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	AVC LIQUID CRYSTAL DISPLAY GROUP SHARP CORPORATION	APPLICABLE GROUP AVC Liquid Crystal Display Group
	SPECIFICATION	

DEVICE SPECIFICATION FOR

Lamp unit for maintenance

MODEL No. LQ0DDB5438

☐ CUSTOMER'S APPROVAL

DATE

BY

PRESENTED

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RECORDS OF REVISION

MODEL : LQ0DDB5438

SPEC No.	DATE	REVISED No.	SUMMARY PAGE	SUMMARY	NOTE
LD17104	Jan.7.2005	-	-	-	1st Issue

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> 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.

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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_{HOW}	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)

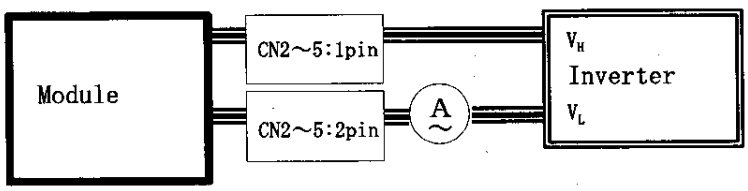
(4) Electrical characteristics

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℃

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

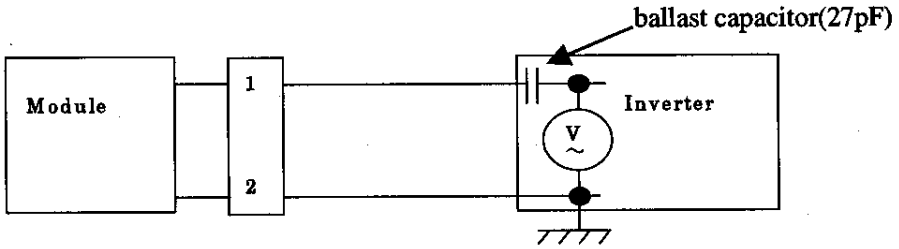
【Note 1】 A lamp can be light in the range of lamp current shown above.
Maximum rating for current is measured by high frequency current measurement equipment connected to V_{LOW} at circuit showed below.
(Note : To keep enough kick-off voltage and necessary steady voltage for CCFT.)
Lamp frequency : 40～70kHz
Ambient temperature: 0～50℃



[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 transfoformer output voltage at 27 pF for the ballast capacitor of a DC −AC inverter. The kick-off voltage maiy rise up in the user set, please decide the open output voltage by checking not to occur lighting falure under operating state.
The open output voltage should be applied to the lamp for more than 1second to startup. Otherwise the lamp may not be turned on.



* 2pin V_{Low}

[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 Ta=25℃, I_L=6.0 mArms.
① Brightness becomes 50% of the original value under standard condition.
② Kick-off voltage at Ta= 0℃ exceeds maximum value, 1480Vrms.
(Lamp lifetime may vary if lamp is in portrait poison 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 whithout 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℃

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=6.0mA F_L=55KHz

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

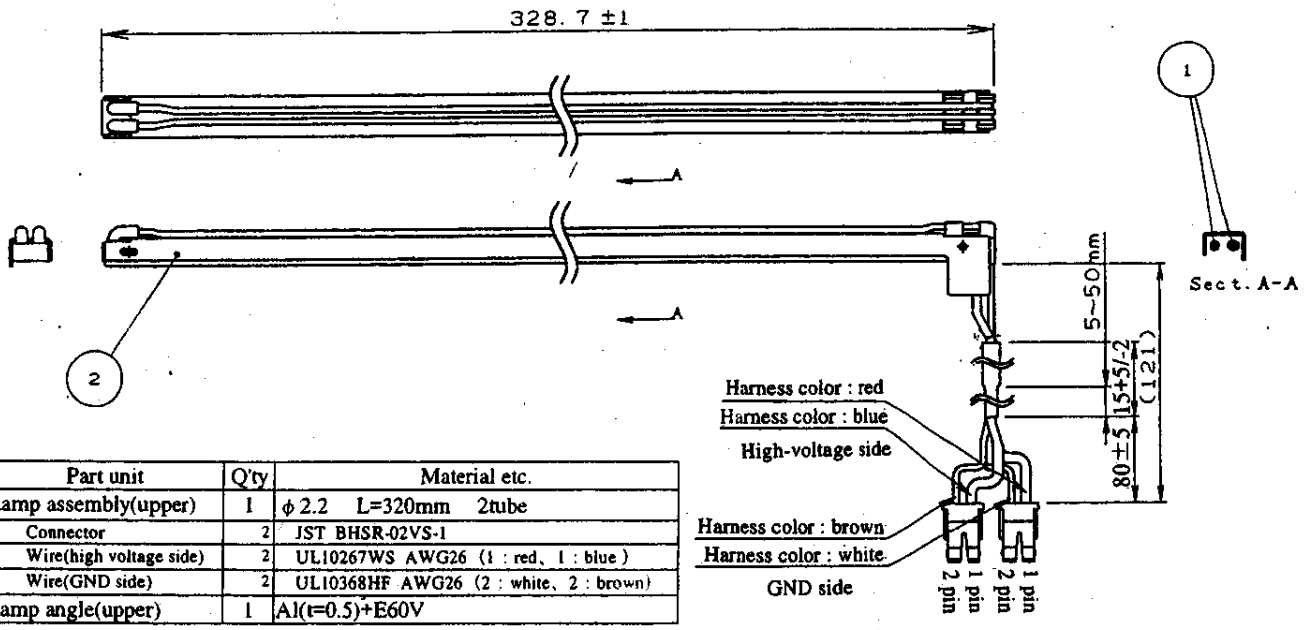
Prior to changing design, process and control system, any changes and their quality check date shall be provided in writing.

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

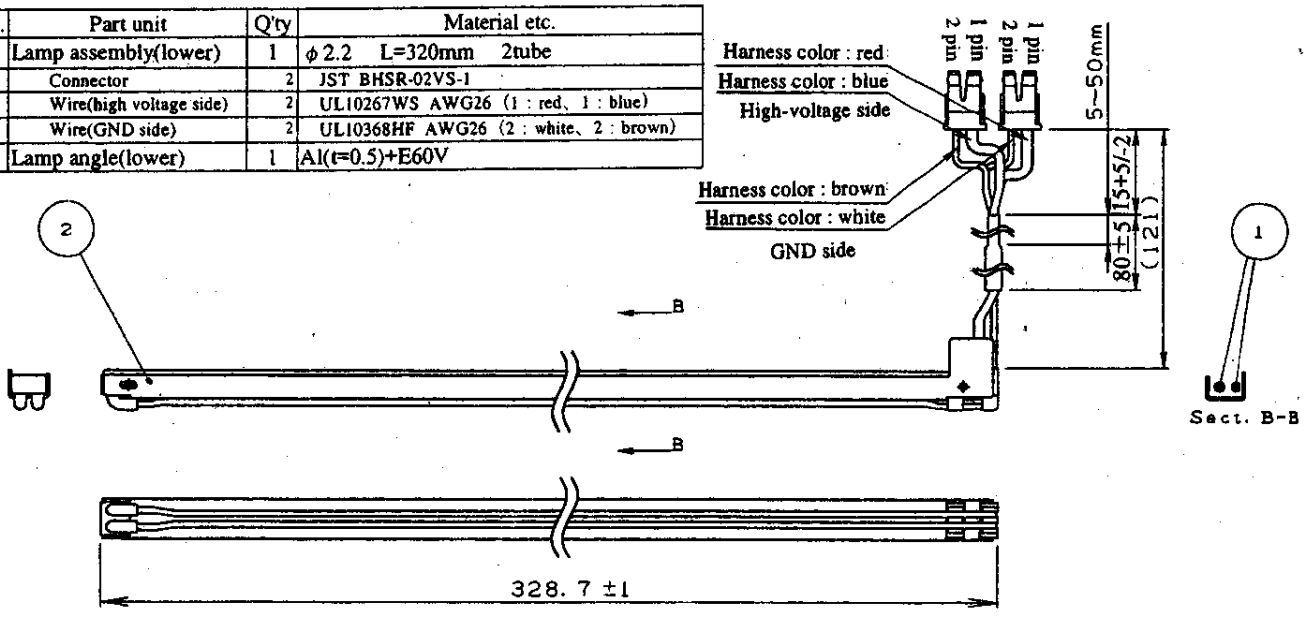
COLD CATHODE FLUORESCENT LAMP IN LCD PANEL CONTAINS A SMALL AMOUNT OF MERCURY, PLEASE FOLLOW LOCAL ORDINANCES OR REGULATIONS FOR DISPOSAL.

Lamp unit(upper)



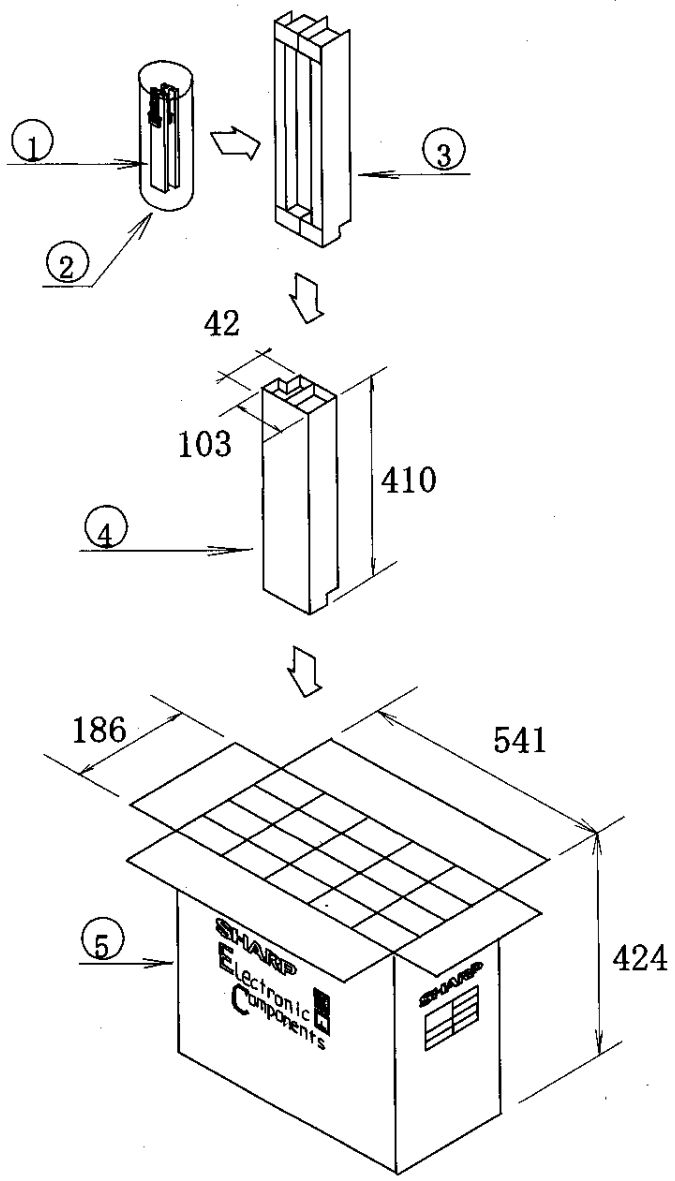
No.	Part unit	Q'ty	Material etc.
1	Lamp assembly(upper)	1	ϕ 2.2 L=320mm 2tube
	Connector	2	JST BHSR-02VS-1
	Wire(high voltage side)	2	UL10267WS AWG26 (1 : red, 1 : blue)
	Wire(GND side)	2	UL10368HF AWG26 (2 : white, 2 : brown)
2	Lamp angle(upper)	1	Al(t=0.5)+E60V

Lamp unit(lower)



No.	Part unit	Q'ty	Material etc.
1	Lamp assembly(lower)	1	ϕ 2.2 L=320mm 2tube
	Connector	2	JST BHSR-02VS-1
	Wire(high voltage side)	2	UL10267WS AWG26 (1 : red, 1 : blue)
	Wire(GND side)	2	UL10368HF AWG26 (2 : white, 2 : brown)
2	Lamp angle(lower)	1	Al(t=0.5)+E60V

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 ±0.01 N·m (1.2 ±0.1 kgf·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.

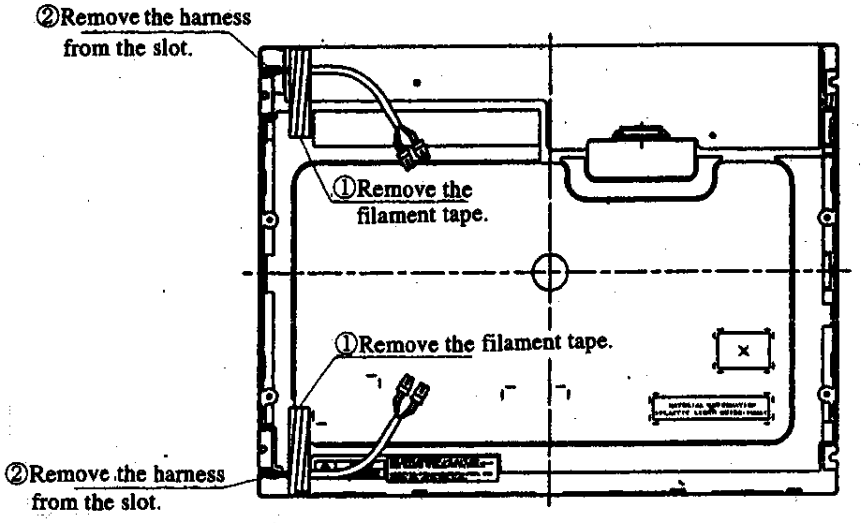


Fig.1

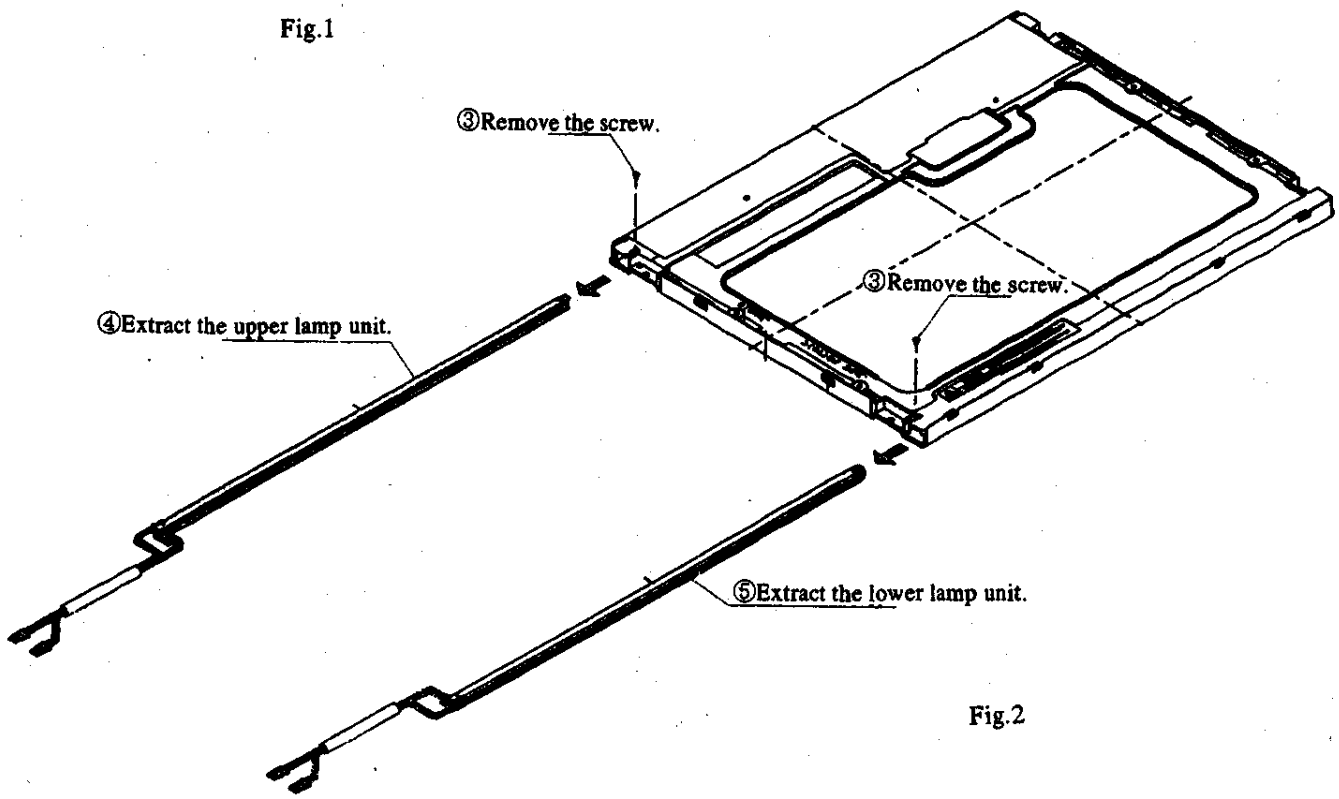


Fig.2

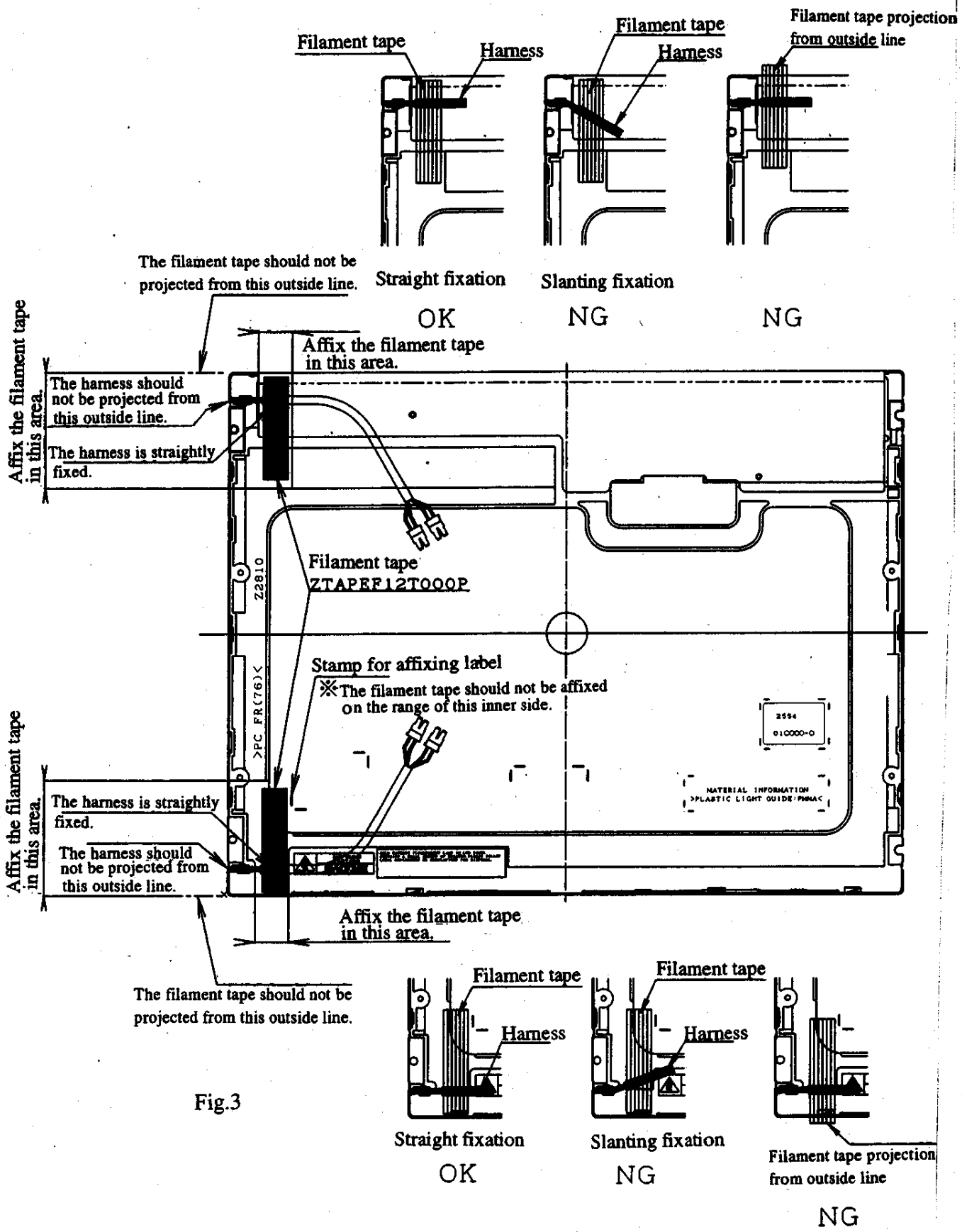

Filament tape
Harness
Filament tape
Harness
Filament tape projection from outside line
The filament tape should not be projected from this outside line.
Straight fixation
Slanting fixation
OK
NG
NG
Affix the filament tape in this area.
Affix the filament tape in this area.
The harness should not be projected from this outside line.
The harness is straightly fixed.
Filament tape
ZTAPEF12T000P
Stamp for affixing label
※The filament tape should not be affixed on the range of this inner side.
Affix the filament tape in this area.
The harness is straightly fixed.
The harness should not be projected from this outside line.
Affix the filament tape in this area.
The filament tape should not be projected from this outside line.
Filament tape
Harness
Filament tape
Harness
Straight fixation
Slanting fixation
Filament tape projection from outside line
OK
NG
NG

Fig.3