

KS

KOREAN INDUSTRIAL STANDARD

90mm Flexible Disk Cartridges(7958 Ftprad)-Part 1
: Dimensional, Physical and Magnetic Characteristics

KS X 5428-1-1994

Korean National Institute of Technology and Quality

2, Joongang-dong, Kwachon-shi,
Kyonggi-do, 427-010
Rep. of Korea

Translation without guarantee. In the event of any doubt arising,
the original standard in Korean is to be evidence.

KOREAN INDUSTRIAL STANDARD

KS X 5428-1-1994

90mm Flexible Disk Cartridges (7958 ftprad)

1. Scope

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

Remarks 1. The content marked with * in this standard shall be the values for reference.

2. The normative references to this standard are as follows :

KS C 5602 Glossary of Terms used in Information

ISO 8860-1 Information processing-Data interchange on 90mm (3.5in) flexible disk cartridges using modified frequency modulation recording at 7958 ftprad, on 80 tracks on each side
- Part 1 : Dimensional, physical and magnetic characteristics

2. Definitions

For the main terms used in this Standard the definitions in KS C 5602 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 300rpm, too.

(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) and the angle in the 4th corner (w) shall be as shown in Fig. 1 and as follows :

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

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

$$* w = 45^\circ$$

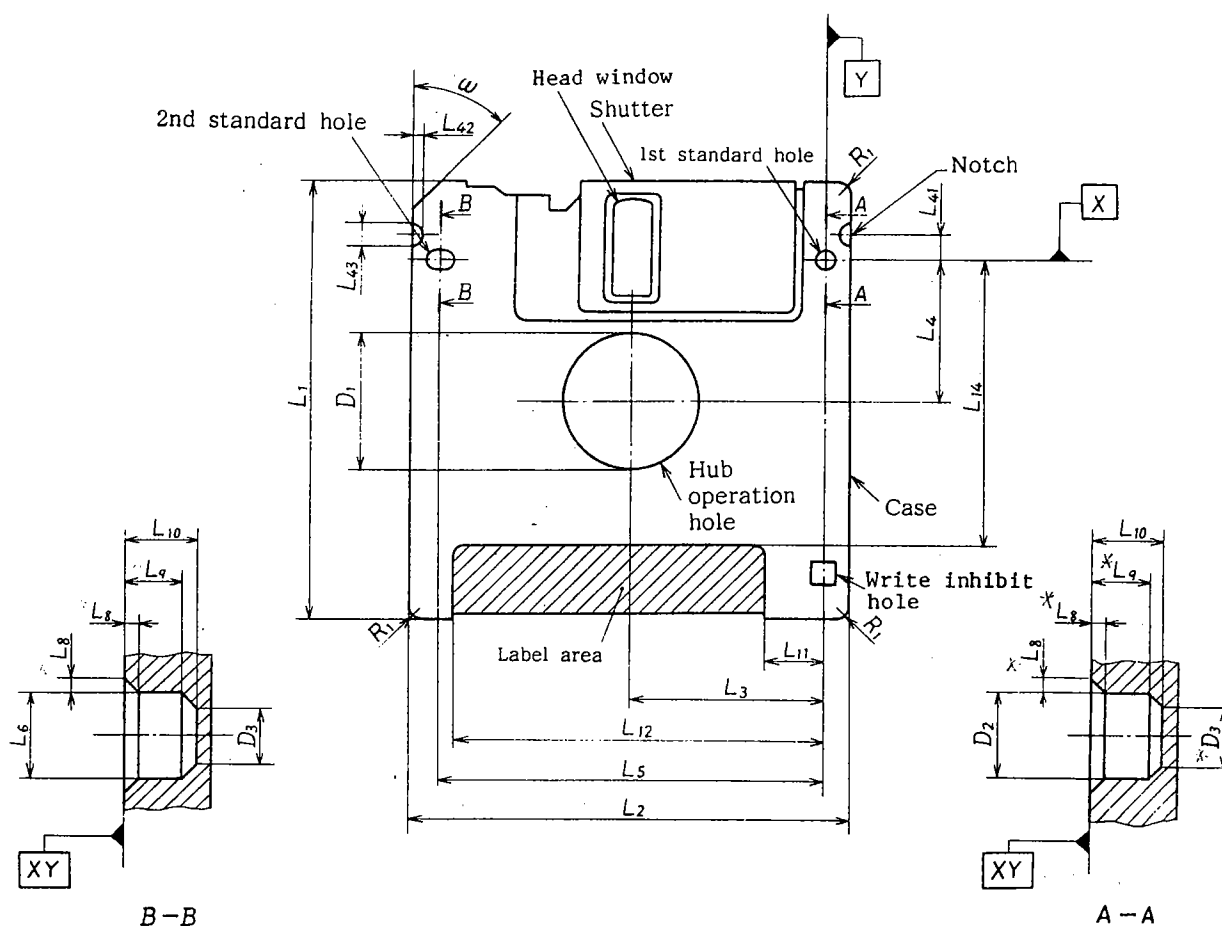


Fig. 1 Flexible Disc (0-plane side)

(2) Thickness

The thickness (E_1) of the case in the area 8.5mm from both ends of the case (the shaded area in Fig. 2) shall be :

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

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. 0.2N.

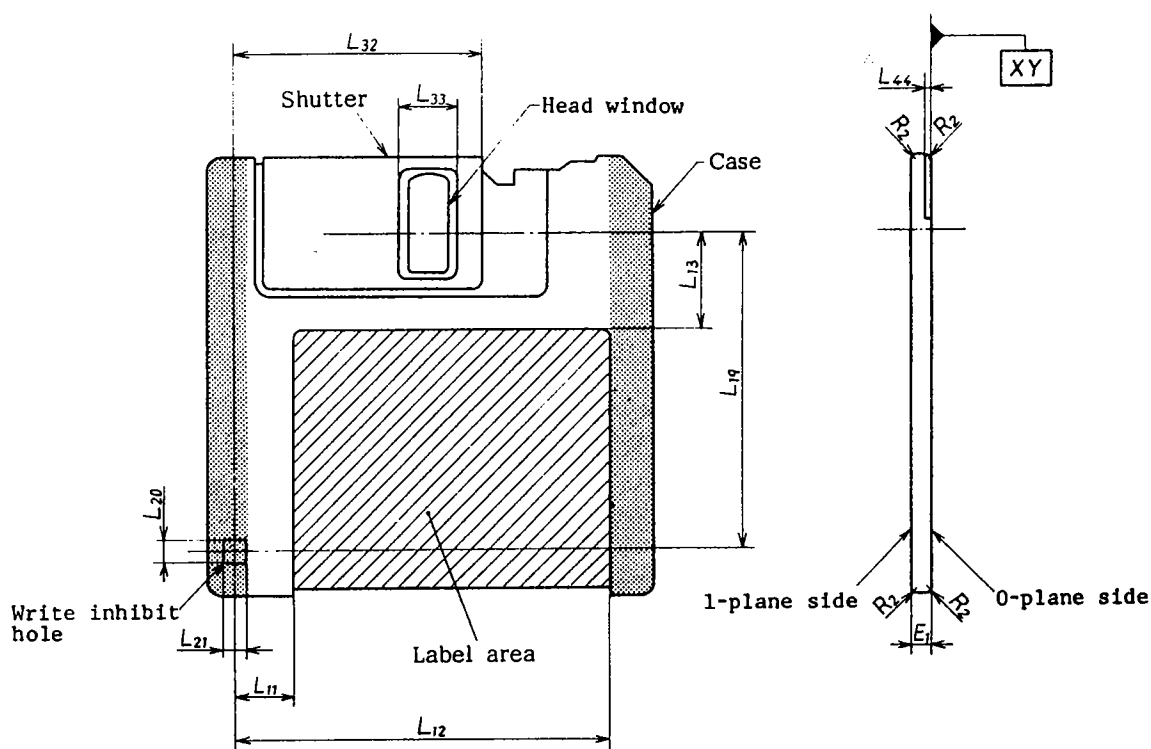


Fig. 2 Flexible Disc (1-plane side)

(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 :

$$* L_8 = 0.2 \text{ mm}$$

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

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

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

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

(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).

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

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

$$* L_7 = 4.4 \text{ mm}$$

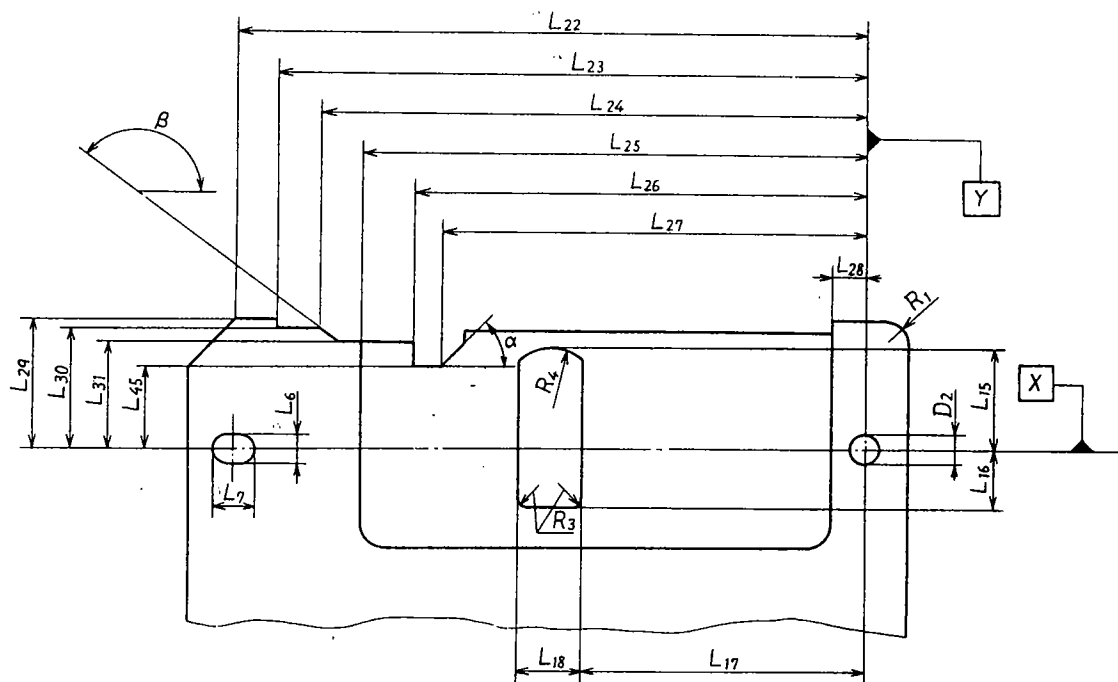


Fig. 3 Enlarged Drawing of the Flexible Disc (0-plane side)

(5) Head Window

The position (L_{15} to L_{17}) and width (L_{18}) shall be as shown in Fig. 3 and as follows :

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

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

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

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

(6) 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 :

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

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

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

(7) Shape of Shutter Part

The shape and dimension of the parts where the shutters are attached (L_{22} to L_{31} , L_{45}) and the bevel angles (α , β , w) shall be as shown in Figs. 1 and 3 and as follows :

$$* L_{22} = 80.0 \text{ mm}$$

$$* L_{23} = 76.0 \text{ mm}$$

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

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

(8) 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 :

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

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 0.2mm 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 :

$$\begin{aligned}
 D_4 &= 85.8 \pm 0.2\text{mm} \\
 E_2 &= 0.080 \pm 0.008\text{mm}
 \end{aligned}$$

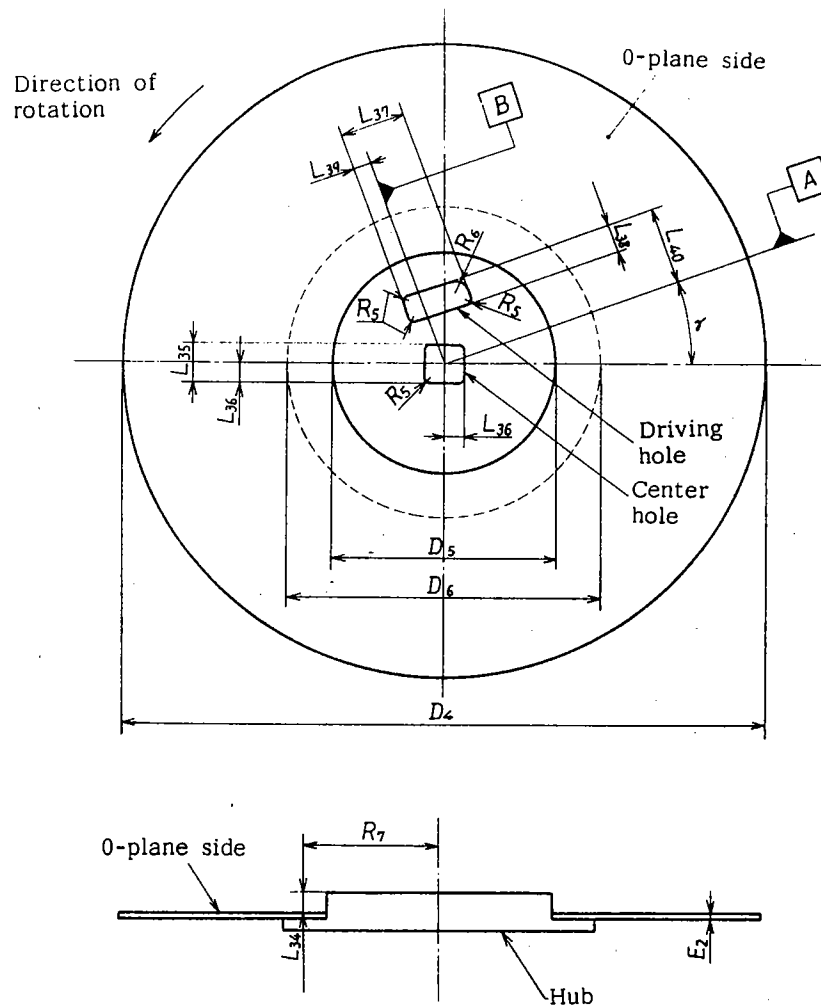


Fig. 4 Disc and Hub

(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 = 20.6mm
- * outer radius = 42.0mm

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), and the distance from the plane of the central part to the 0-plane (L_{34}) shall be as follows :

$$D_5 = 25.00 + 0.00\text{mm} \\ - 0.15\text{mm}$$

$$D_6 \leq 31.15\text{mm}$$

$$L_{34} = 1.36 \pm 0.10\text{mm}$$

(2) Hub Orientation Hole

The hub shall have two orientation holes : the central hole and the driving hole.

(a) Central Hole

One side length of the square in the central hole (L_{35}) and the position from the rotational centre of the disc (L_{36}) shall be as follows :

$$\begin{aligned} L_{35} &\geq 4.00\text{mm} \\ L_{36} &= 1.9955\text{mm} \end{aligned}$$

The rotational centre of the disc shall be within 0.5mm from the geometrical centre of the disc, and for its position, the 2 sides of the hole shall be measured.

(b) Driving Hole

The driving hole shall be specified by the two standard lines A, B which cross each other in the right angle. The angle (γ), the size of the holes (L_{37} , L_{38}) and position from the standard lines A, B (L_{39} , L_{40}) shall be as follows :

$$\begin{aligned} \gamma &= 15 \pm 3^\circ \\ L_{37} &= 8.0 \pm 0.3\text{mm} \\ L_{38} &\geq 4.5\text{mm} \\ L_{39} &= 2.0 \pm 0.2\text{mm} \\ L_{40} &= 10.00 \pm 0.15\text{mm} \end{aligned}$$

4.5 Notch

When installing notch, the position from the standard line X (L_{41}), the sizes (L_{42} , L_{43}) and the depth from the standard planes XY (L_{44}) shall be as shown in Fig. 1, Fig. 2 and as follows :

$$\begin{aligned} L_{41} &= 7.50 \pm 0.15\text{mm} \\ * L_{42} &\geq 3.0\text{mm} \\ * L_{43} &= 4.2\text{mm} \\ * L_{44} &\geq 2.0\text{mm} \end{aligned}$$

4.6 Contact Surface Sectional Plane of Flexible Disc and Disc Device

When the flexible disc is attached to the drive, the thickness of one side of the case (E_3), the thickness (E_4) of the ring belts and their positions (L_{47} , L_{48}) which are defined by L_{47} and L_{48} shall be as shown in Fig. 5, and as follows :

$$\begin{aligned} E_3 &= 1.3 \pm 0.1\text{mm} \\ E_4 &\leq 2.5\text{mm} \\ * L_{47} &= 22.6\text{mm} \\ L_{48} &= 21.7 \pm 0.2\text{mm} \end{aligned}$$