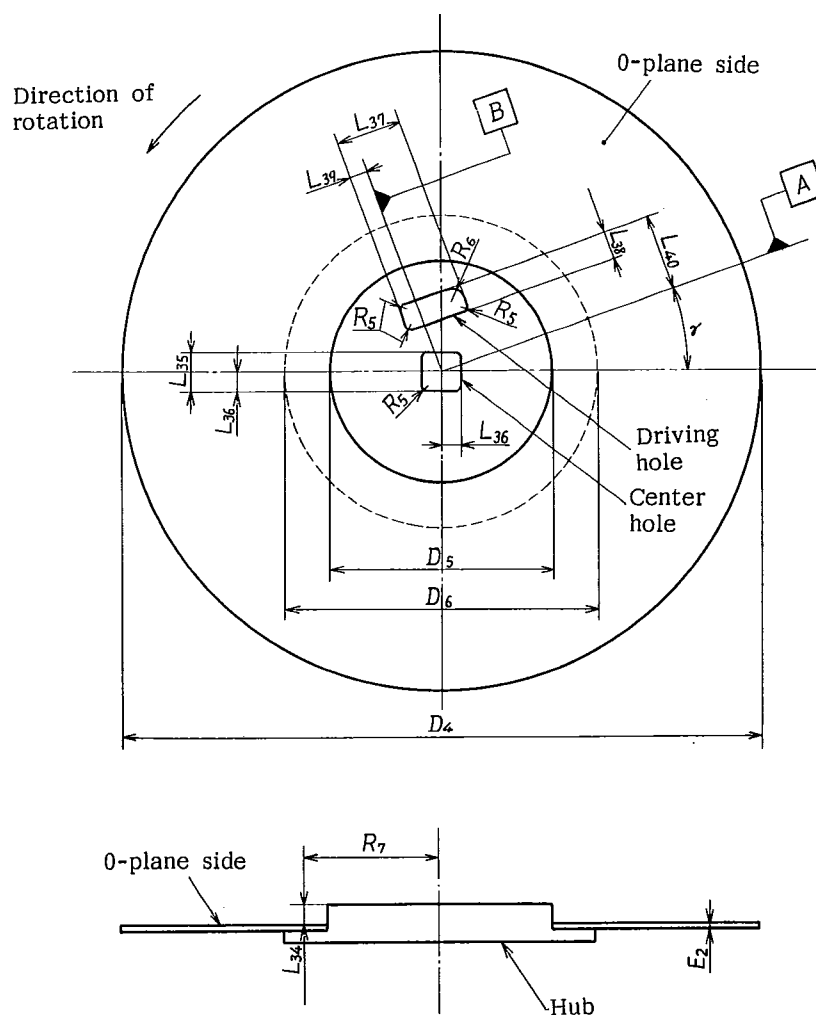
4.3 Disc A disc shall be as follows:

- (1) Dimension The diameter of the disc (D_4) and its thickness (E_2) shall be as shown in Fig. 4 and as follows:

$$D_4 = 85.8 \pm 0.2 \text{ mm}$$

$$E_2 = 0.080 \pm 0.008 \text{ mm}$$

Fig. 4. Disc and Hub



- (2) Effective Area of Magnetic Zone The effective area of the magnetic zone shall be the area occupied by a circle with the outer radius detracted by the area occupied by one with the inner radius. The two radii shall be as follows:

inner radius = 20.6 mm

outer radius = 42.0 mm

4.4 Hub The hub shall be composed of the central part and the flange part as shown in Fig. 4.

- (1) Size The diameter of the central part (D_5), the diameter of the flange part (D_6), the distance from the plane of the central part to the 0-plane (L_{34}), and the radius (R_7) in the measuring position of L_{34} shall be as follows: