

PRREPARED BY : DATE	SHARP AVC LIQUID CRYSTAL DISPLAY GROUP SHARP CORPORATION SPECIFICATION	SPEC No. LD-17104
APPROVED BY : DATE		FILE No.
		ISSUE: Jan. 7 .2005
		Page : 6 Page
		APPLICABLE GROUP AVC Liquid Crystal Display Group

DEVICE SPECIFICATION FOR

Lamp unit for maintenance

MODEL No. **LQ0DDB5438**

☐ CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED

BY K. Shiono

K.SHIONO

Department General Manager

Development Engineering Department II

Taki Development Center

AVC LIQUID CRYSTAL DISPLAY GROUP

SHARP CORPORATION

RECORDS OF REVISION

MODEL : LQ0DDB5438

[illegible]

- > These specification sheets are related to the proprietary product of SHARP CORPORATION(SHARP) and include materials protected under copyright of SHARP. Do not reproduce or cause any third party to reproduce them in any form or by any means, electronic or mechanical, for any purpose, in whole or in part, without the express written permission of SHARP.
- > The device listed in these specification sheets was designed and manufactured for use in OA equipment.
- > In case of using the device for applications such as control and safety equipment for transportation (aircraft, trains, automobiles, etc.), rescue and security equipment and various safety related equipment which require higher reliability and safety, take into consideration that appropriate measures such as fail-safe functions and redundant system design should be taken.
- > Do not use the device for equipment that requires an extreme level of reliability, such as aerospace applications, telecommunication equipment(trunk lines), nuclear power control equipment and medical or other equipment for life support.
- > SHARP assumes no responsibility for any damage resulting from the use of the device which does not comply with the instructions and the precautions specified in these specification sheets.

Contact and consult with a SHARP sales representative for any questions about this device.

(1) Introduction

This lamp unit is a service part for 38cm TFT-LCD module (LQ150X1LGB1) of which lamp unit is designed to be replaceable.

(2) Outline

Outline of lamp unit : See Fig. 1

(3) Input / Output terminals

3-1) I/O terminal order

Table 1

Pin No.	Symbol	I/O	Description
1	V_{HIGH}	I	Power supply for lamp (High voltage side)
2	V_{LOW}	I	Power supply for lamp (Low voltage side)

3-2) I/O connector

- 1) Installed socket housing : BHSR-02VS-1
(produced by Japan Solderless Terminal)
- 2) Applicable connector housing : SM02B-BHSS-1
(produced by Japan Solderless Terminal)

(4) Electrical characteristics

The backlight system is an edge-lighting type with 4 CCFTs (Cold Cathode Fluorescent Tube). The characteristics of single lamp are shown in the following table. The value mentioned below is at the case of one CCFT.

Table 2

Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Lamp current range	IL	3.5	6.0	7.5	mA _{rms}	【Note1】
Lamp voltage	V_L	—	625	720	V _{rms}	Ta=25°C, IL =6.0mA _{rms}
Power consumption	PL	—	3.75	4.32	W	【Note2】 ,IL =6.0mA _{rms}
Lamp frequency	FL	40	60	70	kHz	【Note3】
Kick-off voltage	V_s	—	—	1480	V _{rms}	Ta=0°C 【Note4】
Lamp life time	TL	50,000	—	—	hour	【Note5】

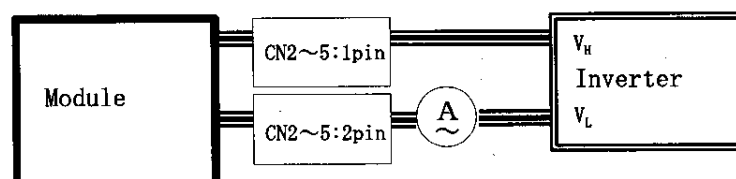
【Note 1】 A lamp can be light in the range of lamp current shown above.

Maximum rating for current is measured by high frequency current measurement equipment connected to V_{LOW} at circuit showed below.

(Note : To keep enough kick-off voltage and necessary steady voltage for CCFT.)

Lamp frequency : 40~70kHz

Ambient temperature: 0~50°C



[Note 2] Referential data per one CCFT by calculation($I_L \times V_L$).

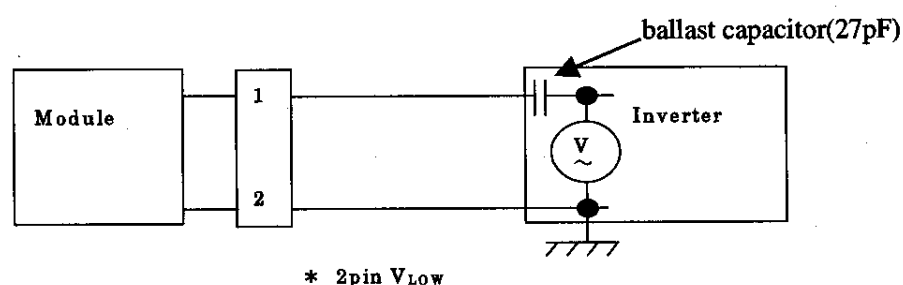
The data don't include loss at inverter.

[Note 3] Lamp frequency may produce interference with horizontal synchronous frequency, and this may cause beat on the display.

Therefore lamp frequency shall be detached as much as possible from the horizontal synchronous frequency and from the harmonics of horizontal synchronous to avoid interference.

[Note 4] This is transformer output voltage at 27 pF for the ballast capacitor of a DC-AC inverter. The kick-off voltage may rise up in the user set, please decide the open output voltage by checking not to occur lighting failure under operating state.

The open output voltage should be applied to the lamp for more than 1 second to startup. Otherwise the lamp may not be turned on.



[Note 5] Above value is applicable when lamp (the long side of LCD module) is placed horizontally. (Landscape position)

Lamp life time is defined as the time when either ① or ② occurs in the continuous operation under the condition of $T_a=25^\circ\text{C}$, $I_L=6.0\text{ mA rms}$.

① Brightness becomes 50% of the original value under standard condition.

② Kick-off voltage at $T_a=0^\circ\text{C}$ exceeds maximum value, 1480Vrms.

(Lamp lifetime may vary if lamp is in portrait position due to the change mercury density inside the lamp).

《NOTE》

The performance of the lamp, for example lifetime or brightness, is much influenced by the characteristics of the DC-AC inverter for the lamp. When you design or order the inverter, please make sure that a poor lighting caused by the mismatch of the lamp unit and the inverter (miss-lighting, flicker, etc.) never occur. When you confirm it, the module should be operated in the same condition as it is installed in your instrument.

Use the lamp inverter power source incorporating such safeguard as overvoltage /overcurrent protective circuit or lamp voltage waveform detection circuit, which should have individual control of each lamp.

In case one circuit without such individual control is connected to more than two lamps, excessive current may flow into one lamp when the other one is not in operation. Under the environment of 10 lx or less, miss-lighting or lighting delay may occur.

(5) Optical characteristics

Table 3

Ta=25°C

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Remarks
Luminance	Y_L	36800	40000	43240	cd/m ²	Lamp itself
Chromaticity	X	0.266	0.276	0.286		
	Y	0.261	0.271	0.281		

Measurement conditions : $I_L=6.0\text{mA}$ $F_L=55\text{KHz}$

Measurement point : Center of lamp

(6) Environmental condition

6-1) Operating temperature range : Based on specifications of the applied module.

6-2) Storage temperature range : Based on specifications of the applied module.

(7) Procedure to lamp unit replacement

Please exchange according to the procedure of an appending attached sheet.

(8) Packing form

Packing form is shown in Fig. 2.

(9) Others

9-1)Obligation to change notice

Prior to changing design, process and control system, any changes and their quality check date shall be provided in writing.

9-2)If any problem occurs in relation to the description in the present specifications or other relevant items, it shall be eliminated in all sincerity through discussion.

9-3)Disposal of cold cathode fluorescent tube

**COLD CATHODE FLUORESCENT LAMP IN LCD PANEL
CONTAINS A SMALL AMOUNT OF MERCURY, PLEASE
FOLLOW LOCAL ORDINANCES OR REGULATIONS FOR
DISPOSAL.**

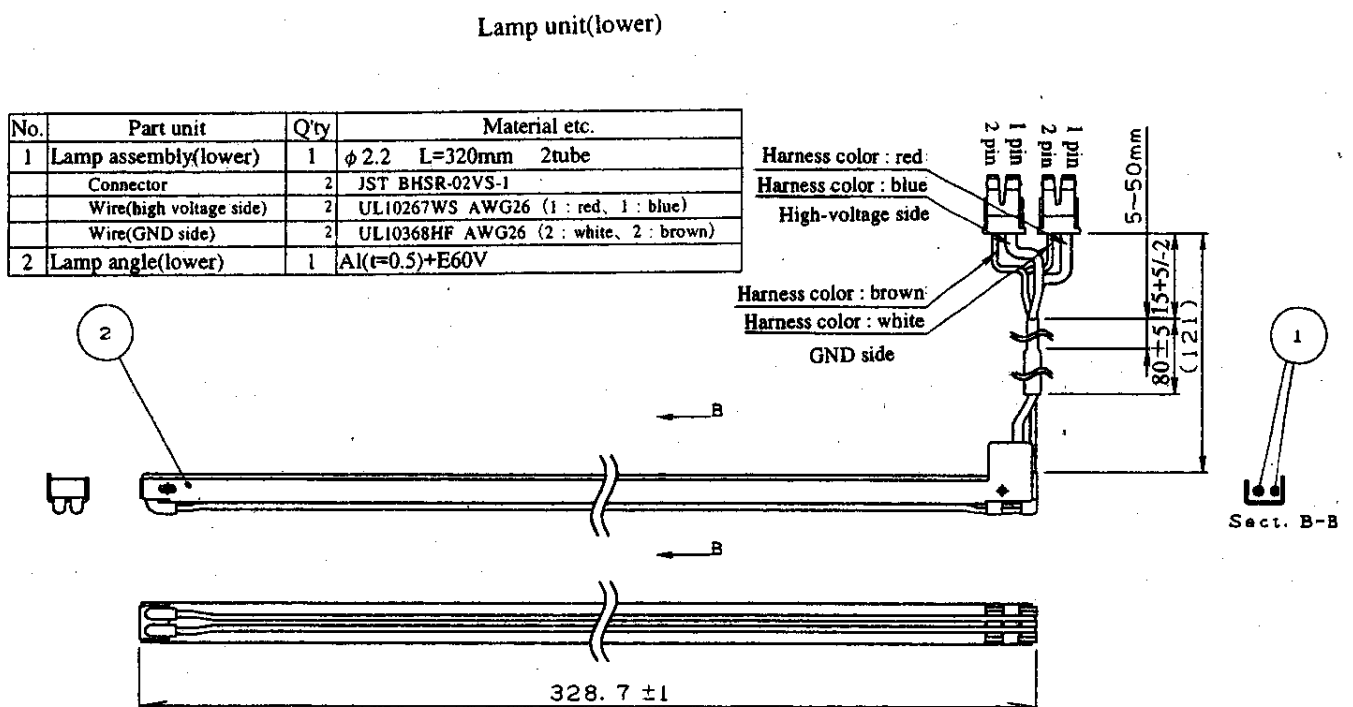
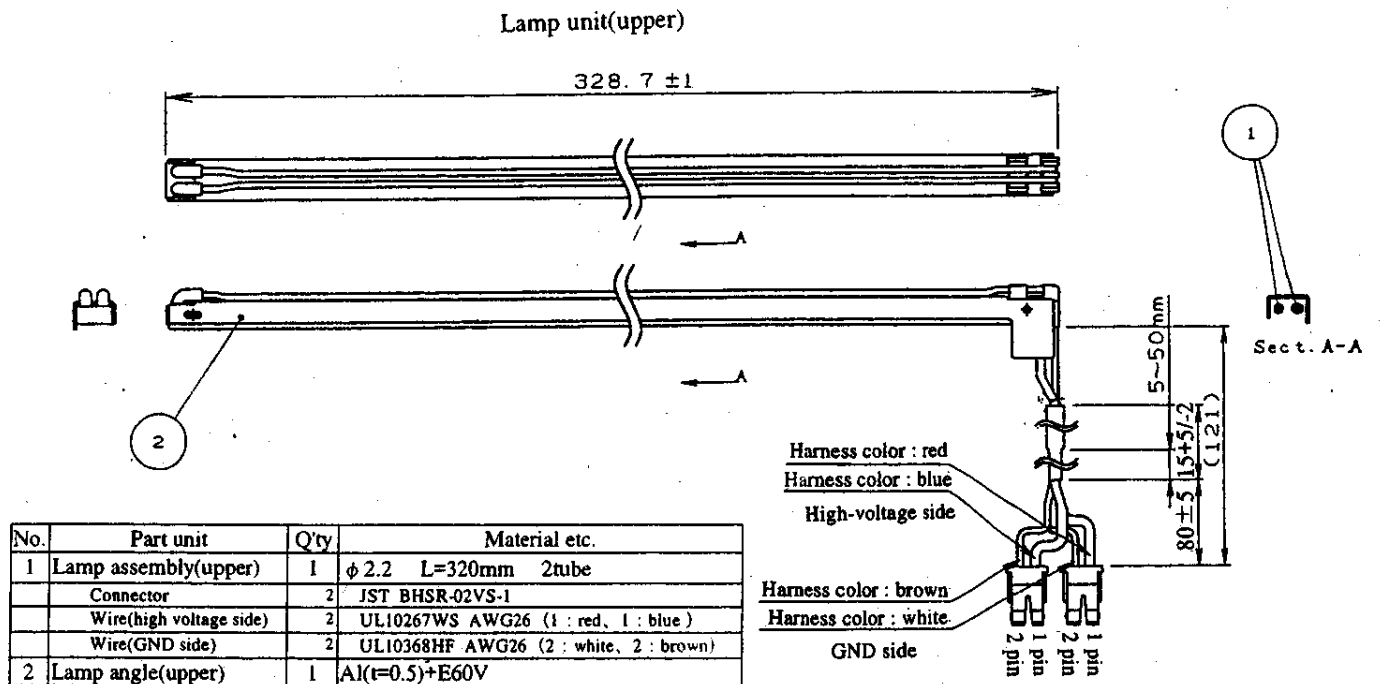
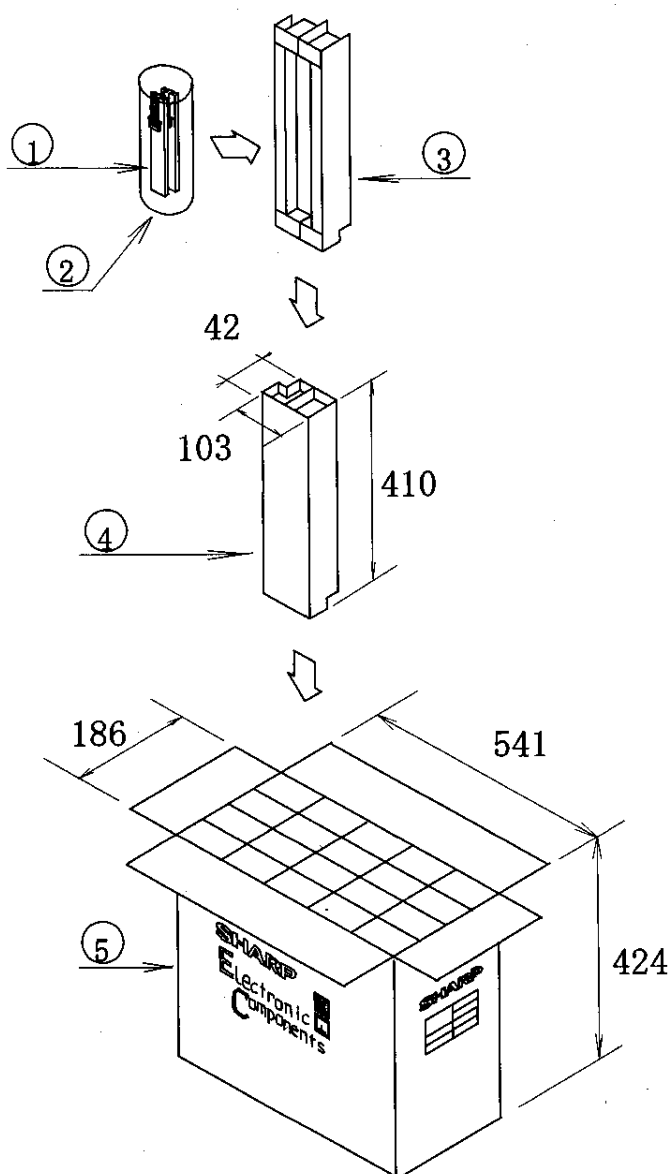


Fig. 1 Outline of lamp unit



No.	Part unit	Q'ty
1	Lamp unit	20
2	Air cap	20
3	Bumper	20
4	Inner carton	20
5	Outer carton	1

20 unit in each carton

Net weight : 23g/unit

Total gross weight : 2800g

Details Table

TYPE	LQ0DDB5438
QUANTITY	20
LOT (DATE)	

Fig. 2 Packing form

<<Procedures for replacing LQ150X1LGB1 lamp unit>>

1) Removal of lamp unit[Refer to fig.1,fig.2]

- ① Remove the filament tape for fixing harness (2 places).
- ② Remove the the harness from the slot of the module.
- ③ Remove the the screw for fixing lamp unit (silver screw at 2 places).
- ④ Extract the upper lamp unit.
- ⑤ Extract the lower lamp unit.

2) Attachment of lamp unit[Refer to fig.3]

Execute the operation steps ① through ⑤ in the reverse sequence.

Applicable screw: LX-HZ2064TPZZ

Applicable bit: No. 0

Recommended tightening torque: $0.117 \pm 0.01 \text{ N} \cdot \text{m}$ ($1.2 \pm 0.1 \text{ kgf} \cdot \text{cm}$)

※Cautions

Caution 1: Insert the lamp unit straightly.

◆Tilted insertion or twist during the insertion can be a cause of lamp breakage.

Caution 2: It is recommended to replace both lamp units simultaneously.

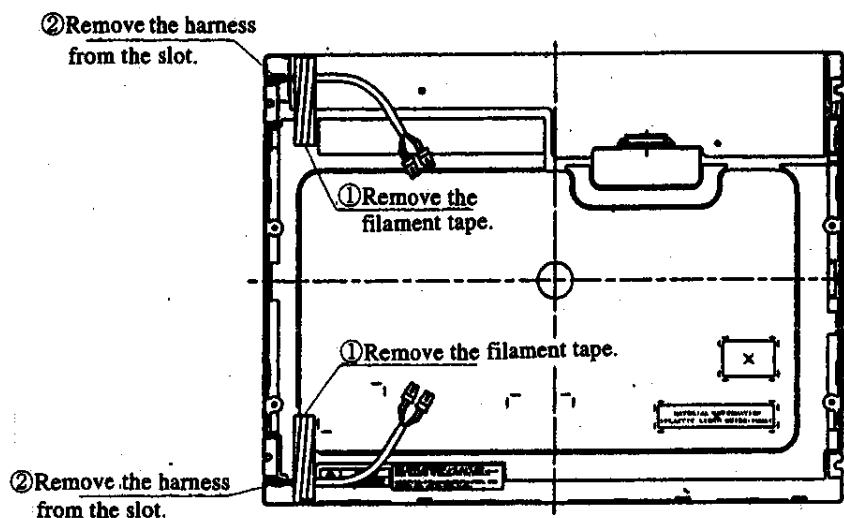


Fig.1

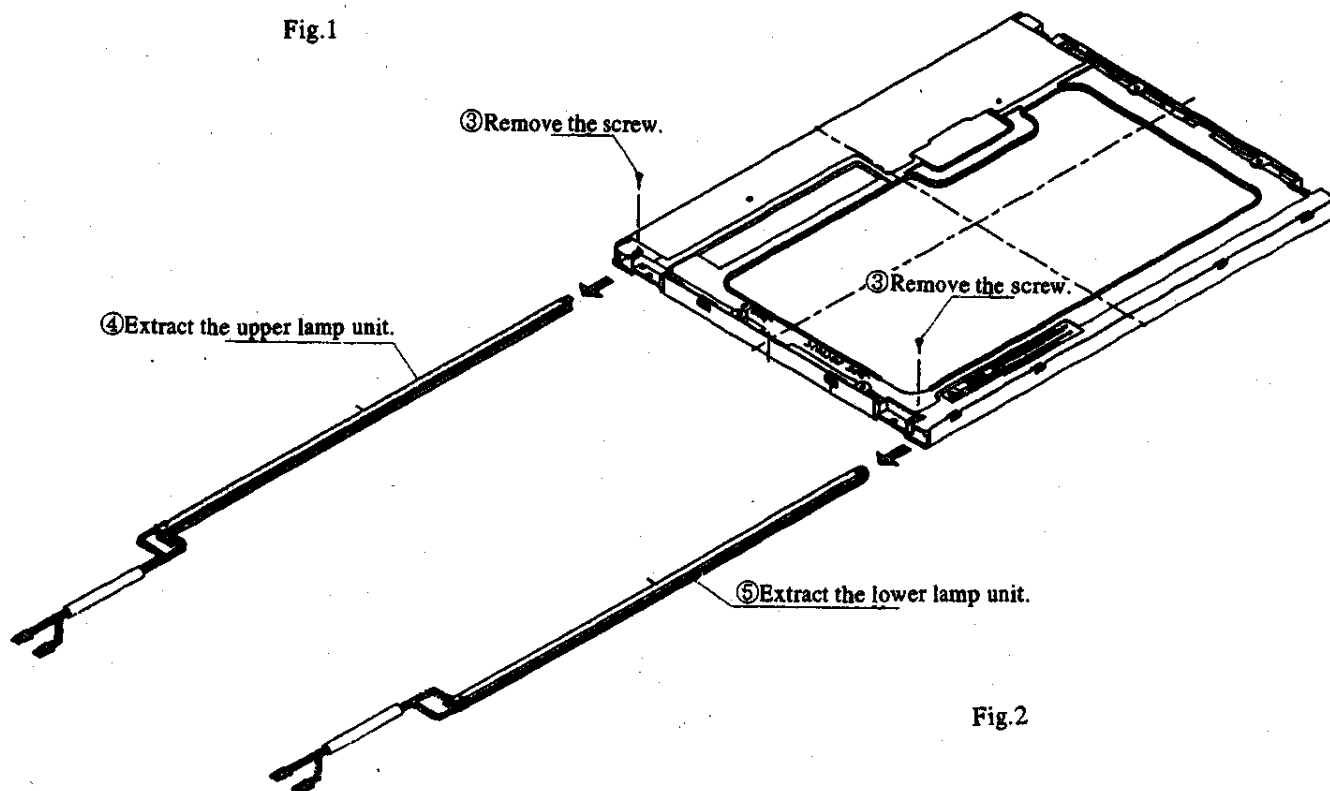


Fig.2

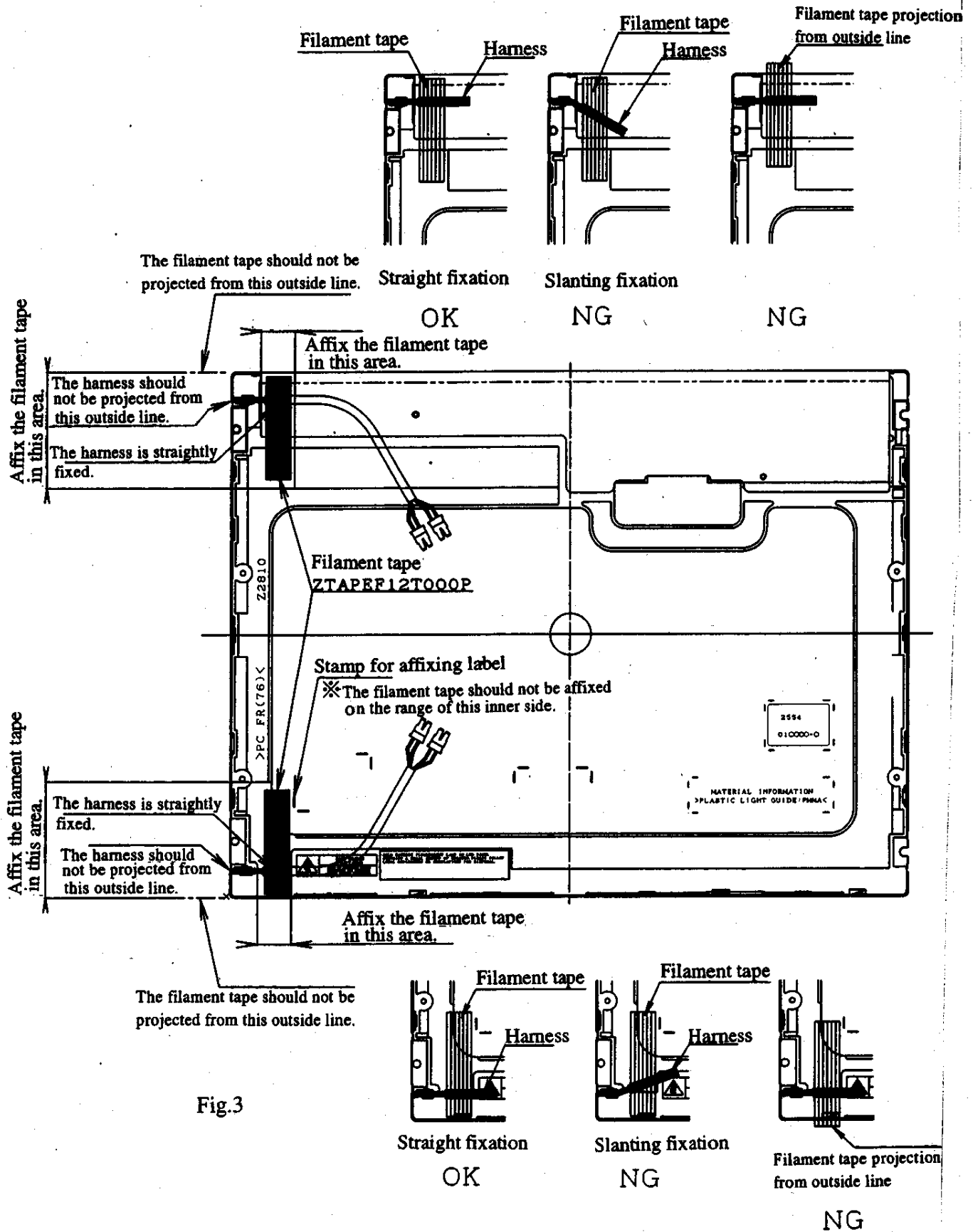


Fig.3