

TOSHIBA

FILE NO. 330-200406
REVISED. 2

SERVICE MANUAL

DLP PROJECTOR

TDP-S20

TDP-S21

TDP-SW20



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APPENDIX 1

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Introduction

■ List of general specifications

Item	Specification
Consumption Power	230 W
Weight	TDP-S20: 3.0 kg TDP-SW20: 3.1kg TDP-S21: 3.9 kg
External Dimensions (including protruding parts)	TDP-S20 TDP-SW20: 285 × 98 × 254 mm (W × H × D) TDP-S21: 369 × 98 × 259 mm (W × H × D)
Cabinet material*	PC+ABS resin and ABS resin
Conditions for usage environment	Temp: 5°C to 35°C; relative humidity: 30% to 70%
Display pixels	1 chip DMD™
Picture elements	480,000 pixels (800H × 600V)
Lens	Zoom lens F=2.0-2.2 f=18.20-21.84 mm
Lamp	High-pressure mercury lamp 160W(135W) 3,000H(typ.)
Projection screen size	30-300 inches
Projection distance	1.15-10.00m
Speaker	1 W (Monaural)
Connection terminal	COMPUTER-1 terminal Mini D sub 15 pin RGB / Y/P _B /P _R (dual use)
	COMPUTER-2 terminal Mini D sub 15 pin RGB / Y/P _B /P _R (dual use) / CAMERA (TDP-S21)
	MONITOR terminal Mini D sub 15 pin RGB / Y/P _B /P _R (dual use)
	S-VIDEO terminal Mini DIN 4 pin
	AUDIO (L/R) terminal RCA Pin Jack × 2, 1.5 V (rms), 22 kΩ or more
	VIDEO terminal RCA Pin Jack, 1 V (p-p), 75 Ω
	AUDIO IN terminal ø3.5mm dia. stereo mini-jack, 1.5V (rms); 22 kΩ or more
	AUDIO OUT terminal ø3.5mm dia. stereo mini-jack
	CONTROL terminal Mini DIN 8 pin (RS-232C)

■ Document camera specifications (TDP-S21)

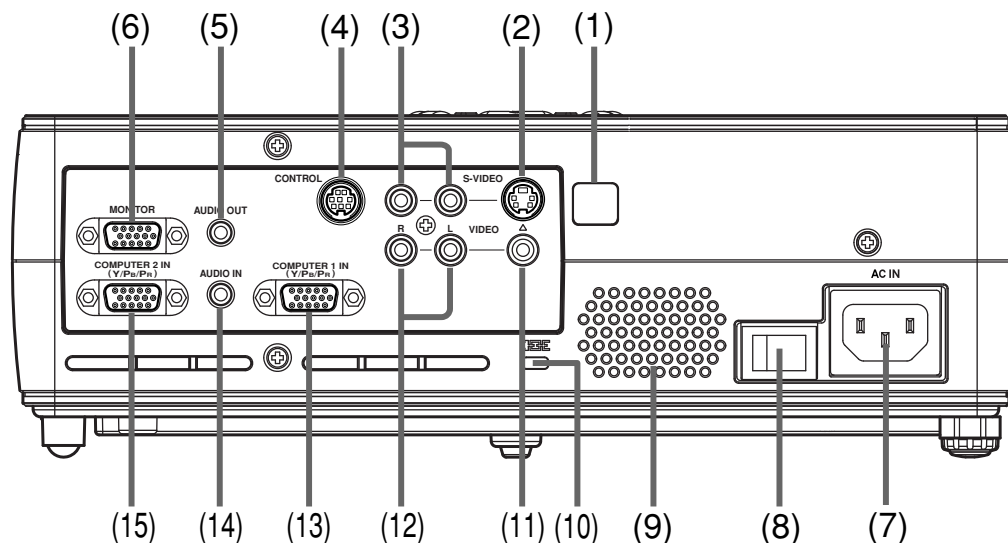
Item	Specification
Lens	F=2.8, f=2.8mm
Focusing	Switching in two steps
Zooming	None (adjusted through distance from subject)
Image element	1/4.2 inches honeycomb CCD
Effective pixels for pickup section	629,856 pixels (648H × 486V × 2)

* Each plastic part displays the materials it is made from, in order to facilitate recycling after this product becomes no longer usable.

TDP-SW20

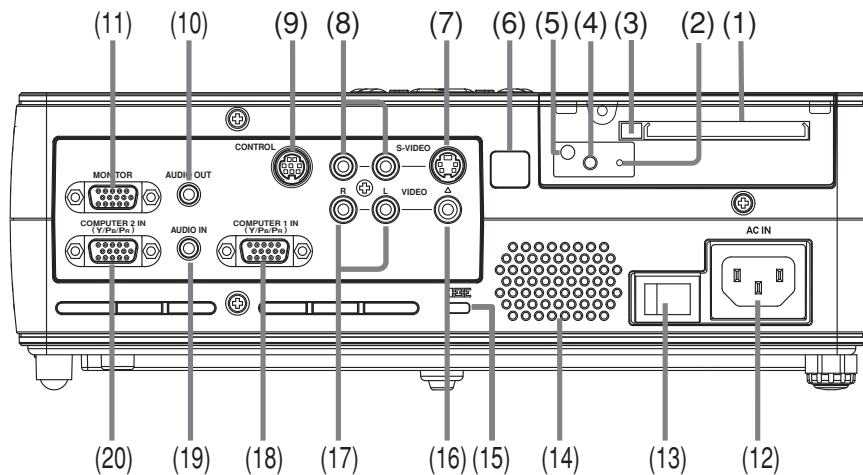
PC Card slot : Compliant with PC Card Standard TYPE II

Parts on the rear panel (TDP-S20/S21)



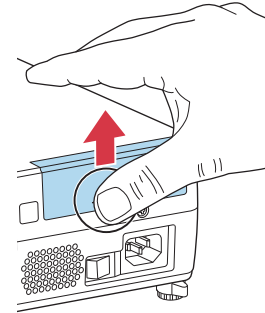
Name	: Main Function
(1) Infrared remote sensor	: Senses commands from the remote control.
(2) S-VIDEO terminal	: Input S video signals from video equipment.
(3) AUDIO (L/R) terminal	: Input audio signals from video equipment.
(4) CONTROL terminal	: When operating the projector via a computer, connect this to the controlling computer's RS-232C port.
(5) AUDIO OUT terminal	: Outputs audio signals.
(6) MONITOR terminal	: Connect to a computer display, etc.
(7) AC IN socket	: Connect the supplied power cord here.
(8) Main power switch	: AC power line ON (standby)/OFF.
(9) Speaker	: Outputs audio sound.
(10) Antitheft lock hole	: Attach a safety cable or any other antitheft device.
(11) VIDEO terminal	: Input video signals from video equipment.
(12) AUDIO (L/R) terminal	: Input audio signals from video equipment.
(13) COMPUTER 1 terminal	: Input RGB signal from a computer or other source, or a component video signal (Y/Pb/Pr) from video equipment.
(14) AUDIO IN terminal	: Input audio signals from a computer or video equipment with a component video signal output terminal.
(15) COMPUTER 2 terminal	: Input RGB signal from a computer or other source, or a component video signal (Y/Pb/Pr) from video equipment. For TDP-S21, use exclusively for document camera connection.

Parts on the rear panel (TDP-SW20)



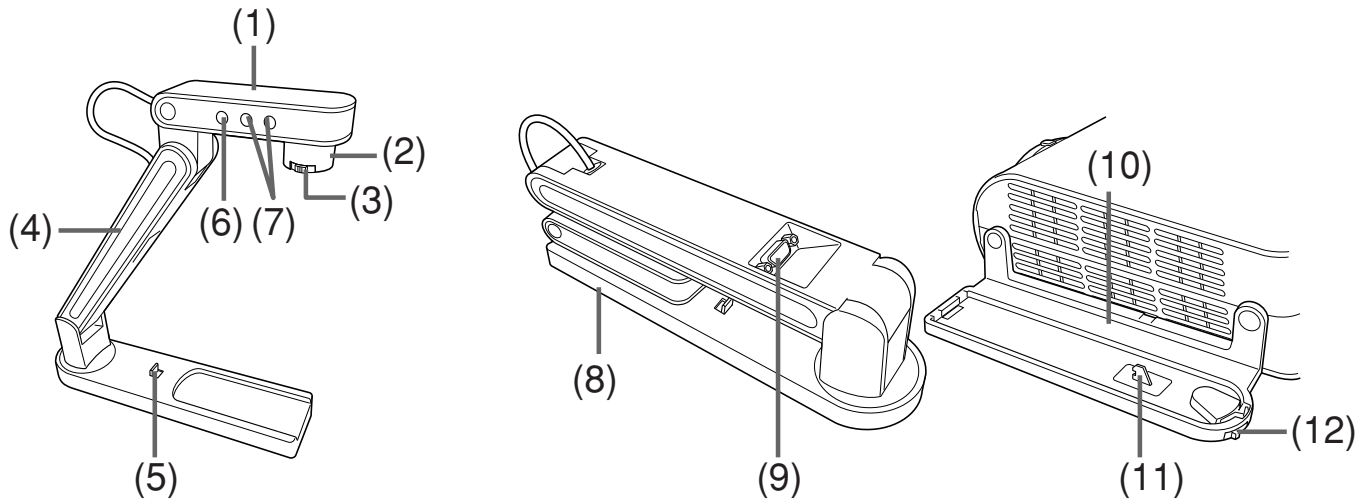
■ Removing the PC card slot cover

Press on the circle ("O") while sliding the cover in the direction of the arrow. The cover will come off.



Name	: Main Function
(1) PC card slot	: Insert PC cards here.
(2) RESET switch (inside depression)	: Press if CARD indicator turns red.
(3) Eject button	: Press to remove PC card.
(4) UNMOUNT button	: Press before removing PC card.
(5) CARD indicator	: Displays PC card's status.
(6) Infrared remote sensor	: Senses commands from the remote control.
(7) S-VIDEO terminal	: Input S video signals from video equipment.
(8) AUDIO (L/R) terminal	: Input audio signals from video equipment.
(9) CONTROL terminal	: When operating the projector via a computer, connect this to the controlling computer's RS-232C port.
(10) AUDIO OUT terminal	: Outputs audio signals.
(11) MONITOR terminal	: Connect to a computer display, etc.
(12) AC IN socket	: Connect the supplied power cord here.
(13) Main power switch	: AC power line ON (standby)/OFF.
(14) Speaker	: Outputs audio sound.
(15) Antitheft lock hole	: Attach a safety cable or any other antitheft device.
(16) VIDEO terminal	: Input video signals from video equipment.
(17) AUDIO (L/R) terminal	: Input audio signals from video equipment.
(18) COMPUTER 1 terminal	: Input RGB signal from a computer or other source, or a component video signal (Y/PB/PR) from video equipment.
(19) AUDIO IN terminal	: Input audio signals from a computer or video equipment with a component video signal output terminal.
(20) COMPUTER 2 terminal	: Input RGB signal from a computer or other source, or a component video signal (Y/PB/PR) from video equipment.

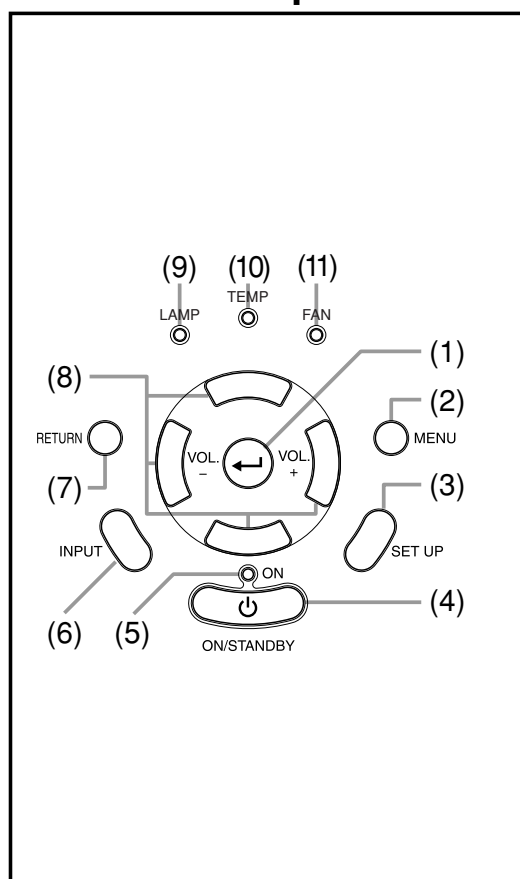
Names of each part on the document camera (TDP-S21)



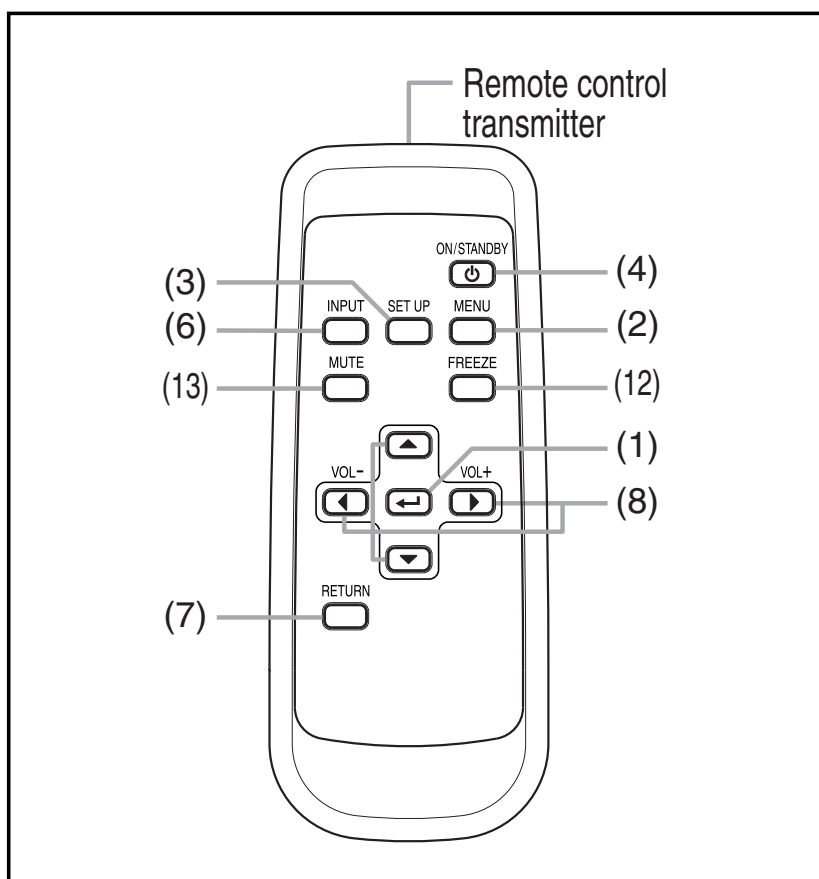
Name	: Function
(1) Camera head	: Document camera.
(2) Camera lens	: Shooting lens for the document camera.
(3) Focusing lever	: Adjusts the focus.
(4) Camera arm	: Adjusts the shooting angle.
(5) Lock lever	: Used when the document camera is detached from the tray.
(6) CAMERA button	: Toggles between the camera input and previous input.
(7) CAMERA GAIN buttons	: Adjusts the camera gain.
(8) Tip resistant bar	: Pulled out when a camera is used separated from the projector.
(9) Camera output terminal (CAMERA OUT)	: Used connect the supplied document camera cable to the COMPUTER IN (camera) terminal of the projector.
(10) Tray	: The document camera is mounted.
(11) Lock lever	: Locks the document camera onto the tray.
(12) Lock switch	: Used when the document camera is attached/detached to/from the tray.

Names of each part on the control panel and remote control

Control panel



Remote Control



Name	: Main Function
(1) ENTER button	: Accepts the selected mode.
(2) MENU button	: Displays menus.
(3) SET UP button	: Sets up image and mode.
(4) ON/STANDBY button	: Turns the power on/off (standby).
(5) ON indicator	: Displays whether power is on or off.
(6) INPUT button	: Selects input.
(7) RETURN button	: Goes back one screen.
(8) Selection button	: Menu selections and adjustments, etc.
(9) LAMP indicator	: Displays lamp mode.
(10) TEMP indicator	: Lights when internal temperature too high.
(11) FAN indicator	: Displays cooling fan mode.
(12) FREEZE button	: Pauses image.
(13) MUTE button	: Cuts off the picture and sound temporarily.

Using the menu

■ The image adjustment menu

Use this menu to adjust image-related items.

Items that can be adjusted are marked with "Yes", and those that cannot are marked with "No".

Item	Description	Computer	Y/Pb/Pr	Video S-video	Camera
Contrast	Adjust the image contrast. Lower Higher	Yes	Yes	Yes	Yes
Brightness	Adjust the brightness of the image. Darker Brighter	Yes	Yes	Yes	Yes
Color	Adjust the color of the image. Lighter Deeper	No	Yes	Yes	No
Tint ^{*1}	Adjust the tint of the image color. Reddish Greenish	No	No	Yes	No
Sharpness	Adjust the sharpness of the image. Softer Sharper	No	Yes	Yes	Yes
Noise reduction	Set the function to reduce screen noise. On (Enable) Off (Disable)	No	Yes	Yes	No
Picture mode	Press / . Bright/Standard/True color	Yes	Yes	Yes	No
R-level	Adjust red of the image color. Less red More red	Yes	Yes	Yes	Yes
G-level	Adjust green of the image color. Less green More green	Yes	Yes	Yes	Yes
B-level	Adjust blue of the image color. Less blue More blue	Yes	Yes	Yes	Yes
NTSC mode ^{*1}	Set the black level with / button. US: NTSC (US) mode Japan: NTSC (JAPAN) mode	No	No	Yes	No
Shutter (TDP-S21)	Set the shutter speed of the camera to the local power frequency. 50 Hz 60 Hz	No	No	No	Yes
White balance ^{*2} (TDP-S21)	Set the white balance of the document camera. Auto Lock	No	No	No	Yes

*1: [Tint] and [NTSC mode] can be displayed and adjusted only when the video signal is set to [NTSC] and [NTSC4.43]. (NTSC mode is set to JAPAN when the language is set to Japanese. It is set to US for other languages.)

*2: Even if the **white balance** is set to [Lock], turning the projector off disables this function and turning it on again the next time resets the menu to [Auto]. (TDP-S21)

■ The display setting menu

Use this menu to set screen display-related items.

Item	Description
Screen size	 (Full): Display with 800 × 600 dot resolution (Thru): Display with sampling resolution (for computer input) (Wide): Wide-screen display (for Video, S-video, and Y/Pb/Pr)
Language	Select one of the languages below to use for displaying the menu and messages [] : Enter setting mode] → [: Selection] → [Apply:] English/Français/Deutsch/Italiano/Español/Português/Russкий/ Svenska/Türkçe/ 日本語 / 中文 (简体字) / 中文 (繁体字) / 한국어
Background	Screen to display when there is no input signal. [Logo] [Blue] [Black]
Icon	Display icons as function guides On Off
Start-up screen	Display start-up screen when power is turned on On Off

■ Note

- If "Thru" is selected for **screen size**, portions exceeding the native resolution (800 × 600 pixels) will not appear on the screen. Note that for RGB signals with clock frequency 110MHz or lower, all input pixel signals are sampled. However, if the clock speed is higher than this, the RGB pixel signal is thinned before sampling.

Notes

- Picture mode default setting
Computer -> "Bright"
Y/Pb/Pr, Video, S-Video -> "Standard"
- Background default setting is "Blue".

Using the menu

The default setting menu

This menu shows placement status and other settings.

Item	Description
Projection mode	Sets projection mode in accordance with Placement Style. (Standard) (Rear) (Mounted from ceiling)
No signal power off	Set the timer to wait for the power to be turned off after signal input stops. Press . Switch with and . Off (not turned off)/1 min./5 min./10 min./30 min./60 min.
Auto input search	Set whether the input with signals is only selected or not. On Off
Power on	Sets whether to turn on the power when the ON/STANDBY button is pressed (Manual), or when the power cord is plugged in (Auto). Manual Auto
Lamp power <small>[Note 1]</small>	Sets the lamp power. Low Standard
Fan mode <small>[Note 2]</small>	Sets the cooling fan speed. Standard High
Reset all	Press . Resets all adjustments and settings to their factory settings. Yes No

Notes

- 1: When **Lamp power** is set to **Low**, the screen becomes a little darker, but the cooling fan noise gets quieter. This setting will be cleared when you turn the power off.
- 2: Setting **[Fan mode]** to **[High]** increases the cooling fan speed. Set this option to use the projector, for example, at high altitude (over 1,500 meters above sea level).

Notes

- Note that in the event of a power outage but the power is restored afterwards, the projector power will come on if **Power on** is set to **Auto**, and the power cord is plugged in.
- When you turn off the projector even if **Power on** is set to **Auto**, you must press the **ON/STANDBY** button to turn the power off.

- When Lamp time reaches in 3,000H, a Warning Display appears. Then, it is displayed every 100Hours.



Displaying Information (Status display)

This displays information about the input signal, lamp use time, etc.

"Yes": displayed, "No": not displayed

Item	Description	Computer	Y/Pb/Pr	Video S-video	Camera
Input	Input source name	Yes	Yes	Yes	Yes
Mode name	RGB input mode <small>[Note 1]</small>	Yes	No	No	No
H-resolution	Horizontal resolution (in dots)	Yes	No	No	No
V-resolution	Vertical resolution (in dots)	Yes	No	No	No
H-frequency	Horizontal sync frequency <small>[Note 2]</small>	Yes	No	No	No
V-frequency	Vertical sync frequency <small>[Note 3]</small>	Yes	No	No	No
Sync	Sync signal polarity <small>[Note 3]</small>	Yes	No	No	No
Signal format	Y/Pb/Pr signal format	No	Yes	No	No
Video mode	Color method of video signal	No	No	Yes	No
Lamp time	Time of lamp use <small>[Note 4]</small>	Yes	Yes	Yes	Yes
Lamp reset count	The count for lamp replacement	Yes	Yes	Yes	Yes
Total time	The total time that this projector is used <small>[Note 5]</small>	Yes	Yes	Yes	Yes
Version	Firmware version <small>[Note 5]</small>	Yes	Yes	Yes	Yes

Notes

- 1: The mode of supported RGB signals is shown at owner's manual.
- 2: Same as the refresh rate of the computer signal.
- 3: Sync signal polarity shown as P (positive) or N (negative) for [H/V].
- 4: Displays **[Lamp time]** as a measure of when the lamp should be replaced. (Cannot be used as a counter of guaranteed lamp time.) When the displayed time approaches 3,000 hours, consult with a store about getting a TLPLV4 replacement lamp (sold separately) prepared.
- 5: **[Version]** shows the version of the projector's internal control program. This version is referred to for customer service, etc.

Note

- The displayed information will not be refreshed if the status changes. To refresh the information, dismiss the display, then display it again.

LED DISPLAY (Problems Shown on LED Indicator Combination)

Error Code No.	Status of Indicator Lights	Trouble and Cause	Solution
-		Standby power is not on. -> There's a problem with the power supply or the MAIN Board.	Check the power supply. Check the connector. Check the MAIN Board.
1		[Lamp error] Lamp went out during use, or won't come on. -> Lamp temperature is high or the lifetime of the lamp has ended or the projector is malfunctioning.	Unplug the power cord and wait for a short while, then turn the power back on. If the lamp burns out, replace it with a new one. Or it may have a trouble at ballast power supply. Or it may have a trouble at color wheel sensor or color wheel ribbon cable or MAIN Board.
2	 ORANGE flashing	[Lamp cover error] Power went out during use, or power won't come on. -> The lamp cover is not properly attached.	Unplug the power cord and reattach the lamp cover.
4		[Fan error] Power went out during use. -> Problem with internal cooling fan or IC454(M62334) doesn't reply to I2C commands or the MAIN Board does not read revolving pulse. Error code 04:DMD/Lamp Fan (Intake) 05:Ballast Fan (Exhaust) 06:Power Fan (Exhaust)	Check the each cooling Fan. Check the MAIN Board.
5			
6	 RED flashing		
8		[Temperature error] Power went out during use. -> Internal overheating, or the outside temperature is too high or temperature sensor doesn't reply to I2C commands. Error code 08: Intake temperature sensor (Sensor Board) 09: Lamp nearby temperature sensor (MAIN Board) 10: DMD nearby temperature sensor (DMD Board)	Place the projector so that the air intake and exhaust are not blocked. Unplug the power cord and wait for a short while, then turn the power back on. Check the each temperature sensor.
9			
10	 RED flashing		
12	 GREEN flashing	[Device error] Power went out during use. -> There are problems with the MAIN Board or Color wheel or Color wheel sensor. Error code 12: AD9888, VPX3226, NJW1141, BR24L16 at MAIN Board. 13: A color wheel doesn't spin or be not controlled. 14: DAD1000 has some serious errors at MAIN Board. 15: DDP2000 has some serious errors at MAIN Board.	Check the MAIN Board. Check the Color wheel. Check the Color wheel sensor Board. Check the connector.
13	 GREEN flashing		
14	 GREEN flashing		
15	 GREEN flashing		
16		[Camera error] Power went out during use. -> A camera microprocessor doesn't reply to I2C commands.	Check the RGB cable. Check the Document Camera. Check the MAIN Board.

Notes

When each error occurs, after approx. one minute of abnormal display, the projector returns to the standby state waiting for internal cool down.

[L] : LAMP, [T] : TEMP, [F] : FAN, [O] : ON

[Check Mode]

How to enter to the Check Mode

While the Volume adjustment bar is displayed on the screen, press the buttons,

[Input] , **[Return]** , **[Setup]** and **[Menu]** simultaneously.

Then, the projector enters to the Check mode.

The Check mode will be maintained until you turn off the Main power switch..

How to display the Operation state

After the projector has entered to the Check mode, press

[Return] button and **[Up]** button at once.

Then, the Operation state appears on the screen.

When you press **[Return]** button, it will disappear.

Version	xxxx-0010-1400-1300		
User lamp time	1H-10M-10S		0
Panel time	1H-10M-10S		0
Total time	1H-10M-10S		
Sub B 66- 70- 67		Sub C 147-153-150	
KC0 0-0-0		KC1 0-0-0	
KC2 0-0-0		KC3 0-0-0	
Fan1 5082rpm	Fan2 2766rpm	Fan3 3360rpm	
Temp1 28deg	Temp2 60deg	Temp3 38deg	
Engine No.	A000000E0360	Altitude	0
C/W delay index	500	DMD bias	E
Error count	5	Shut down	5
Err log	1-2-16-1-10-0-0-0-0-0		

The **version** is displayed as each firmware version of the network (SW20 only), the camera (S21 only), the MAIN board and the OSD data.

Right side numbers of the **user lamp time** and the **panel lamp time** mean reset counters of them.

Sub B and **Sub C** are electrical adjustment values of input signal levels.

KC0, **KC1**, **KC2** and **KC3** are not used (fixed values)

Fan1, **Fan2** and **Fan3** are the values of a speed of each fan being revolved.

Temp1 is Intake temperature at Sensor Board. **Temp2** is lamp nearby temperature at Main Board. **Temp3** is DMD nearby temperature at DMD Board.

Temp3 will be displayed as 0 degree (fixed value) from the middle of Mass Production.

The **altitude** is a setting of the fan altitude mode (Range is from 0 to 6).

C/W delay index and **DMD bias** are optical adjustment values.

Error count is the sum of all error counts.

Shut down is the times of shutdown of power on state.

A number in the **Err log** means an error ID.

Firmware Release History

Model	MAIN Version		
TDP-S20	1.200	→	→ 1.600
TDP-S21	X	1.400	→ 1.600
TDP-SW20	X	X	1.500 1.600

DMD TEMP.
Disable

Model	MAIN Version		
TDP-T90	1.000	→	1.500
TDP-T91	X	1.300	1.500
TDP-TW90	X	X	1.500

Lighting pattern of Card indicator for TW90 and SW20 series

1. Card indicator (LED)

Card indicator LED is placed next to the PCMCIA card slot.

It indicates whether the PC card is available in normal condition.



TDP-TW90



TDP-SW20

2. Lighting pattern

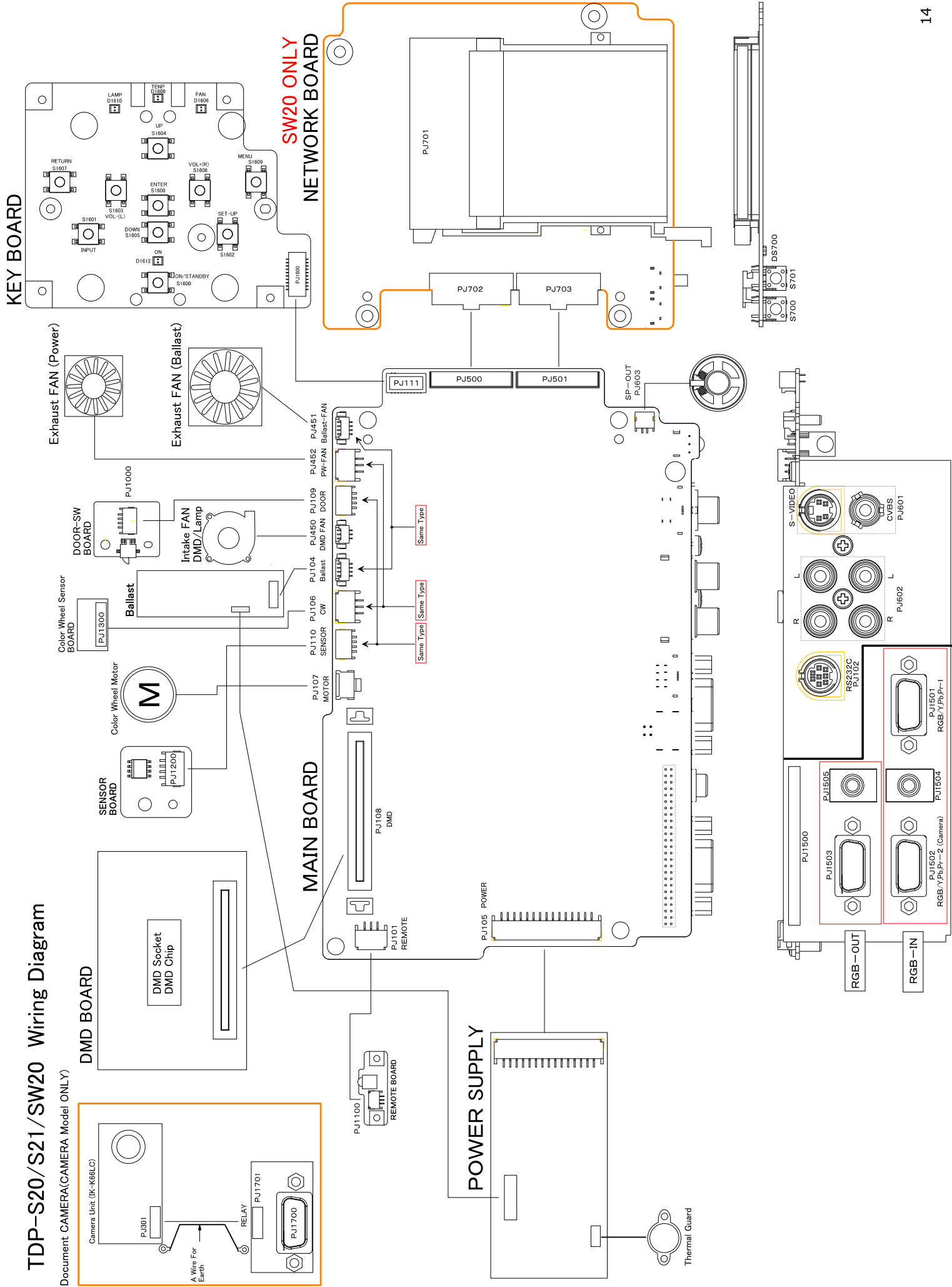
Color or state	Lighting pattern	Blink times	Condition
● Off	Continuous	N/A	Power off / PC card cannot be recognized.
● Green	Continuous	N/A	PC card is working.
☀ Green	Blink	Constantly	F/W updating was successfully completed.
☀ Green	Blink	1	N/A
☀ Green	Blink	2	N/A
☀ Green	Blink	3	N/A
● Red	Continuous	N/A	PC card has been removed from a card slot before a user presses the UNMOUNT button.
☀ Red	Blink	Constantly	F/W updating has been failure.
☀ Red	Blink	1	N/A
☀ Red	Blink	2	H/W error or communication error between main PCB and Network PCB.
☀ Red	Blink	3	Internal error.
● Orange	Continuous	N/A	Projector is "writing" mode.
☀ Orange	Blink	Constantly	N/A
☀ Orange	Blink	1	N/A
☀ Orange	Blink	2	N/A
☀ Orange	Blink	3	N/A

Notes)

- Applicable to projectors which have the same wireless module as the TDP-TW90 inside.
- When LED lights in orange color, it may be reddish orange.

TDP-S20/S21/SW20 Wiring Diagram

Document CAMERA/CAMERA Model ONLY)



BLOCK DIAGRAM

The diagram illustrates the system architecture, showing the interconnections between various components across several boards:

- VIDEO BOARD:** Includes VIDEO S VIDEO Pj801, VPX3226E VIDEO DEC IC601, K4R271669F RDRAM IC116, MX29LV160 Flash ROM WD-TIMER IC115, and DDP2000 SCALER CPU IC106.
- REMOTE BOARD:** Includes PNA4612 FRONT REM IC1200, PNA4612 REAR REM IC123, and RS-232C IN Pj102.
- KEY BOARD:** Includes KEY SW x 10 LED x 4, KEY I/F Pj111, and LM393 COMP IC129.
- CW SENSOR BOARD:** Includes GP2S700 PHOTO IR DS1300, CW INDEX Pj106, and CW MOTOR Pj107.
- DMD BOARD:** Includes G751 TEMP SENS IC1400, DMD SVGA 0.56inch, and DAD1000 DMD RESET IC131.
- DOOR SW BOARD:** Includes SPVG110100 SW S1000.
- POWER SUPPLY:** Includes APS-M526 P800 and POWER IN Pj105.
- SENSOR BOARD:** Includes G751 TEMP SENS IC1200, G751 TEMP SENS IC455, and A-MS-150-17S P850.

Pin List:

PIN	Function
1	3.4V
2	3.4V
3	3.4V
4	GND
5	GND
6	GND
7	6.5V
8	6.5V
9	GND
10	GND
11	15V
12	15V
13	GND
14	GND
15	Control

Warning: Handling Caution !! It is easy to break.

The adjustment item comparison of LCD Model and DLP Model

Electrical Adjustment	TLP-T70/S40/S10 Series (LCD)		TDP-D1/D2 (DLP)		TDP-S20 Series (DLP)		TDP-T90 Series (DLP)		Remarks
	ITEM	Signal Source	ITEM	Signal Source	ITEM	Signal Source	ITEM	Signal Source	
KEystone	○ Except S10	-	○	-	X	-	○	-	
SUB (RGB-1)	○	SINGO98 XGA/SVGA Black (0%) White(100%)	○	External SG. XGA 60Hz Black (0%) White(100%)	○	SINGOWS2000 SVGA 60Hz Black (16/255) White(240/255)	○	SINGOWS2000 XGA 60Hz Black (16/255) White(240/255)	Signal Levels are different.
SUB (Y/Pb/Pr-1)	○	SINGO98 VGA 60Hz SMPTE Green Only	○	External SG. VGA 60Hz Level 0% Green Only	○	SINGOWS2000 + JIG VGA 60Hz Level 0% (Green Only)	○	SINGOWS2000 + JIG VGA 60Hz Level 0% (Green Only)	S20/T90 are required 1.JIG Board (TLP-ET1) 2.US PJ - DSUB Conversion Cable
SUB (CAMERA) CAMERA MODEL ONLY	○	Camera Black (0%) White(100%)	-	-	X	-	X	-	
SUB (NETWORK) SW20/TW90 ONLY	-	-	-	-	○	Memory card Jpeg files	○	Memory card Jpeg files	
VCOM (R,G,B)	○	SINGO98	X	-	X	-	X	-	
GAMMA	○	SINGO98	X	-	X	-	X	-	
SHADING	○	SINGO98	X	-	X	-	X	-	
Altitude FAN Mode	-	-	-	-	○	-	X Altitude not use	-	

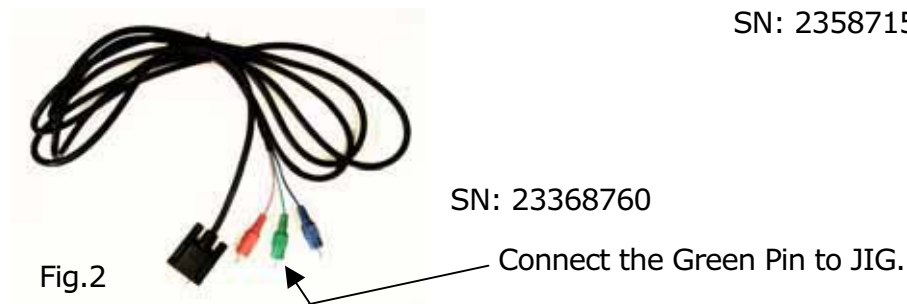
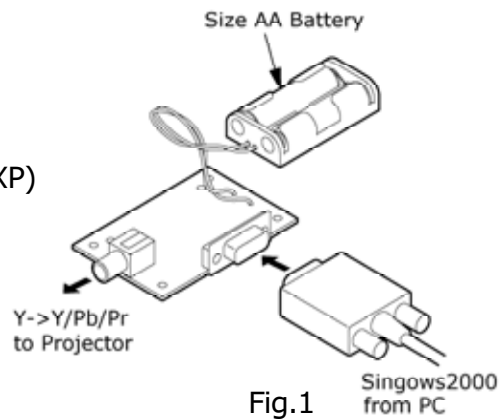
Optical Adjustment	TLP-T70/S40/S10 Series (LCD)		TDP-D1/D2 Series (DLP)		TDP-S20 Series (DLP)		TDP-T90 Series (DLP)		Remarks
	ITEM	Signal Source	ITEM	Signal Source	ITEM	Signal Source	ITEM	Signal Source	
Convergence (R,G,B Panel)	○	SINGO98	-	-	-	-	-	-	
DMD BIAS	X	-	○	-	○	-	○	-	
ColorWheel Index Delay	X	-	○ Square Waveform PIN Detector	External SG. Red/Green/ Blue	○	SINGOWS2000 V-Ramp Bitmap	○	SINGOWS2000 V-Ramp Bitmap	

ELECTRICAL ADJUSTMENT

1. Preparation

<Test equipment and JIG>

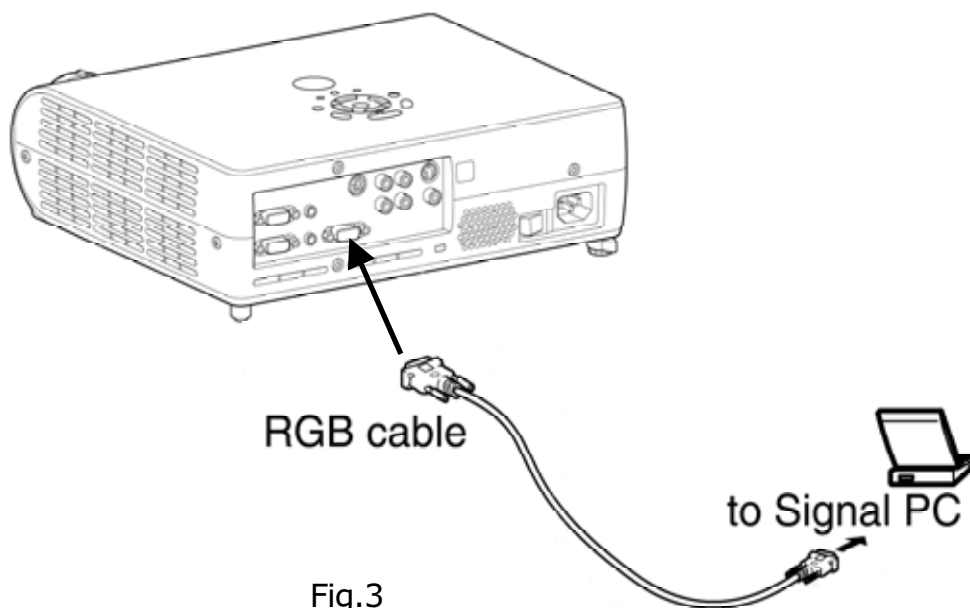
- 1) Personal computer
(Windows PC, OS: Windows 98SE, ME, 2000, XP)
- 2) Signal generating software
SINGOWS2000.exe and S20_V_Ramp.bmp
- 3) JIG for Y/Pb/Pr Input (Fig.1)
- 4) Cables
RGB Cable
Conversion cable (for Y/Pb/Pr Input: Fig.2)



- 5) Memory PC Card (TDP-SW20 Only)
Copy the following files into memory pc card.
XGA_16_255.jpg and XGA_240_255.jpg

<For connection and setting of Personal computer>

- 1) Connection of personal computer
Connect the PC to computer 1 input as shown in following Fig.3
Set RGB output of the PC to CRT.



2. All items to be adjusted

When replacing **Main Board**, adjustment procedure of

DMD Bias voltage,

C/W index delay,

Sub brightness for Computer 1 input,

Sub contrast for Computer 1 input,

Sub brightness for Y/Pb/Pr 1 input,

Sub brightness for Wireless/Card, (TDP-SW20 Only)

Sub contrast for Wireless/Card, (TDP-SW20 Only)

Altitude,

And, save data to EEPROM

should be applied.

When replacing **ENGINE**, adjustment procedure of

DMD Bias voltage,

C/W index delay,

And, save data to EEPROM

should be applied.

When replacing **DMD**, adjustment procedure of

DMD Bias voltage,

And, save data to EEPROM

should be applied.

When replacing **C/W**, adjustment procedure of

C/W index delay,

And, save data to EEPROM

should be applied.

When replacing **C/W Sensor Board**, adjustment procedure of

C/W index delay,

And, save data to EEPROM

should be applied.

3. Preparation for the projector

Plug in the power cord, turn on main power switch and the power of the projector.
Set the Auto input search is off by setting the "default setting" menu.
Select computer 1 input.

How to enter to the Adjustment Mode

While the Volume adjustment bar is displayed on the screen, set value to **2**,
and press the buttons,

[Input], **[On/Standby]** and **[Setup]** simultaneously.

Repeat the above-mentioned procedure three times.

For your confirmation's sake, press **[Return]** and **[Up]** buttons at once.

When the projector enters to the Adjustment Mode, the following menu appears.

If it doesn't appear, repeat from the beginning.

Version	xxxx-0010-1400-1300		
User lamp time	1H-10M-10S		0
Panel time	1H-10M-10S		0
Total time	1H-10M-10S		
Sub B 66- 70- 67	Sub C 147-153-150		
KC0 0-0-0	KC1 0-0-0		
KC2 0-0-0	KC3 0-0-0		
Fan1 5082rpm	Fan2 2766rpm	Fan3 3360rpm	
Temp1 28deg	Temp2 60deg	Temp3 38deg	
Engine No.	A000000E0360	Altitude	0
C/W delay index	500	DMD bias	E
Error count	5	Shut down	5
Err log	1-2-16-1-10-0-0-0-0-0		

This mode maintains until you turn off the Main power switch.

4. MAIN Board adjustment

1) DMD Bias voltage

Press **[Return]** and **[Left]** buttons simultaneously . The following menu appears.

Note: For it disappears, press **[Return]** button.

Select the DMD bias voltage item by pressing **[Up]** or **[Down]** button.

Check the bar code seal on the ENGINE.

(EX. Read alphabet "E" from Fig.4).

Note: It is necessary to remove the Top cover.

Select proper Bias by pressing **[Left]** or **[Right]** button.

C/W index delay	360	
DMD bias voltage	E	
White peaking	10	
Gamma table	16	
CSC table	0	
GAM	On	Off
CSC	On	Off

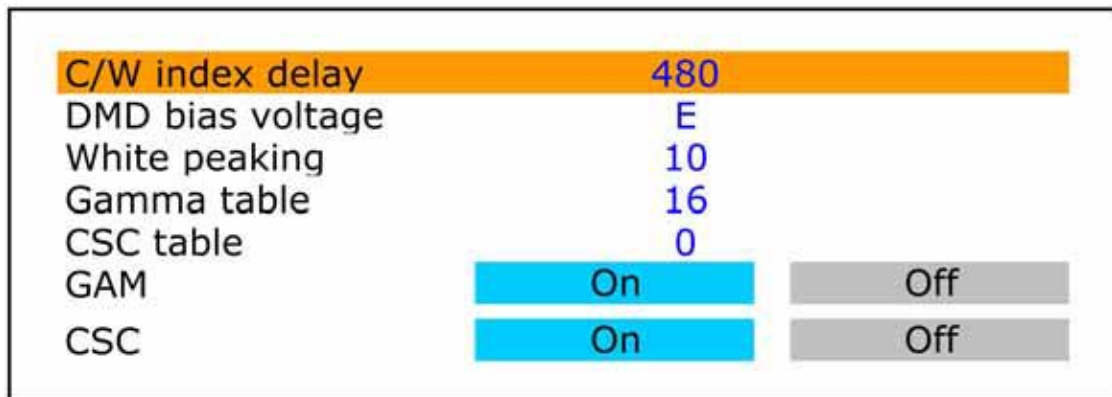


Fig.4

2) Color Wheel (C/W) index delay adjustment

Select the C/W index delay item by pressing **[Up]** or **[Down]** button.

For preparation, set the value to **480** by pressing **[Left]** or **[Right]** button.

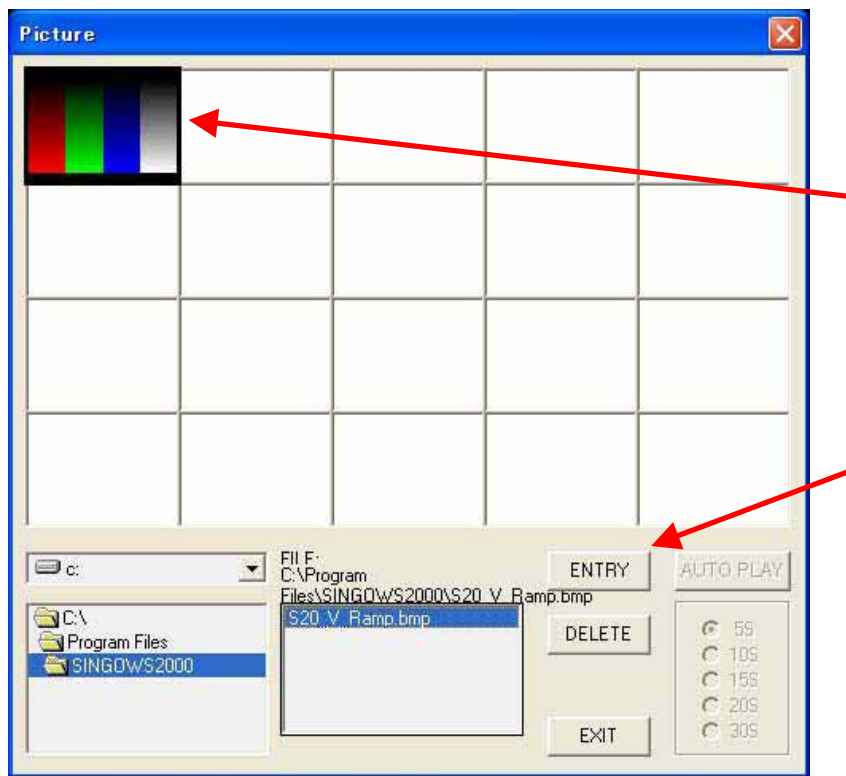


Press **[Return]** button.

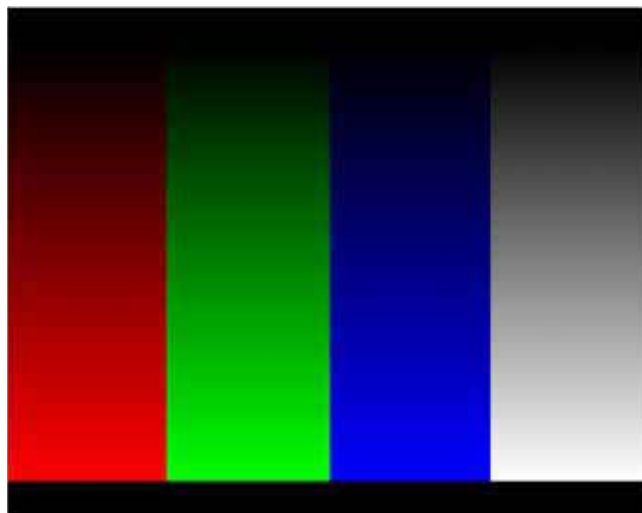
Start the signal generating software (SINGOWS2000.exe),
the following signal pattern appears and click PIC button.



The following Picture dialog box appears.
Select the downloaded file of S20_V_Ramp.bmp.
Click **[ENTRY]** button.



Double click the S20_V_Ramp window, the following V-Ramp signal appears.



Press **[Return]** and **[Left]** buttons simultaneously .

Adjust the C/W index delay by pressing **[Left]** or **[Right]** button

<STEP 1> Check on blue.

Read the value when the horizontal stripes (EX. Fig.5) is minimized and the value is referred to "A."

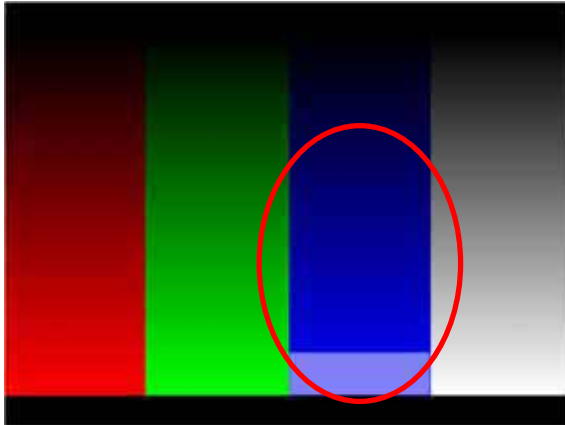


Fig.5

<STEP 2> Check on red.

Read the value when the horizontal stripes (EX. Fig.6) is minimized, and it is referred to as "B."

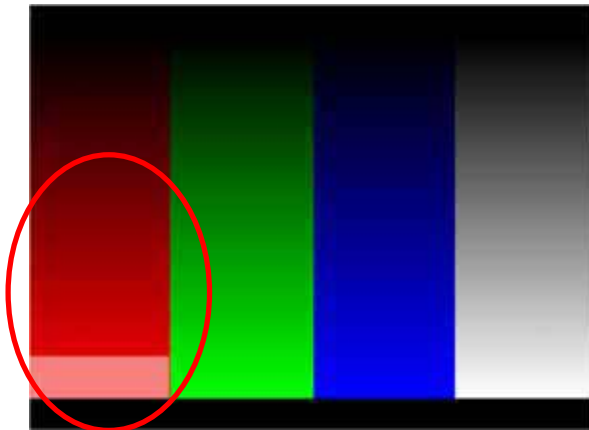


Fig.6

<STEP 3>

Adjust the value to final adjustment value.

Final adjustment value = $(A+B)/2$ (EX. Fig.7)

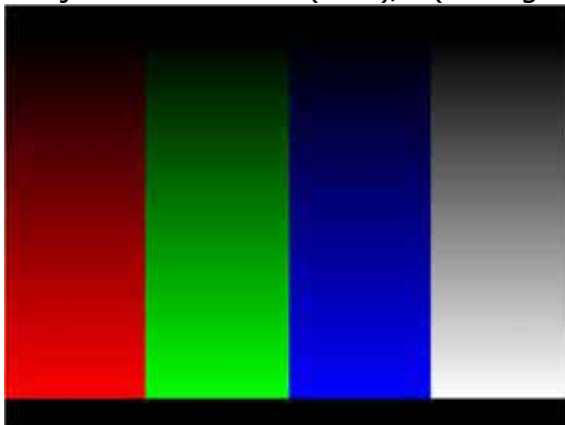


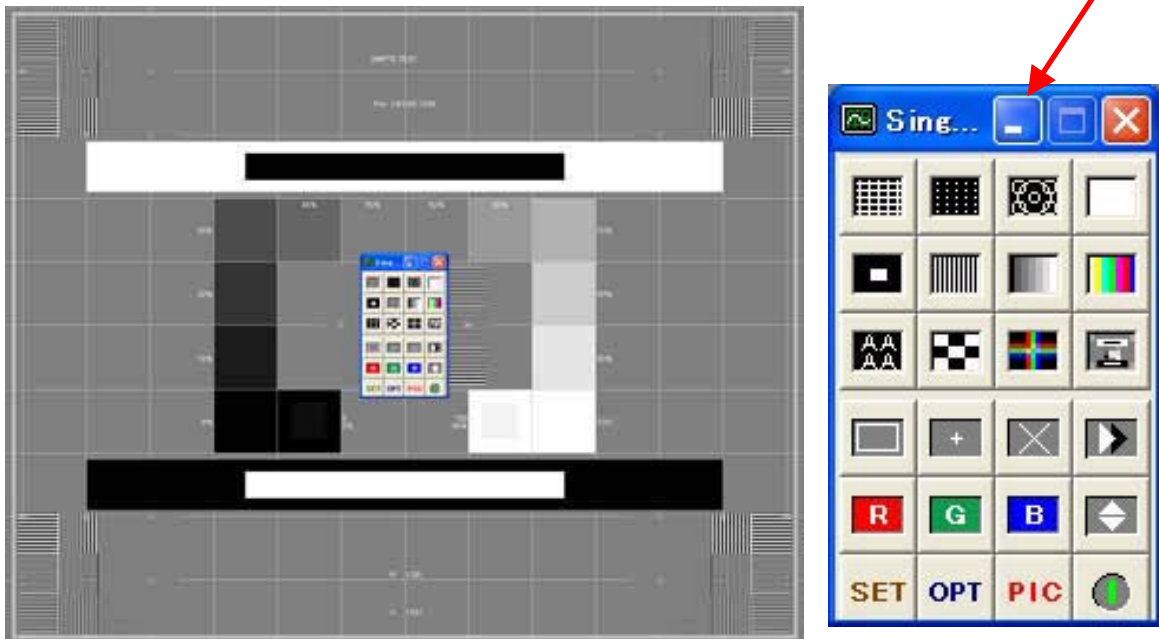
Fig.7

Press **[Return]** button, when it is completed.

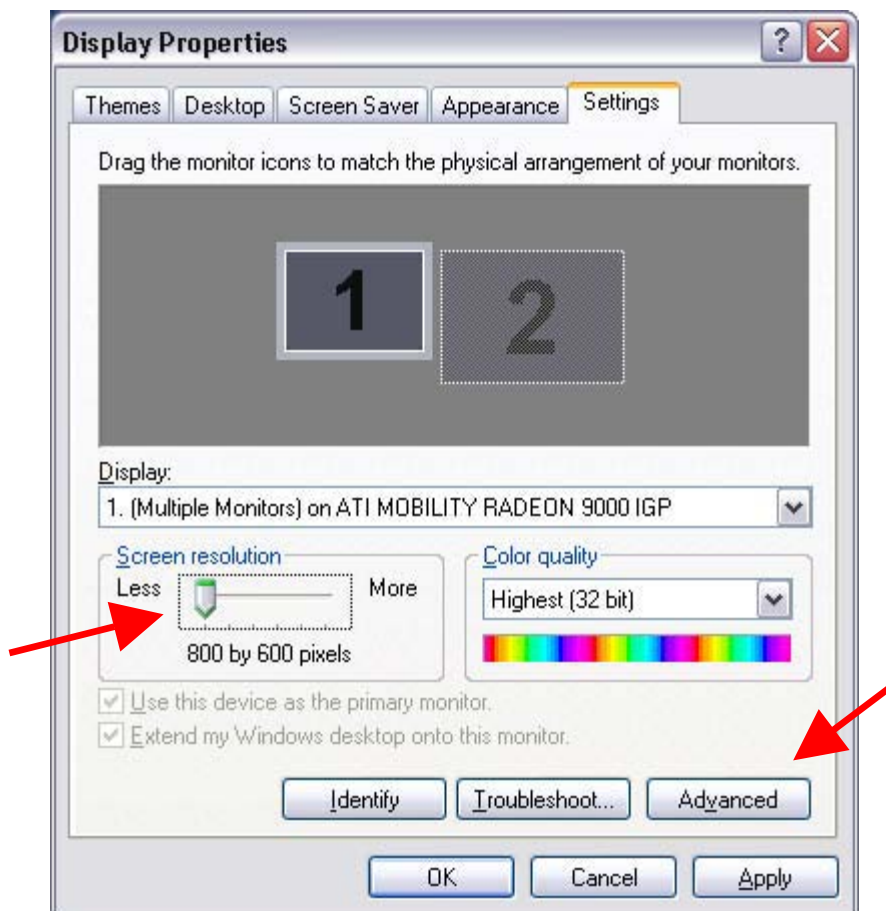
Then, press **[Esc]** key of PC and click **[EXIT]** button of picture dialog box for next adjustment.

3) Sub brightness for Computer 1 input

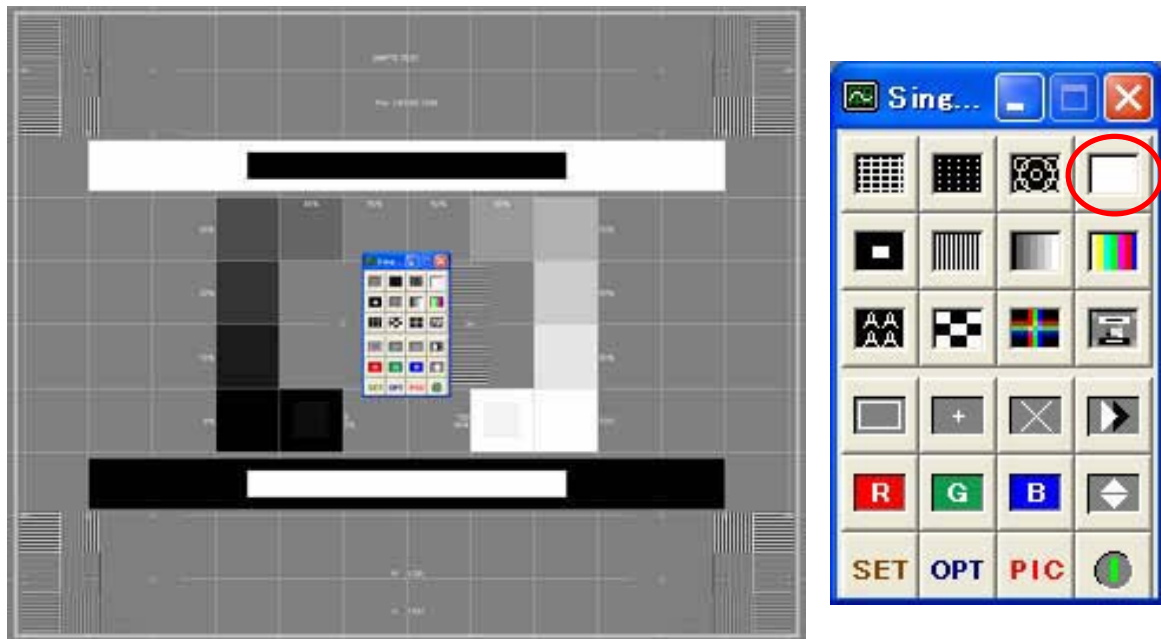
For preparation, call the menu dialog box and click the minimize button.



Change (or confirm) the screen resolution and refresh rate to the SVGA (800x600) 60Hertz of display properties.



Click the SINGOWS2000 of taskbar and select full-white (raster) signal.



Right - click to display the following color pallets.

Click the other button, the following RGB level adjustment dialog box appears.

(1) Set the RGB level to 16. Then click the OK button.

(2) Move the mouse cursor out of a screen to avoid the error.



Press **[Return]** and **[Down]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Press **[Enter]** button of the projector.

Sub brightness	63	63	63
Sub contrast	127	127	127

Press **[Return]** and **[Down]** buttons simultaneously.

When the adjustment is successfully completed, values changes from default [63]. (EX. The following menu)

If it fails, values return to default [63].

Press **[Return]** button.

Sub brightness	67	71	68
Sub contrast	127	127	127

4) Sub contrast for Computer 1 input

Right - click to display the following color pallets.

Click **OTHER (O)** button, the following RGB level adjustment dialog box appears.

(1) Set the RGB level to 240. Then click the OK button.

(2) Move the mouse cursor out of a screen to avoid the error.



Press **[Return]** and **[Down]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Select the Sub contrast item by pressing **[Up]** or **[Down]** button.

Press **[Enter]** button of the projector.

Sub brightness	67	71	68
Sub contrast	127	127	127

Press **[Return]** and **[Down]** buttons simultaneously.

Select the Sub contrast item by pressing **[Up]** or **[Down]** button.

When the adjustment is successfully completed, values changes from default [127]. (EX. The following menu)

If it fails, values return to default [127].

Press **[Return]** button.

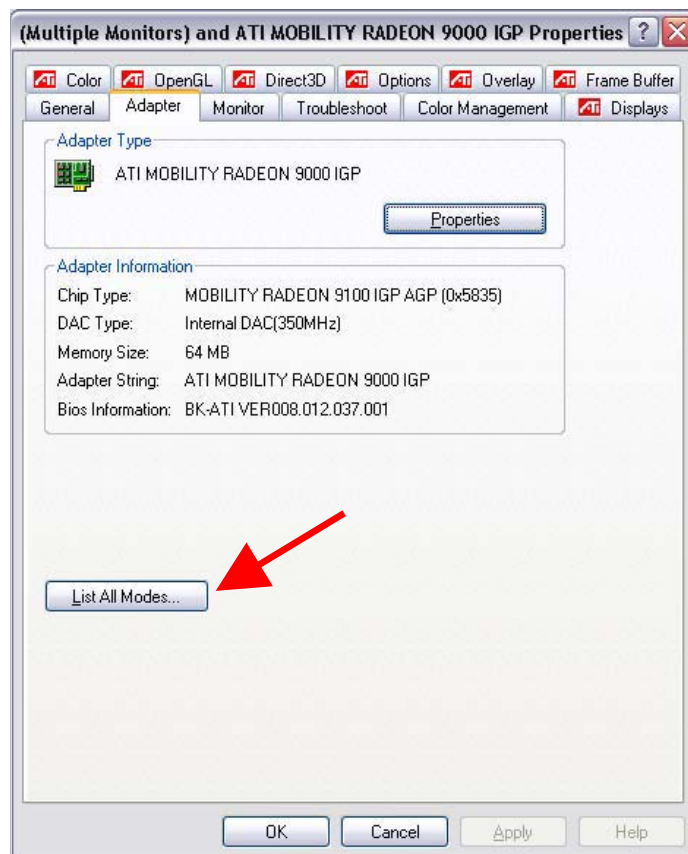
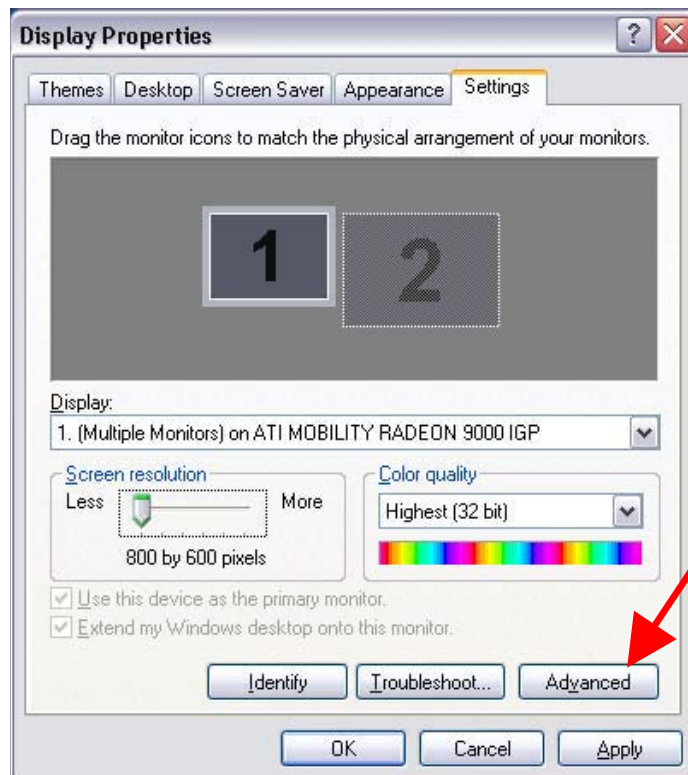
Sub brightness	67	71	68
Sub contrast	150	154	152

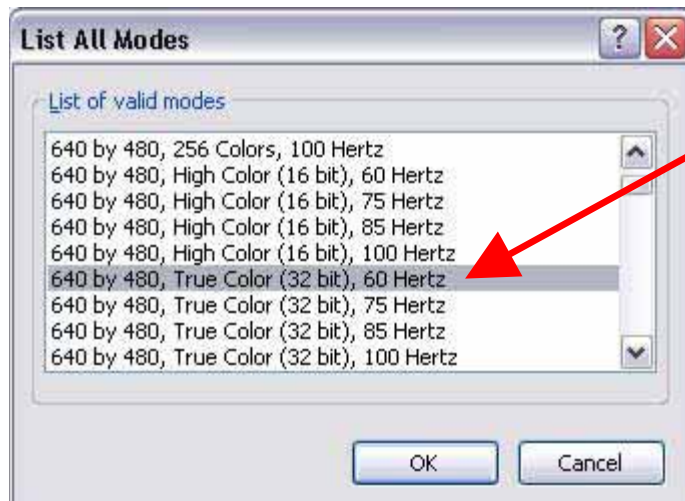
5) Sub brightness for Y/Pb/Pr 1 input

For preparation, call the menu dialog box and click the minimize button.



Change the screen resolution and refresh rate to the VGA (640x480) 60Hertz of display properties.

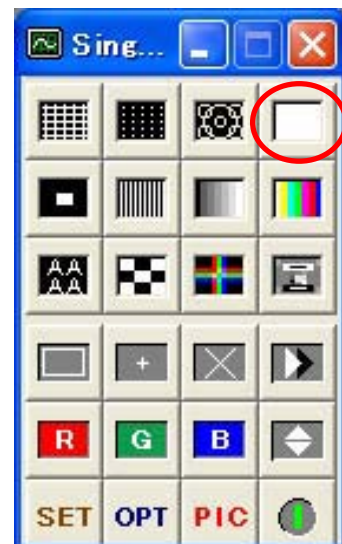
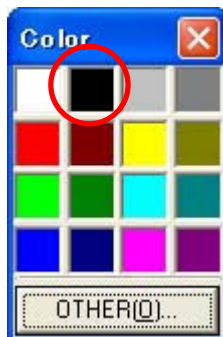




Click the SINGOWS2000 of taskbar and select full-white (raster) signal.

Right - click to display the following color pallets.
Click the black button.

Move the mouse cursor out of a screen
to avoid the error.



When you adjust Y/Pb/Pr, connect RGB output of [SINGOWS2000] to the JIG.
The signal from RCA pin through the JIG is input the computer 1 of the projector
by green signal pin of the conversion cable.
[SINGOWS2000] should be input through the JIG.
Refer to Fig.1 and Fig.2

When the signal is properly connected, the input mode changes to Y/Pb/Pr.

Press **[Return]** and **[Down]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Press **[Enter]** button of the projector.

Sub brightness	63	71	63
Sub contrast	150	154	152

Press **[Return]** and **[Down]** buttons simultaneously.

When the adjustment is successfully completed, left (R) and right (B) values changes from default [63]. (EX. The following menu)

A middle (G) value doesn't change.

If it fails, values return to default [63].

Press **[Return]** button.

Sub brightness	57	71	58
Sub contrast	150	154	152

6) Sub brightness for Wireless/Card (TDP-SW20 Only)

Change input mode to Wireless/card and insert the memory card, the following screen appears.

Select the file of XGA_16_255.jpg and press **[Enter]** button.



Press **[Return]** and **[Down]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Press **[Enter]** button of the projector.

Sub brightness	63	63	63
Sub contrast	127	127	127

Press **[Return]** and **[Down]** buttons simultaneously.

When the adjustment is successfully completed, values changes from default [63]. (EX. The following menu)

If it fails, values return to default [63].

Press **[Return]** button.

Sub brightness	57	64	59
Sub contrast	127	127	127

7) Sub contrast for Wireless/Card (TDP-SW20 Only)

Press **[Return]** button, the following menu appears

Select the file of XGA_240_255.jpg and press **[Enter]** button.



Press **[Return]** and **[Down]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Select the Sub contrast item by pressing **[Up]** or **[Down]** button.

Press **[Enter]** button of the projector.

Sub brightness	57	64	59
Sub contrast	127	127	127

Press **[Return]** and **[Down]** buttons simultaneously.

Select the Sub contrast item by pressing **[Up]** or **[Down]** button.

When the adjustment is successfully completed, values changes from default [127]. (EX. The following menu)

If it fails, values return to default [127].

Press **[Return]** button.

Sub brightness	57	64	59
Sub contrast	33	33	33

8) Altitude

Press **[On/Standby]** and **[Up]** buttons simultaneously. The following menu appears.

Notes: For it disappears, press **[Return]** button.

For it initialize the values, press **[Setup]** button.

Select proper value by pressing the **[Left]** or **[Right]** button.

Factory setting is 0.

The value 1 is more than 500m (1,640ft) and under 1,000m (3,281ft).

The value 2 is more than 1,000m (3,281ft) and under 1,500m (4,921ft).

The value 3 is more than 1,500m (4,921ft) and under 2,000m (6,562ft).

The value 4 is more than 2,000m (6,562ft) and under 2,500m (8,202ft).

The value 5 is more than 2,500m (8,202ft) and under 3,000m (9,843ft).

The value 6 is more than 3,000m (9,843ft).

For example

In case of 2,700m altitude, set the value to 5.

Altitude 0		
Fan control	Setting	Actual
Fan-1	224	4794rpm
Fan-2	179	2610rpm
Fan-3	208	3222rpm
	Actual	
Temp-1	26deg	
Temp-2	56deg	
Temp-3	0deg	

Press **[Return]** button.

9) Save data to EEPROM

Press the buttons,

[Up], **[Down]**, **[Left]** and **[Right]** simultaneously.

When these buttons are accepted, all LED's light orange.

5. Optical Parts adjustment

1) ENGINE

Upgrade the Firmware to the latest version.

1-1) DMD bias voltage

Check the Label on new DMD chip. (EX. Fig.7).

Adjust DMD bias voltage as same as 4. -1) DMD bias voltage.



Fig.7

1-2) C/W index delay

Adjust C/W index delay as same as 4. -2) C/W index delay.

2) DMD

Check the Label on new DMD chip. (EX. Fig.7).

Adjust DMD bias voltage as same as 4. -1) DMD bias voltage.

3) C/W

Adjust C/W index delay as same as 4. -2) C/W index delay.

4) C/W Sensor Board

Adjust C/W index delay as same as 4. -2) C/W index delay.

5) Save data to EEPROM (in each adjustment)

Press the buttons,

[Up], **[Down]**, **[Left]** and **[Right]** simultaneously.

When these buttons are accepted, all LED's light orange.

Functional Tests

You perform the functional tests after you've repaired the projector to make sure All components of the projector operate properly.

You can also perform the functional tests if you're having trouble determining what is wrong with the projector.

Required equipment

Equipment	Notes
Video player	Make sure the video player has an S-video Out port and cables. The player should also have a Composite video port (RCA). Toshiba strongly suggests you use a DVD player to test the Video quality. DVD players reproduce colors better and project Sharper images. The least preferable is a VCR. If you must use a VCR, make sure you use a commercially produces recoding, not one recorded from a broadcast source. The VCR must include an S-Video connector in addition to a composite connector.
Commercially produced video	You'll need the video in DVD, etc. format.
Cables	1. RCA Pin jack cable for Composite video & audio. 2. S-video cable. 3. RGB cable that come with the projector. 4. 3.5mm mini-jack cable for PC audio.
Remote control	Ensure that the remote has fresh AA batteries.
Projector screen	Use a flat screen, not a curved one.
Personal computer (PC)	The stereo audio card should have either a 3.5mm stereo audio Jack or RCA left and right output ports. The PC must have a CD-ROM and must have outputs for RGBHV, VESA, D-sub15pin.

Before beginning

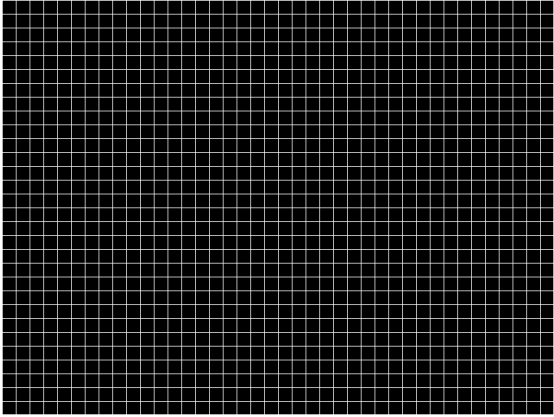
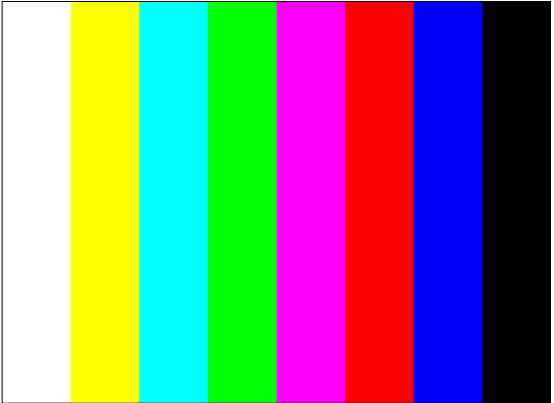
Make sure the work surface where you perform the functional tests is level and clean. Place the projector on a soft surface (such as an anti-static mat) when running the tests.

Connect the following the I/O panel on the projector.

1. Video player through Composite Video and S-video ports.
2. Audio sources through Audio ports (RCA) or 3.5mm mini-jack.
3. Personal computer through RGB cable.

Perform the following tests

Test	Verification
Power Up Connect AC power, and turn the unit on.	Verify that the proper splash(logo) screen Appears. Verify image quality.
Cosmetics and mechanicals Adjust the projector so that the image is Square. Make sure the lens is at a 90 degree angle to the wall.	Verify that the elevator and leveling foot Are functional. Verify that the focus and zoom rings Operate properly. Verify cosmetics.
Composite video from video source Connect the yellow composite (RCA) video Connector to the projector. (Ensure that no other video source is connected to the projector)	Verify that the video automatically synchronizes. Verify there is no distortion, noise or other abnormalities.
S-Video from video source Connect the S-Video cable to the projector. Disconnect the yellow composite(RCA) Video connector.	Verify that the video automatically synchronizes. Verify there is no distortion, noise or other abnormalities.
Image keystone adjustment Connect a video source to the projector.	Verify that image responds properly when You adjust the keystone setting.
Audio from audio source Connect the audio cable to the projector.	Verify that audio source plays through the Projector's speaker. Verify that the volume controls function correctly.
Manual source selection Manually select a connected source.	Verify that the projector switches to the Manually-selected source. Verify that the video automatically synchronizes. Verify there is no distortion, noise or other abnormalities.
Software Version / Lamptime Used Navigate through the Basic menu to the Setup menu. Navigate to the Service menu. Select info from the Service menu.	Verify software version Verify the keys are not sticky. Verify that the software version is current and that the lamp is within its service life.

Test	Verification
<p>Focus</p> <p>SINGOWS2000 Cross Hatch image.</p>	<p>Verify that the image synchronizes properly through the computer 1 input.</p>  <p>Verify that image focuses through the full Zoom range. Verify there are no problems</p>
<p>Color Wheel Index Delay</p> <p>SINGOWS2000 Color bar image.</p>	<p>Verify that the image synchronizes properly through the computer 1 input.</p>  <p>Verify that the color is located in a line. Verify there are no problems</p>

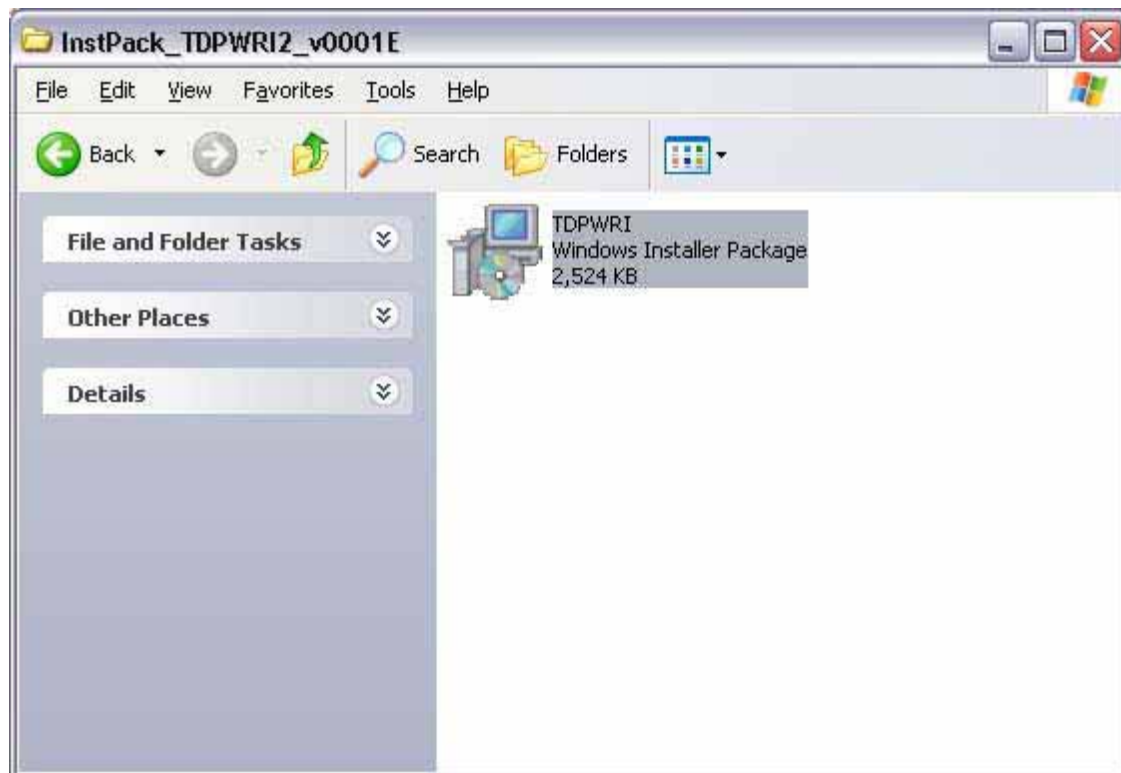
Test	Verification
<p>DMD Images</p> <p>SINGOWS2000 White image (Level 100%)</p> <p>SINGOWS2000 Black image (Level 0%)</p> <p>SINGOWS2000 SMPTE image</p>	<p>Verify that each image synchronizes properly through the computer 1 input.</p> <div data-bbox="807 369 1361 779" data-label="Image"> </div> <div data-bbox="807 831 1361 1247" data-label="Image"> </div> <div data-bbox="807 1296 1361 1704" data-label="Image"> </div> <p>Verify there are no problems</p>

Test	Verification
System Reset On the keypad, press the Menu key. Navigate through the basic menu to the default setting menu. Select Reset all.	Verify that the image synchronizes after System reset.
Power Down After all tests are complete turn the power Off and disconnect all cables. Attach the lens cap.	Verify unit is powered off before disconnecting cables.

Install the Software on the Computer.

The software you download is bundled into one .MSI file.

Double-click the file to install the upgrade software.



The Install Wizard appears, ready to begin the install process.

Click the next button.



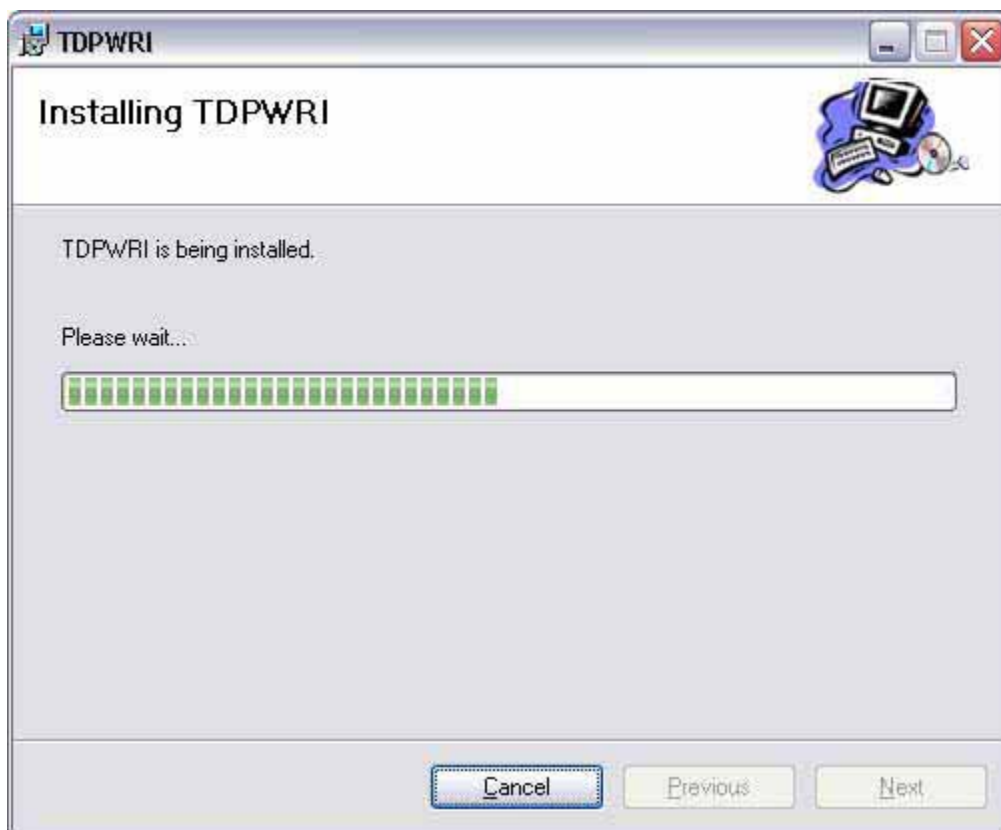
The Select Installation Folder dialog box appears.
Navigate to the location where you stored the upgrade files.
Click the next button.



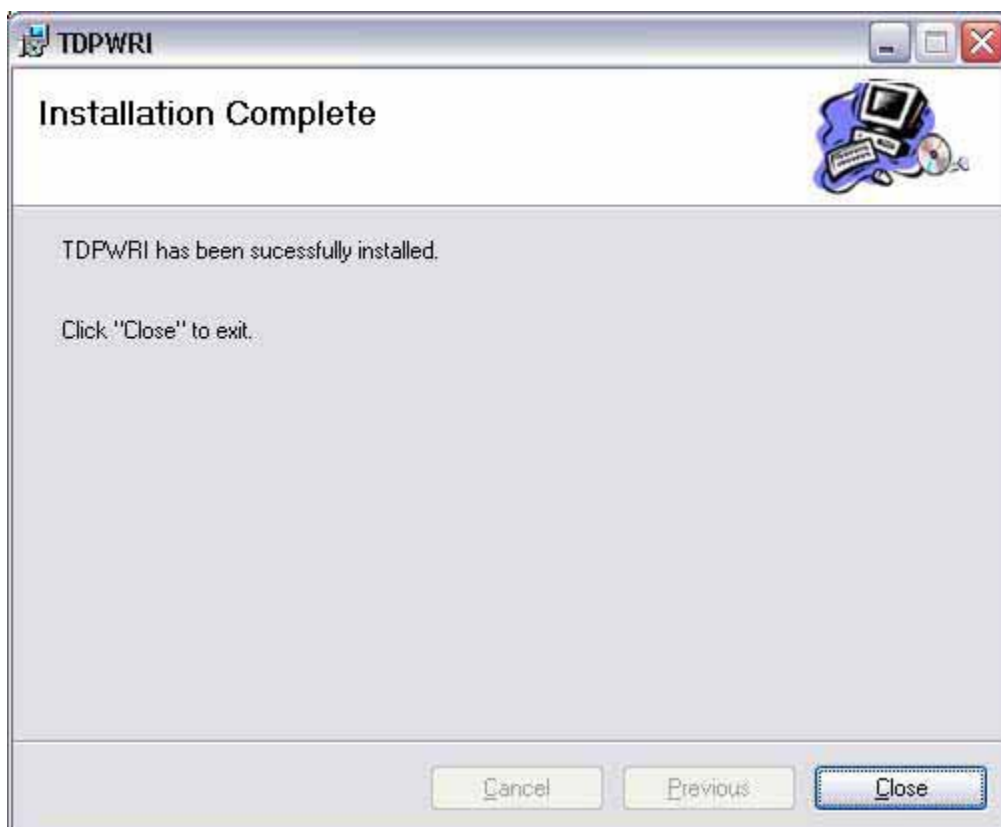
The confirm Installation dialog box appears.
Click the next button.



The Installing software dialog box appears.



The Installation Complete dialog box appears.
Click the close button.

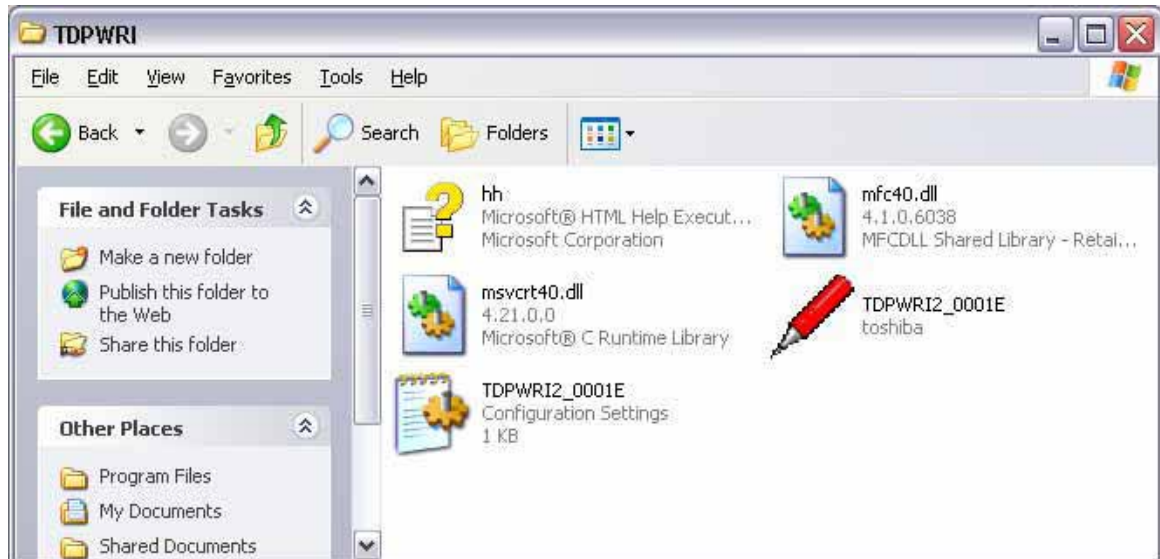


Upgrade the software

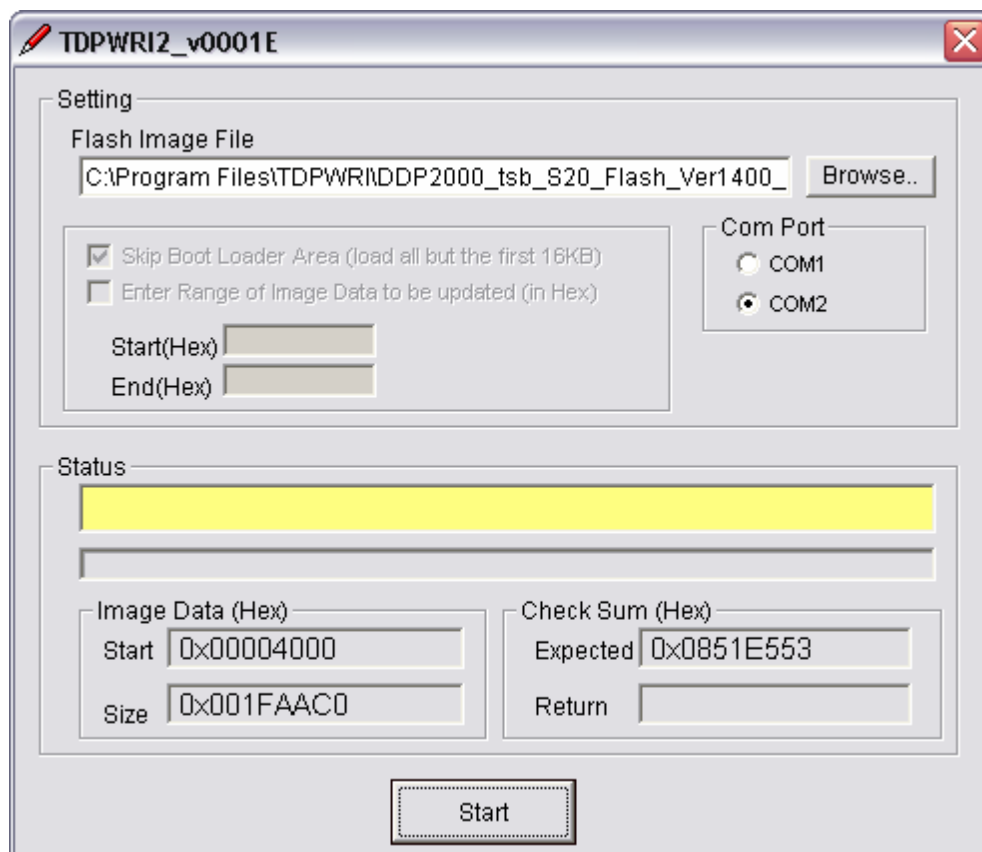
Connect the control cable to the control terminal on the projector.

Then plug the RS232C connector on the other end of the cable into an RS232C port on the computer.

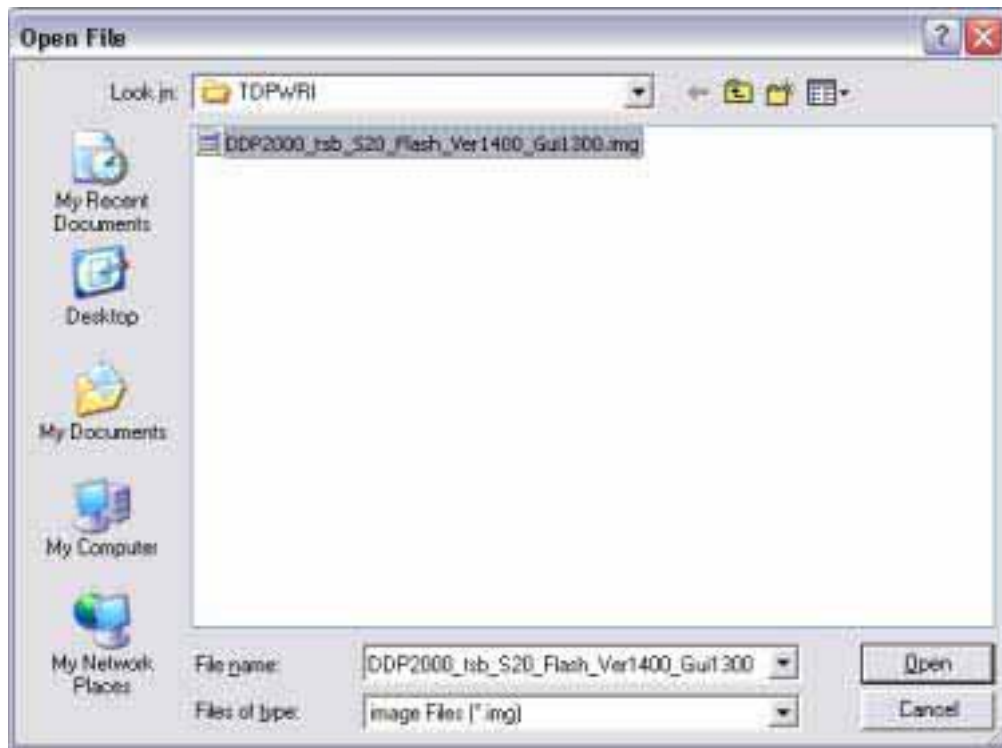
Open Windows Explorer, navigate to the location where you stored the upgrade files, Then double click the **TDPWRI2_0001E.EXE**.



The Upgrade Wizard appears. Select "Com port" and setup the Baud Rate is "115200", Data Bits is "8", Stop Bits is "1", Parity is "None", RTS is "Diabile" and CTS is "Disable". Click the Browse button to open the Select File Dialog box.



In the Open File dialog box, select the **.img** file, then click Open.

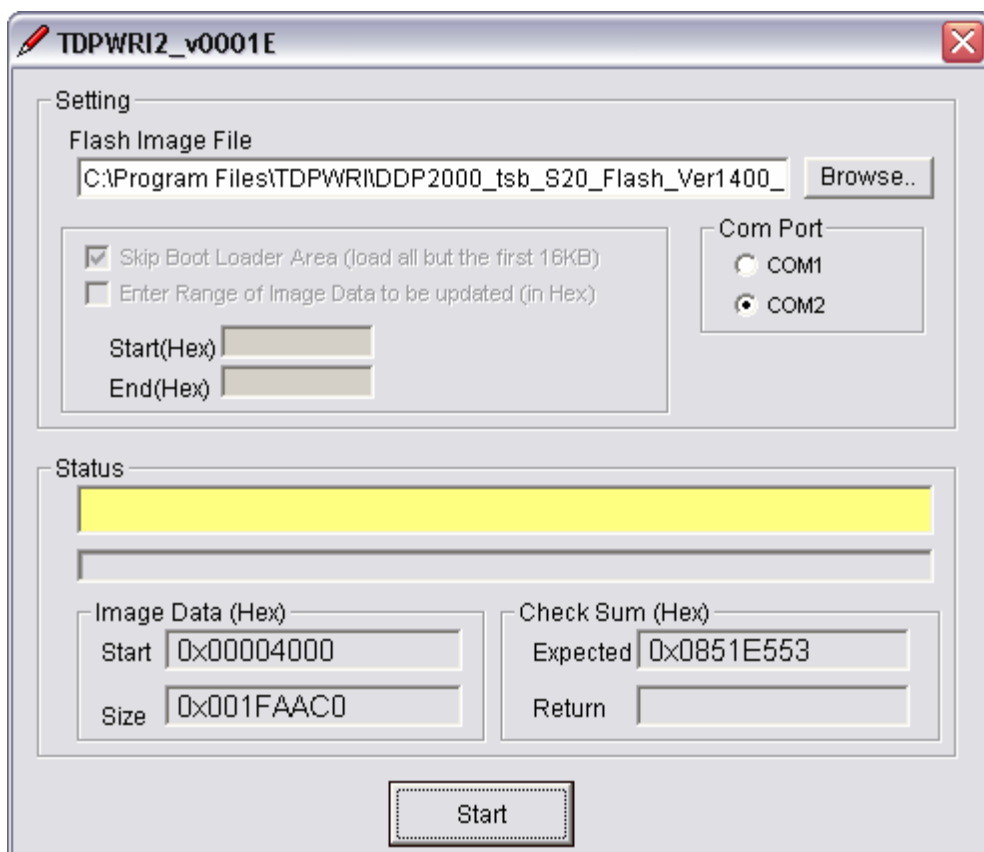


The upgrade file appears in the Select File box.

Press and hold the projector's [Input] and [Setup] keys,
then plug in the power code and turn on Main power switch.

The projector shifts the Firmware upgrade mode.

In the Firmware upgrade mode, [LAMP],[TEMP] and [FAN] LEDs are always
GREEN blinking. Click the start button.



The computer begins downloading the upgrade files to the projector.
The process may take several minutes.

The screenshot shows the 'TDPWR12_v0001E' software window. The 'Setting' section is at the top, with 'Flash Image File' set to 'C:\Program Files\TDPWR\DDP2000_tsb_S20_Flash_Ver1400_'. Below this, there are checkboxes for 'Skip Boot Loader Area (load all but the first 16KB)' (checked) and 'Enter Range of Image Data to be updated (in Hex)' (unchecked). To the right, the 'Com Port' is set to 'COM2'. The 'Status' section in the middle shows a yellow bar with the text 'Erase Complete 0x50000'. Below the status bar, there are fields for 'Image Data (Hex)' (Start: 0x00004000, Size: 0x001FAAC0) and 'Check Sum (Hex)' (Expected: 0x0851E553, Return:). A 'Start' button is at the bottom.

TDPWR12_v0001E

Setting

Flash Image File
C:\Program Files\TDPWR\DDP2000_tsb_S20_Flash_Ver1400_ **Browse...**

☒ Skip Boot Loader Area (load all but the first 16KB)
☐ Enter Range of Image Data to be updated (in Hex)

Start(Hex)
End(Hex)

Com Port
☐ COM1
☒ COM2

Status

Erase Complete 0x50000

Image Data (Hex)
Start
Size

Check Sum (Hex)
Expected
Return

Start

The screenshot shows the 'TDPWR12_v0001E' software window. The 'Setting' section is at the top, with 'Flash Image File' set to 'C:\Program Files\TDPWR\DDP2000_tsb_S20_Flash_Ver1400_'. Below this, there are checkboxes for 'Skip Boot Loader Area (load all but the first 16KB)' (checked) and 'Enter Range of Image Data to be updated (in Hex)' (unchecked). To the right, the 'Com Port' is set to 'COM2'. The 'Status' section in the middle shows a yellow bar with the text 'DownLoad Size 0x1AC200'. Below the status bar, there are fields for 'Image Data (Hex)' (Start: 0x00004000, Size: 0x001FAAC0) and 'Check Sum (Hex)' (Expected: 0x0851E553, Return:). A 'Start' button is at the bottom.

TDPWR12_v0001E

Setting

Flash Image File
C:\Program Files\TDPWR\DDP2000_tsb_S20_Flash_Ver1400_ **Browse...**

☒ Skip Boot Loader Area (load all but the first 16KB)
☐ Enter Range of Image Data to be updated (in Hex)

Start(Hex)
End(Hex)

Com Port
☐ COM1
☒ COM2

Status

DownLoad Size 0x1AC200

Image Data (Hex)
Start
Size

Check Sum (Hex)
Expected
Return

Start

When the upgrades finishes, click the X(close) button.
The upgrade is complete.

The screenshot shows a software window titled "TDPWR12_v0001E" with a standard Windows-style title bar (minimize, maximize, close buttons). The window is divided into two main sections: "Setting" and "Status".

Setting Section:

- Flash Image File:** A text box contains the path "C:\Program Files\TDPWR\IDDP2000_tsb_S20_Flash_Ver1400_" followed by a "Browse..." button.
- Options:** Two checkboxes are present:
 - ☒ Skip Boot Loader Area (load all but the first 16KB)
 - ☐ Enter Range of Image Data to be updated (in Hex)
- Start/End Hex:** Two empty text boxes labeled "Start(Hex)" and "End(Hex)".
- Com Port:** Two radio buttons labeled "COM1" and "COM2", with "COM2" selected.

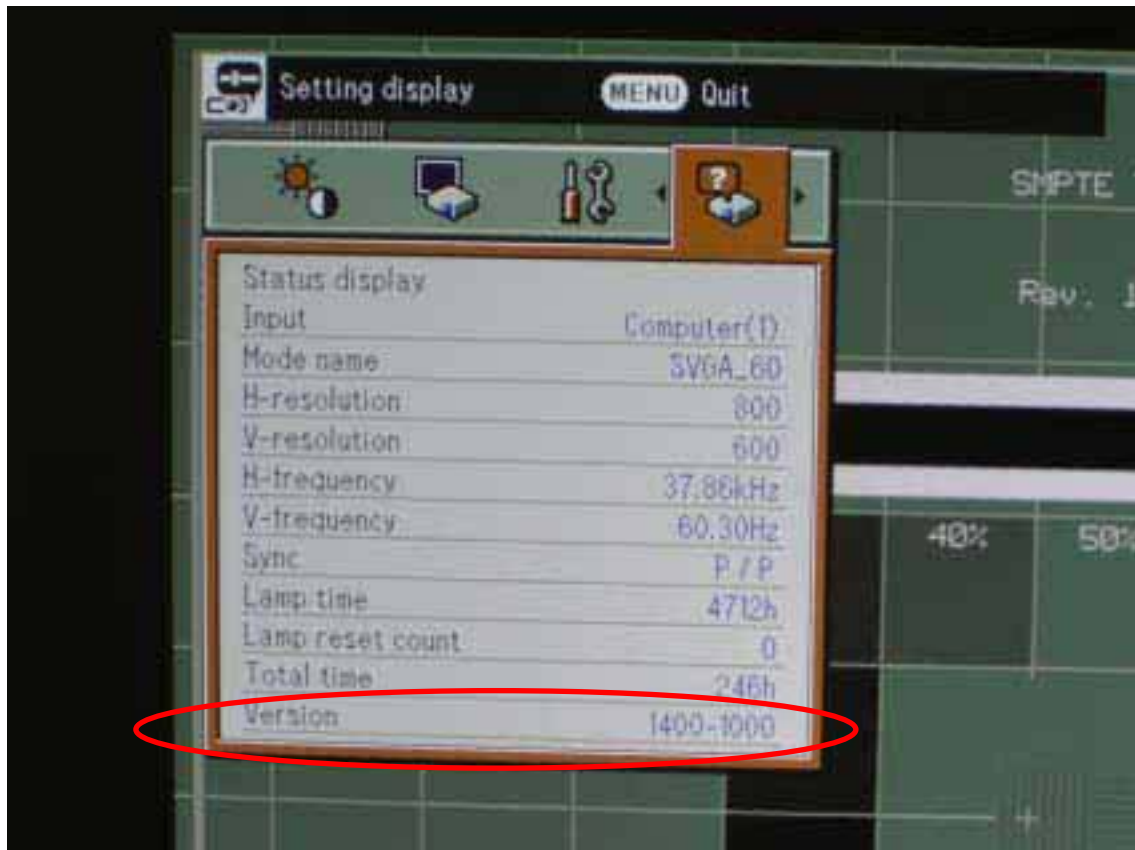
Status Section:

- Message:** A large yellow banner displays "DownLoad Completed!".
- Progress Bar:** A horizontal bar with many small segments, all of which are filled, indicating 100% completion.
- Image Data (Hex):** Two text boxes:
 - Start:** 0x00004000
 - Size:** 0x001FAAC0
- Check Sum (Hex):** Two text boxes:
 - Expected:** 0x0851E553
 - Return:** 0x0851E553

At the bottom center of the window is a "Start" button.

Confirm the software upgrade

1. Power up the projector.
2. On the projector keypad, press the MENU key to display the menus.
3. Press button Right or Left arrow to highlight Status display, then press **[Enter]** button.
4. The Status display dialog box display the software version at last line. These should match the upgrade version you downloaded.



Example: 1400-1000

The MAIN Board

The OSD data

How to update the firmware for PC card unit for TW90 and SW20 series

Caution !!!! Do not unplug while writing !!!!

Applicable to projectors which have the same wireless module as the TDP-TW90 inside.

Prepare the PC memory card. (flash memory card 16MB or more)

Step1)

Make sure "the No signal power off mode" is off on an OSD menu for projector.

Change "No signal power off" into off if not.

Step 2)

Extract an update file, and copy all files in the folder to root directory on your memory card.

e.g.) Files which are unzipped are the following:

- tlpwrite.tab - tw90.tab - tw90.bin - tw90_boot.bin etc...

Step 3)

Turn the projector off with Main power switch behind the projector, and insert the PC card into a card slot.



Fig.1 (a) TDP-TW90



(b) TDP-SW20

Step 4)

Turn Main power switch on while you are pressing the UNMOUNT button next to the slot.

Projector will change the mode to "writing" and card indicator LED becomes orange color.



Fig.2 (a) TDP-TW90



(b) TDP-SW20

"Writing" will take several minutes. If it is completed, the LED will become Green and blink.

If LED became "RED", it means "Writing" was failed. You need to try again.

* Do not forget to keep AC power supply while the projector is "writing" condition.

Step 5)

Turn the projector off and take PC card out.

Step 6)

Make sure of the F/W version. You can find it on the OSD menu of Wireless/Card input.

(Press menu button twice, and see version in the status display of Wireless/Card menu.)

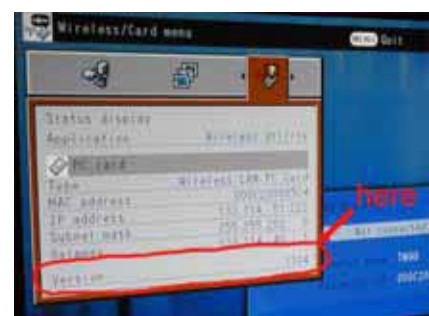
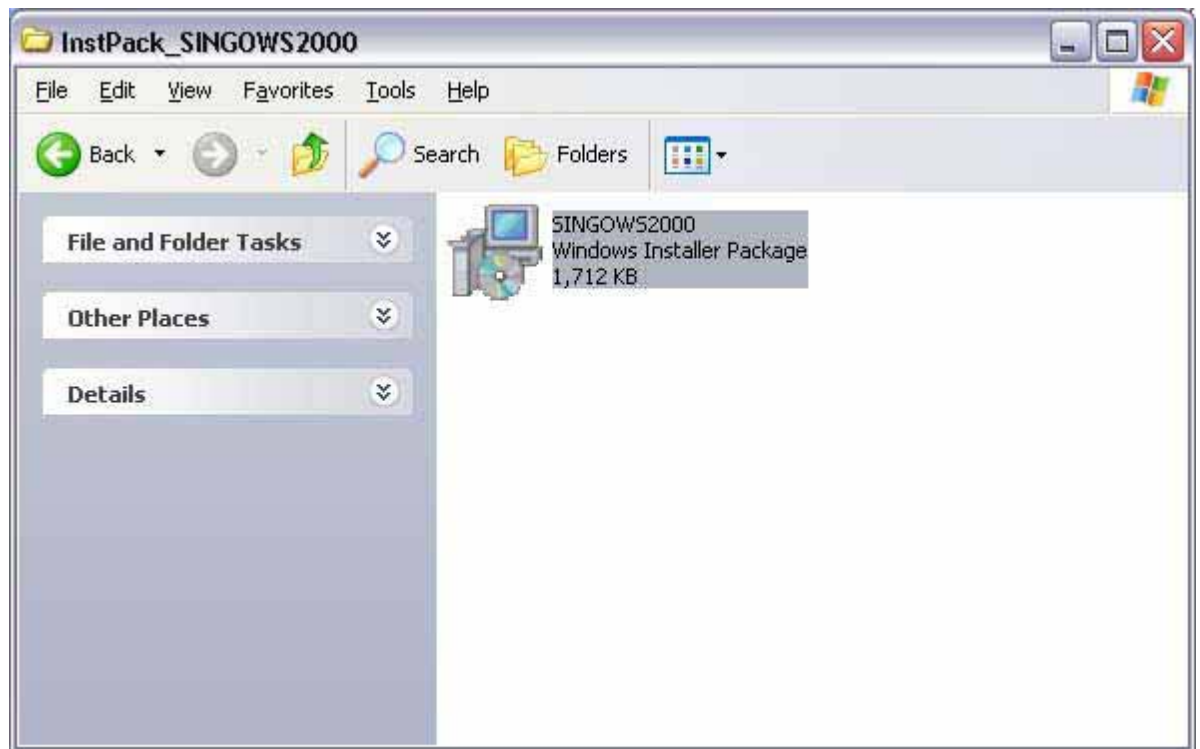


Fig.3 Status display (OSD)

Install the Software on the Computer.

The software you download is bundled into one .MSI file.

Double-click the file to install the signal generating software.



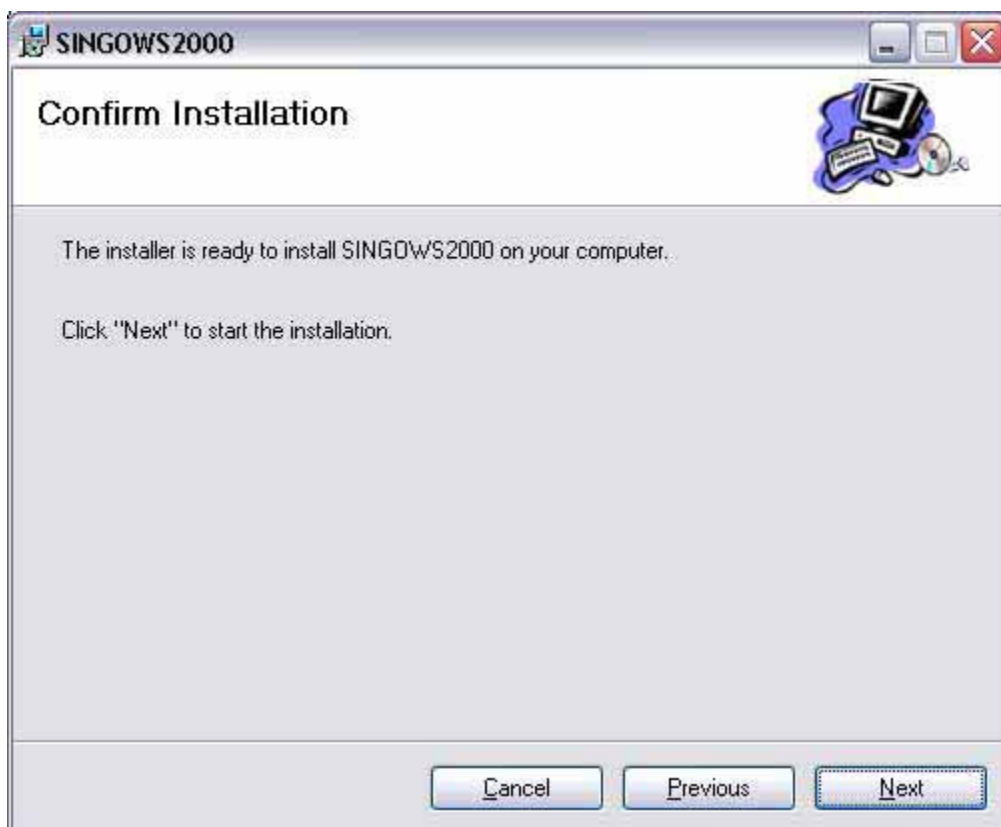
The Install Wizard appears, ready to begin the install process.
Click the next button.



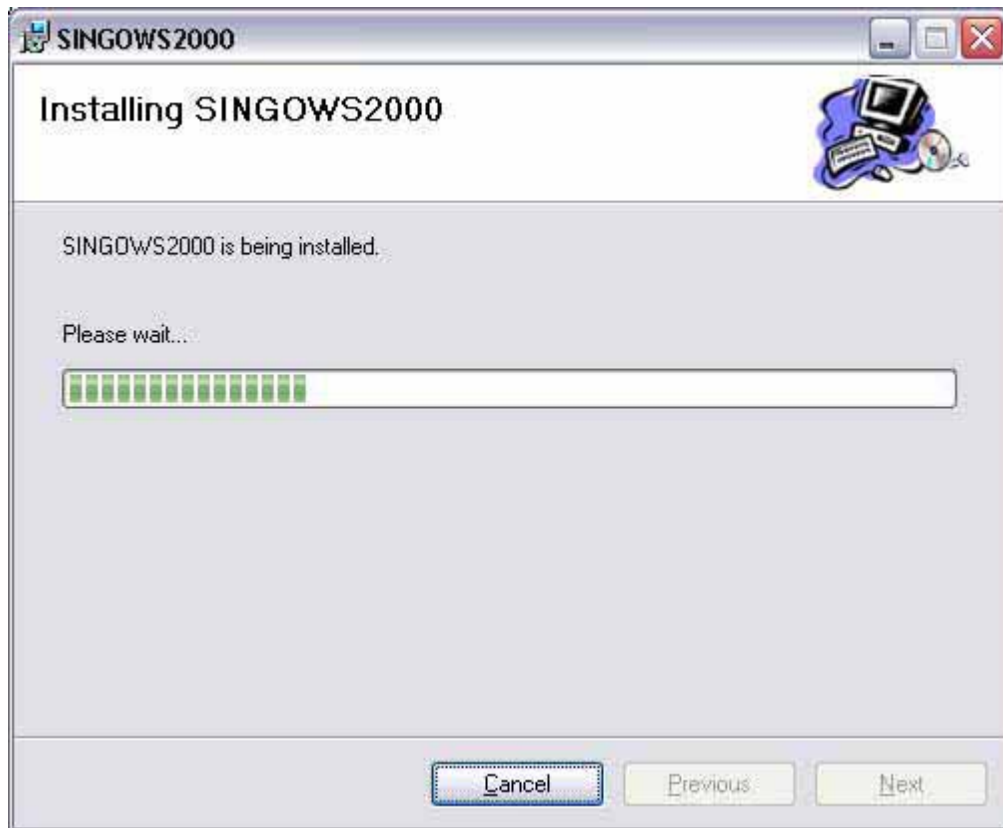
The Select Installation Folder dialog box appears.
Navigate to the location where you stored the software files.
Click the next button.



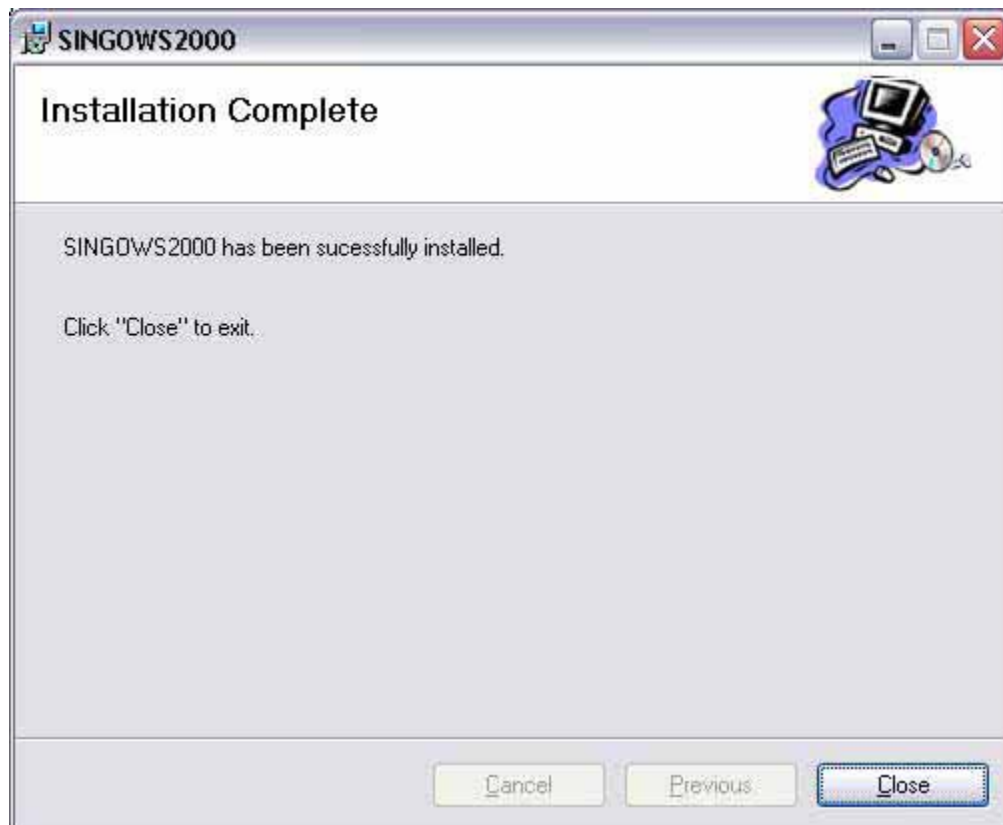
The confirm Installation dialog box appears.
Click the next button.



The Installing software dialog box appears.

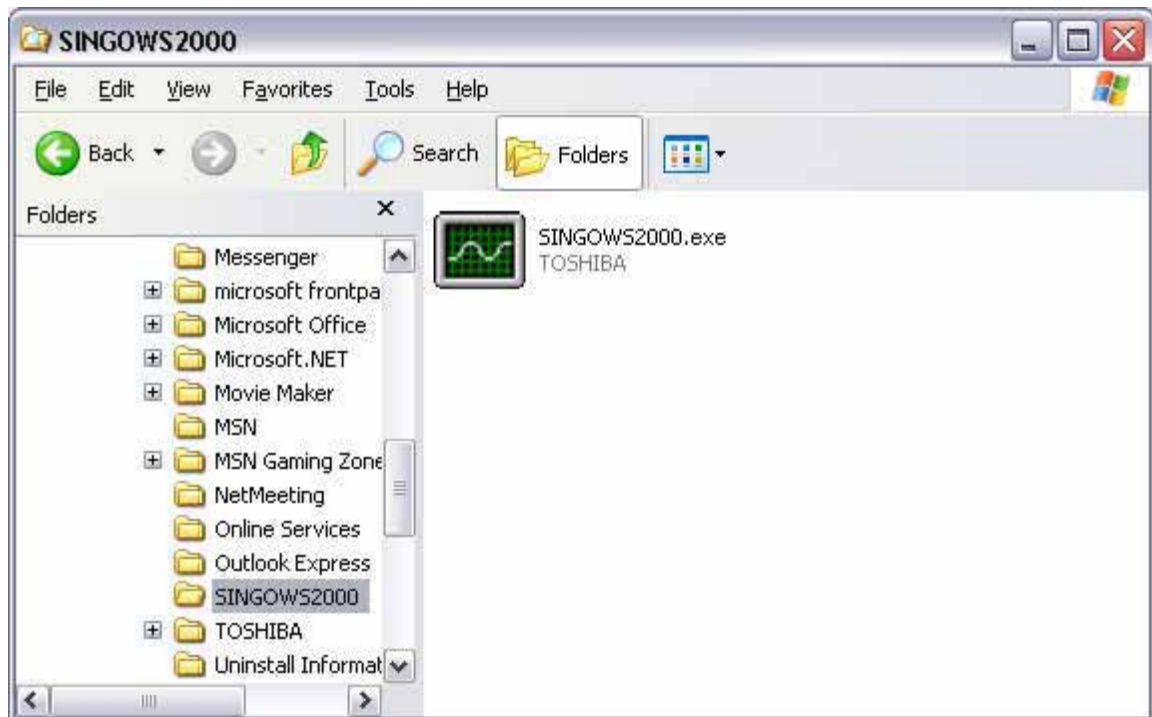


The Installation Complete dialog box appears.
Click the close button.

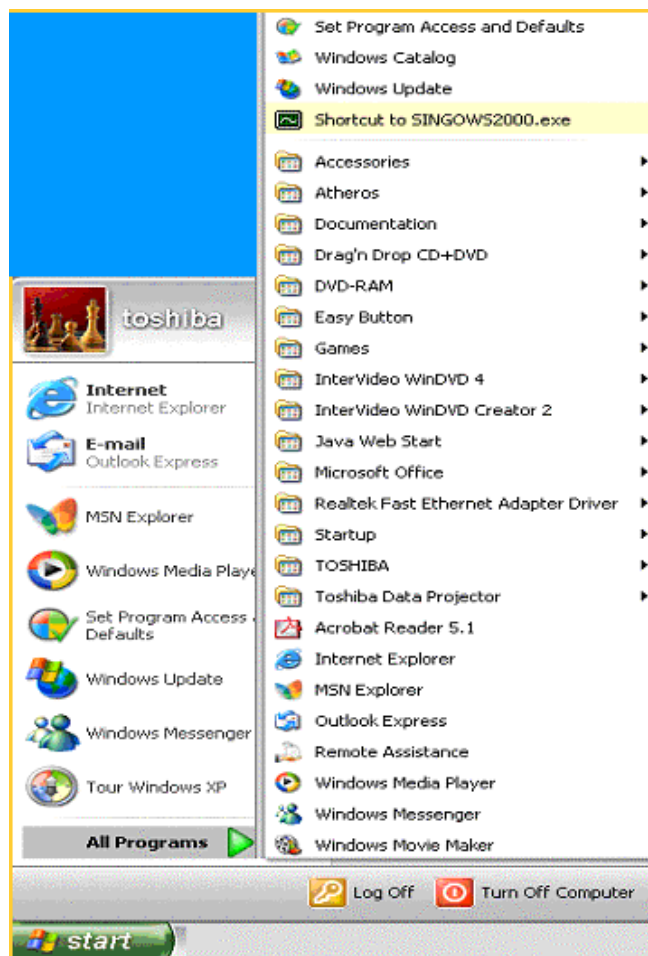


Startup the software

Open Windows Explorer, navigate to the location where you stored the files,
Then double click the **SINGOWS2000.EXE**.



Moreover, even if it chooses the shortcut of the All programs of start, it can startup.

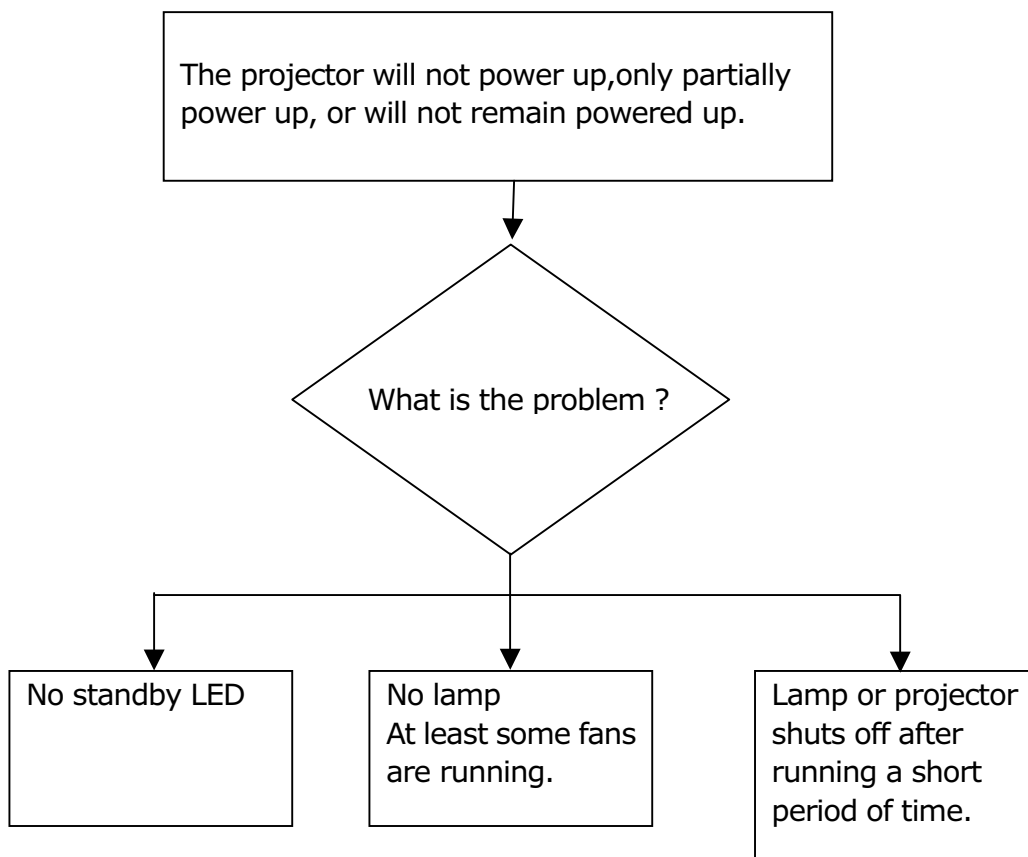


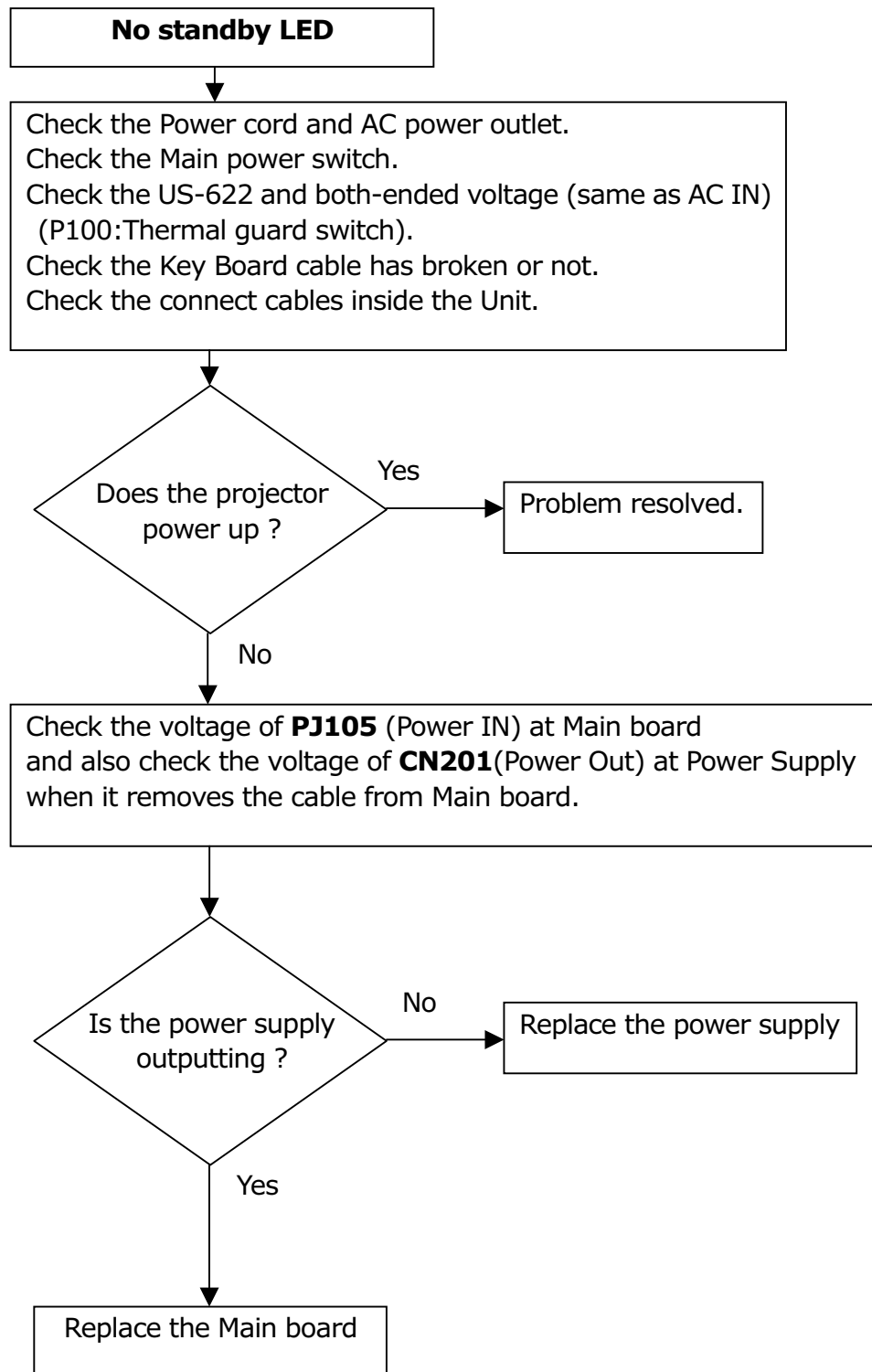
Troubleshooting

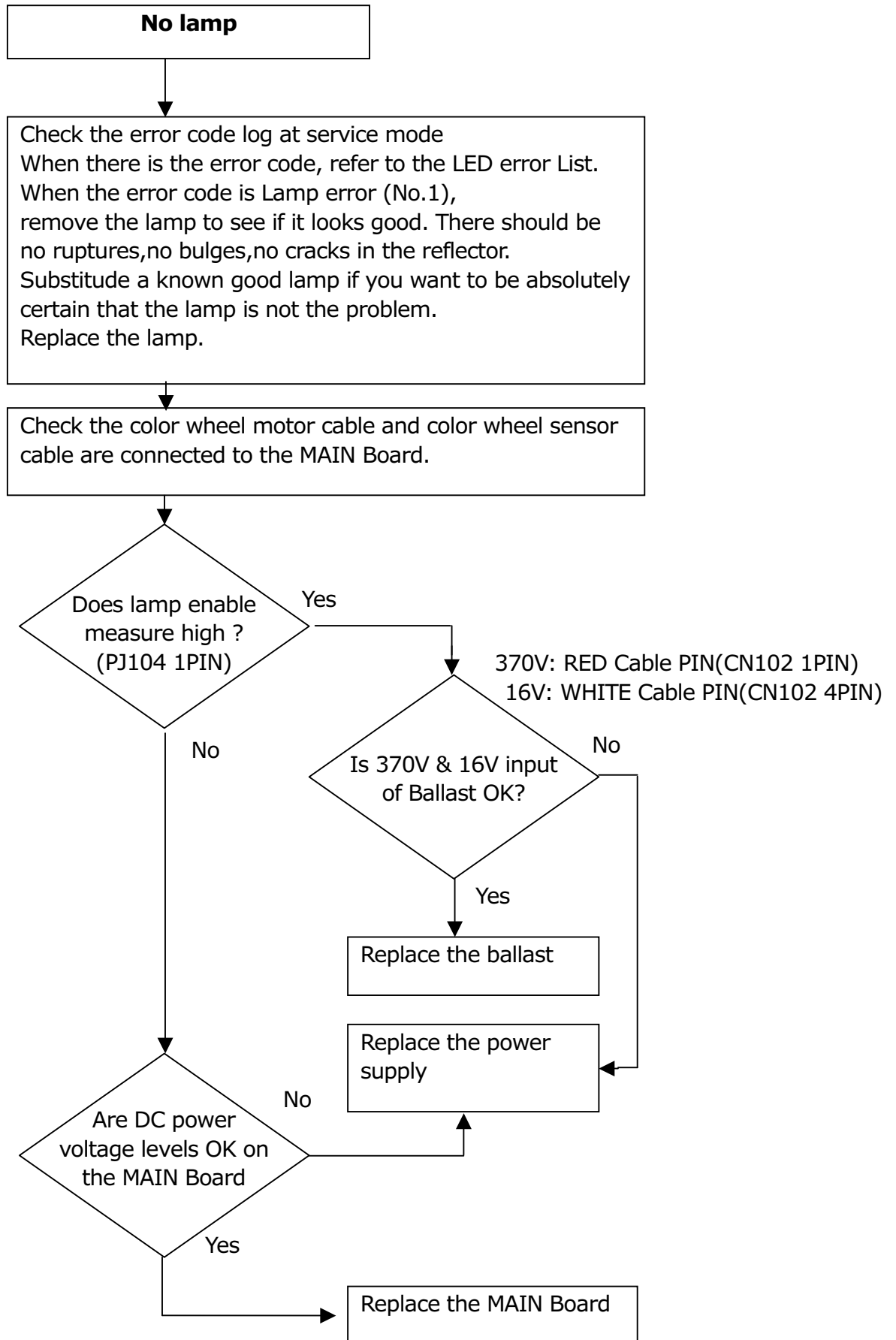
You use this section to diagnose problems with the projector. Choose the problem you are trying to diagnose from the list below. The Power, Image and Audio sections provide a variety of symptoms, while the other include only one page.

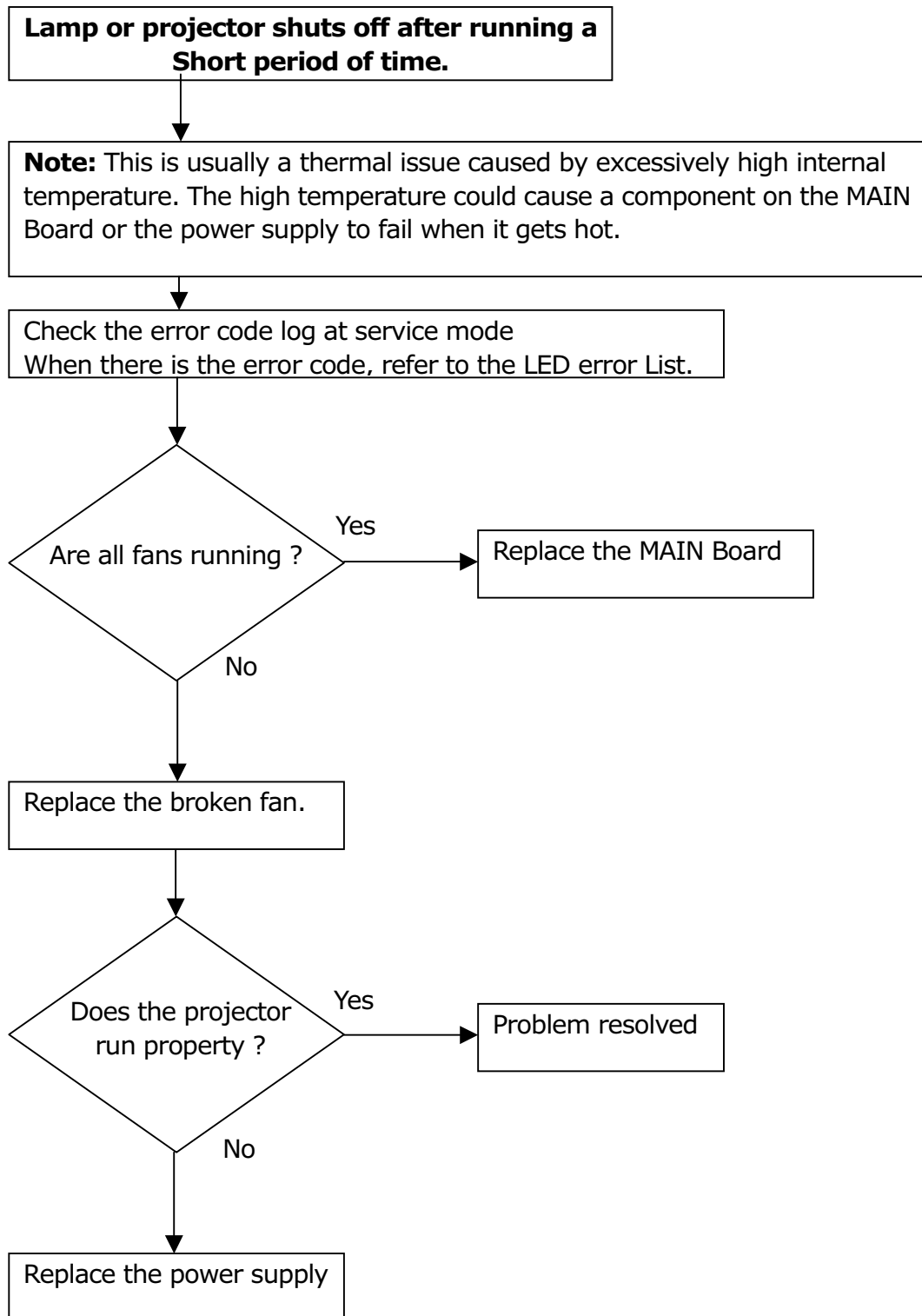
1. For Power problems , see page 53
2. For Image problems, see page 57
3. For Audio problems, see page 61
4. For Remote Control problems, see page 64
5. For Keypad problems, see page 65
6. For Menu problems, see page 66
7. For Camera problems, see page 67

Troubleshooting Power Problems

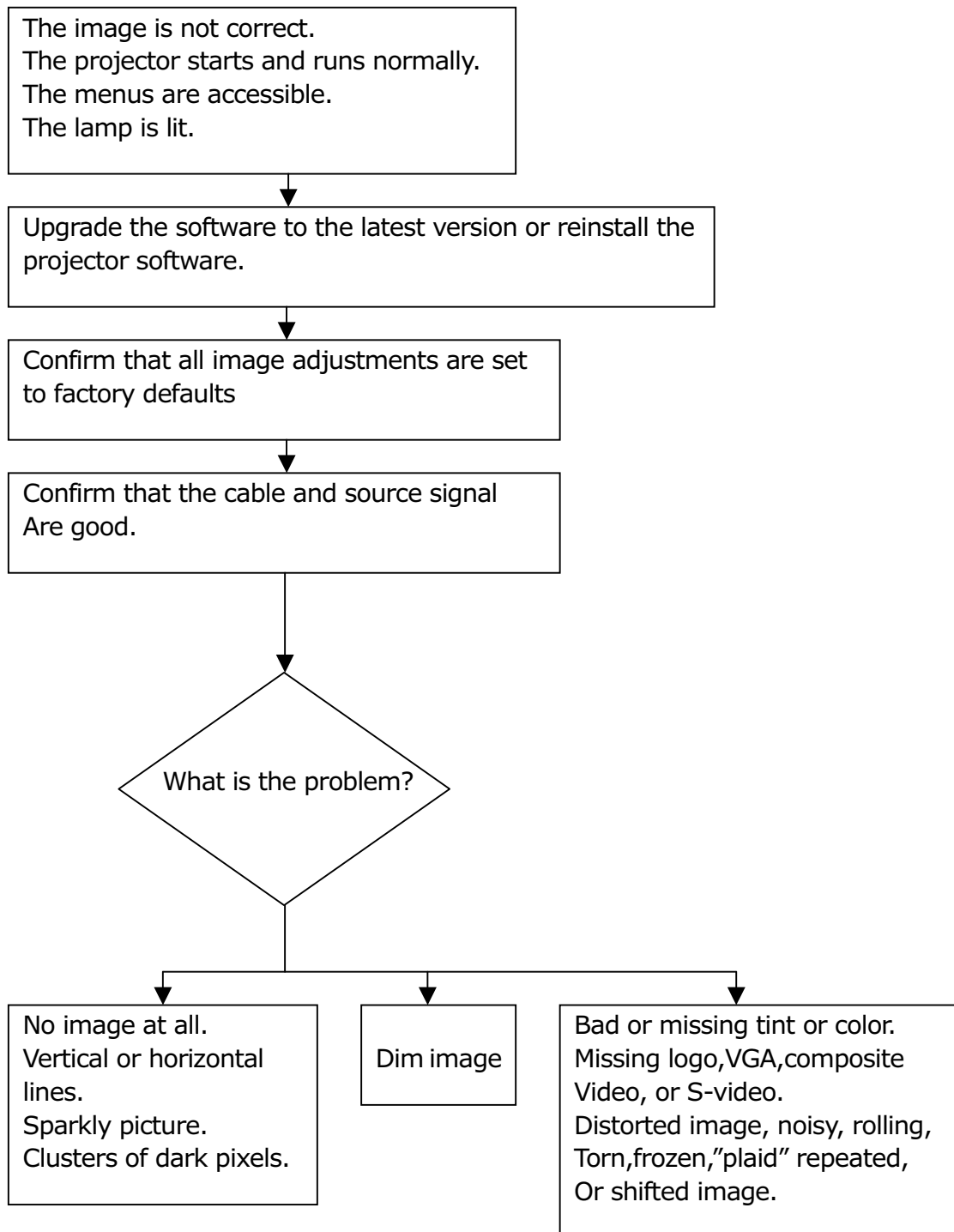


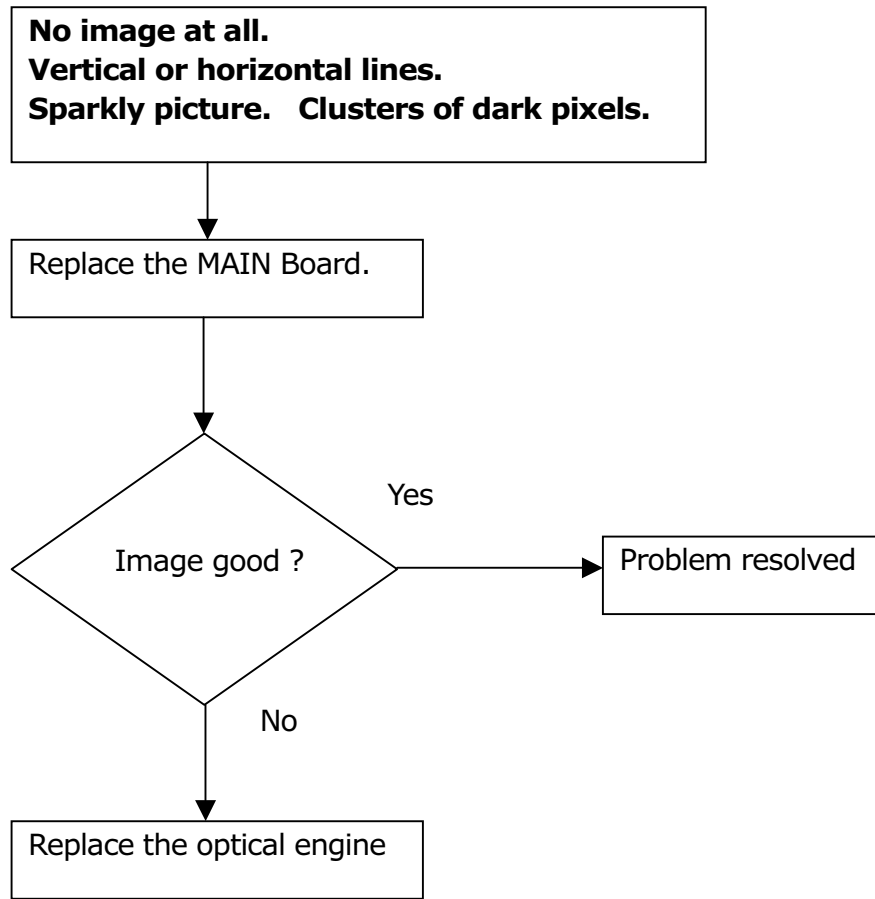


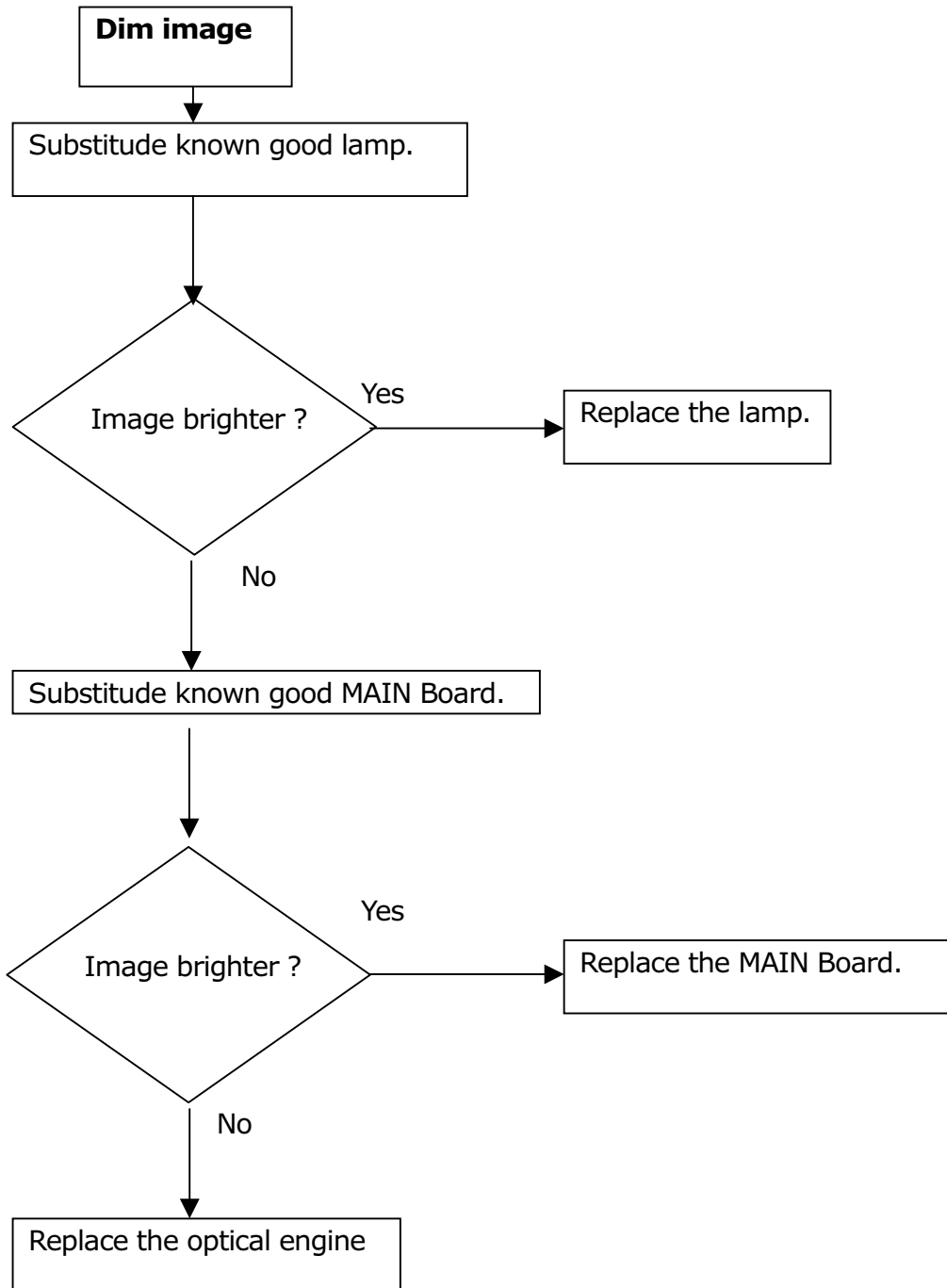


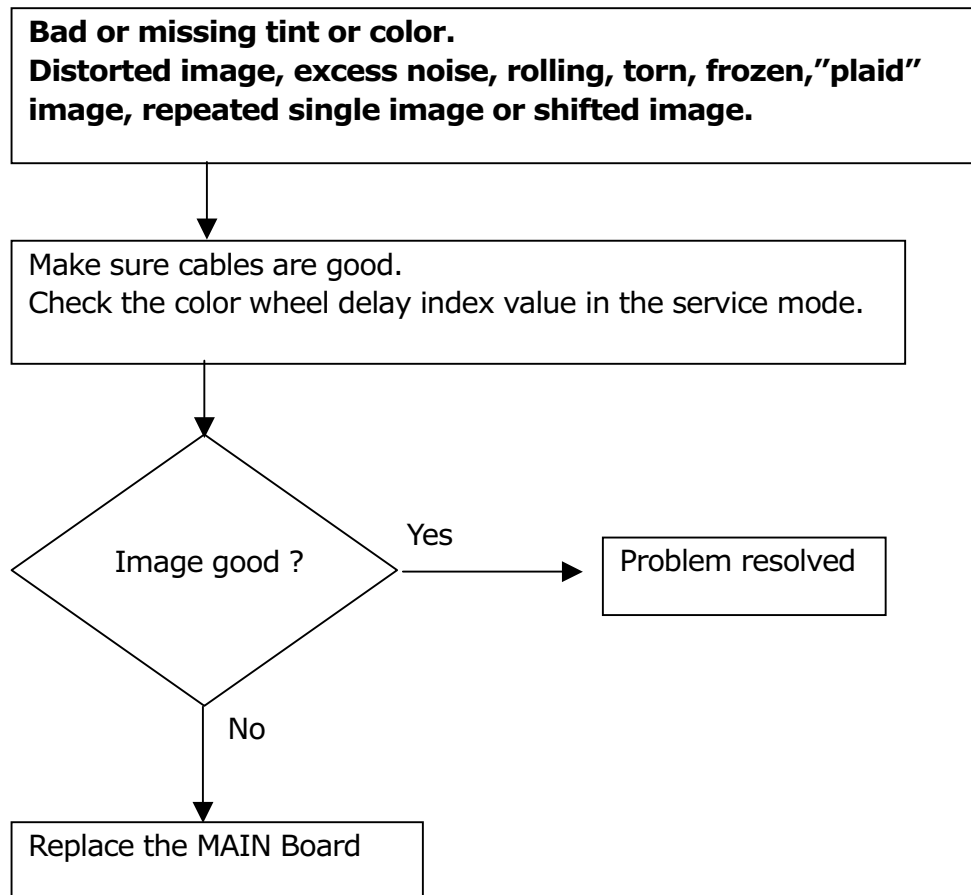


Troubleshooting Image Problems

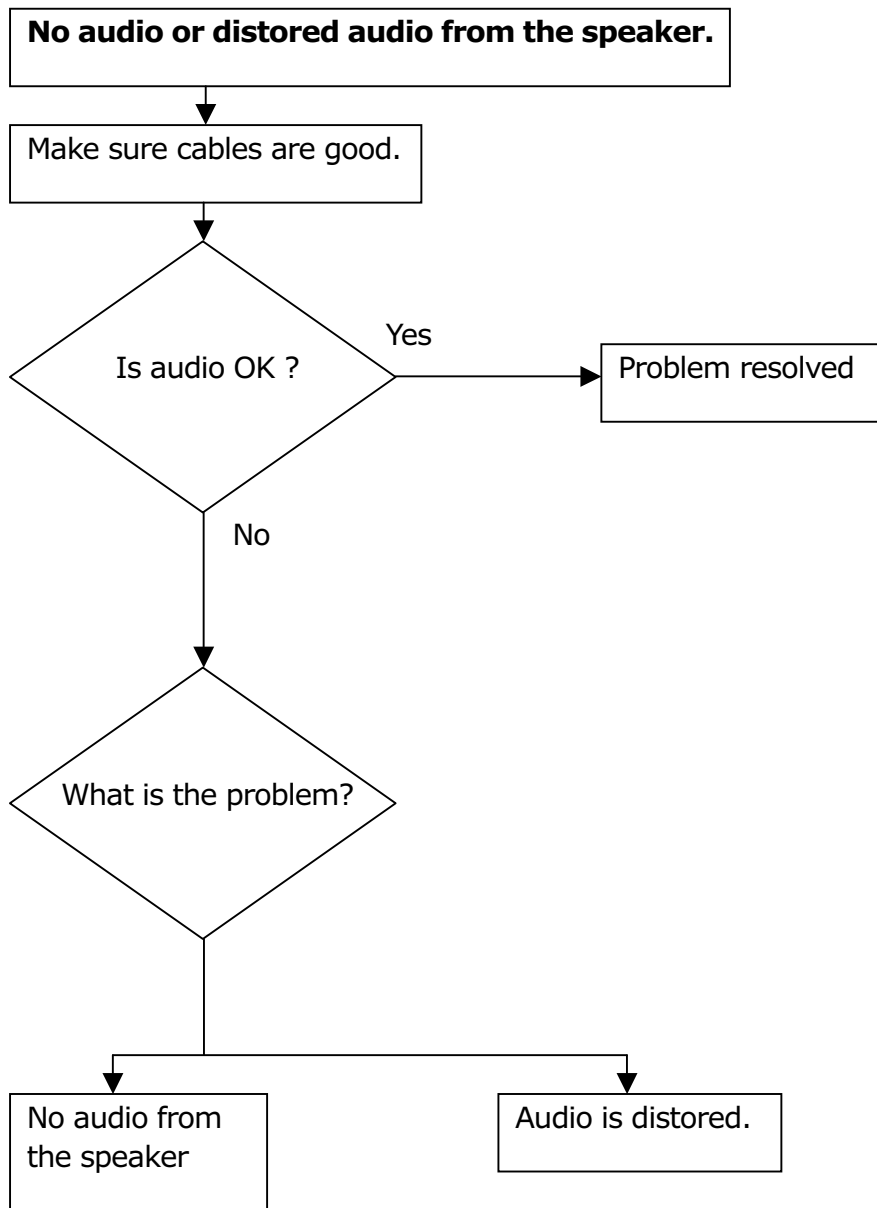


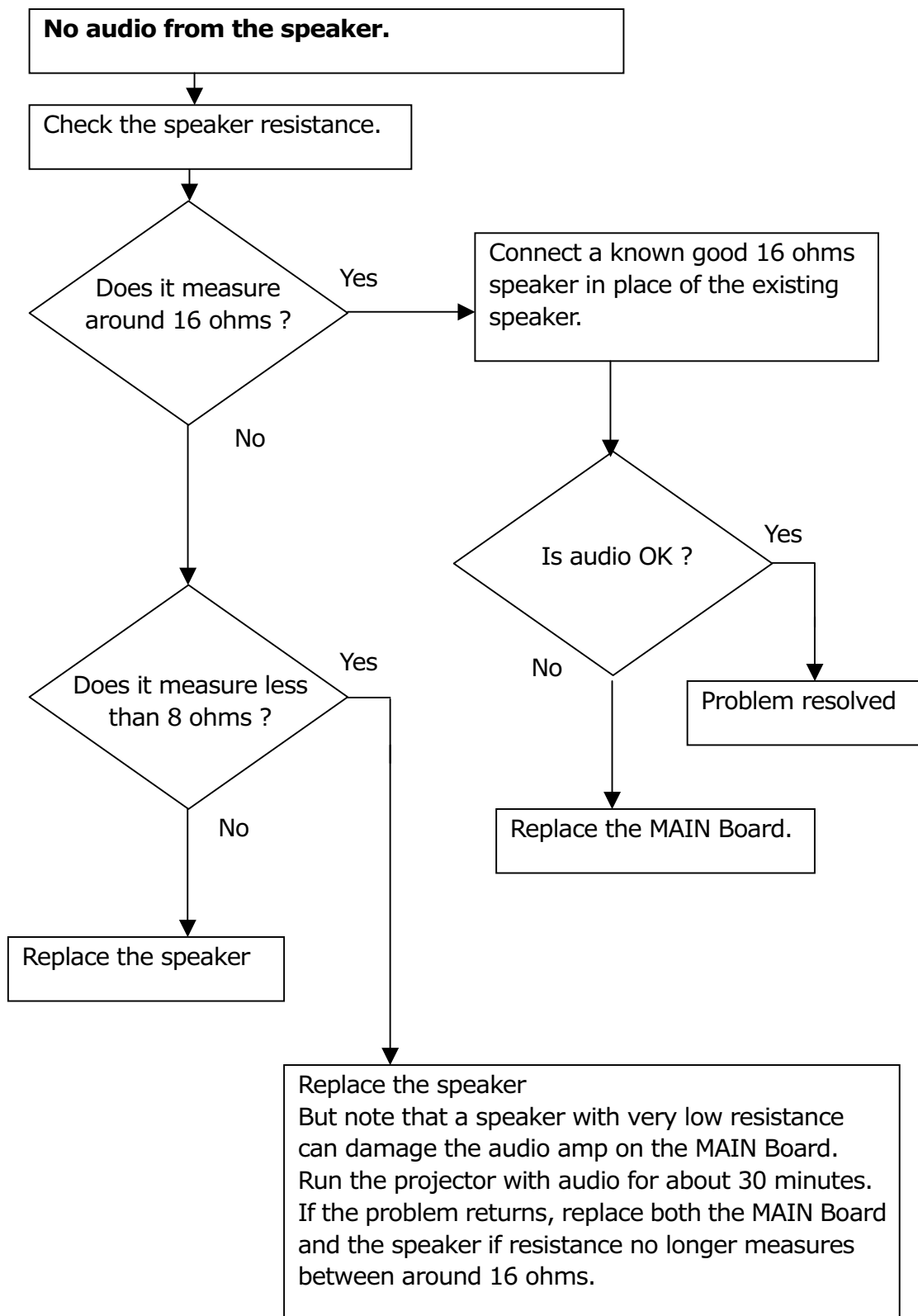


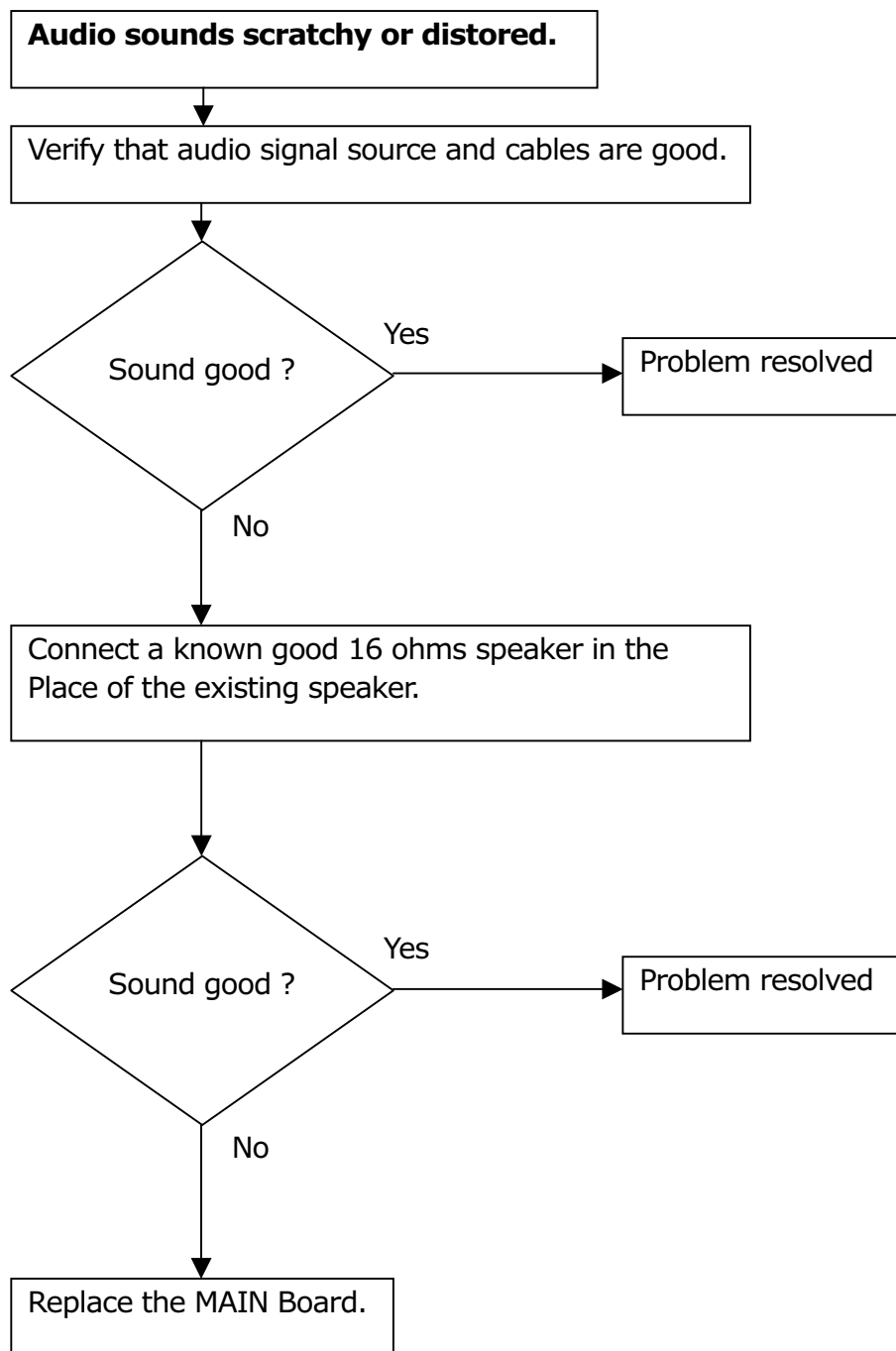




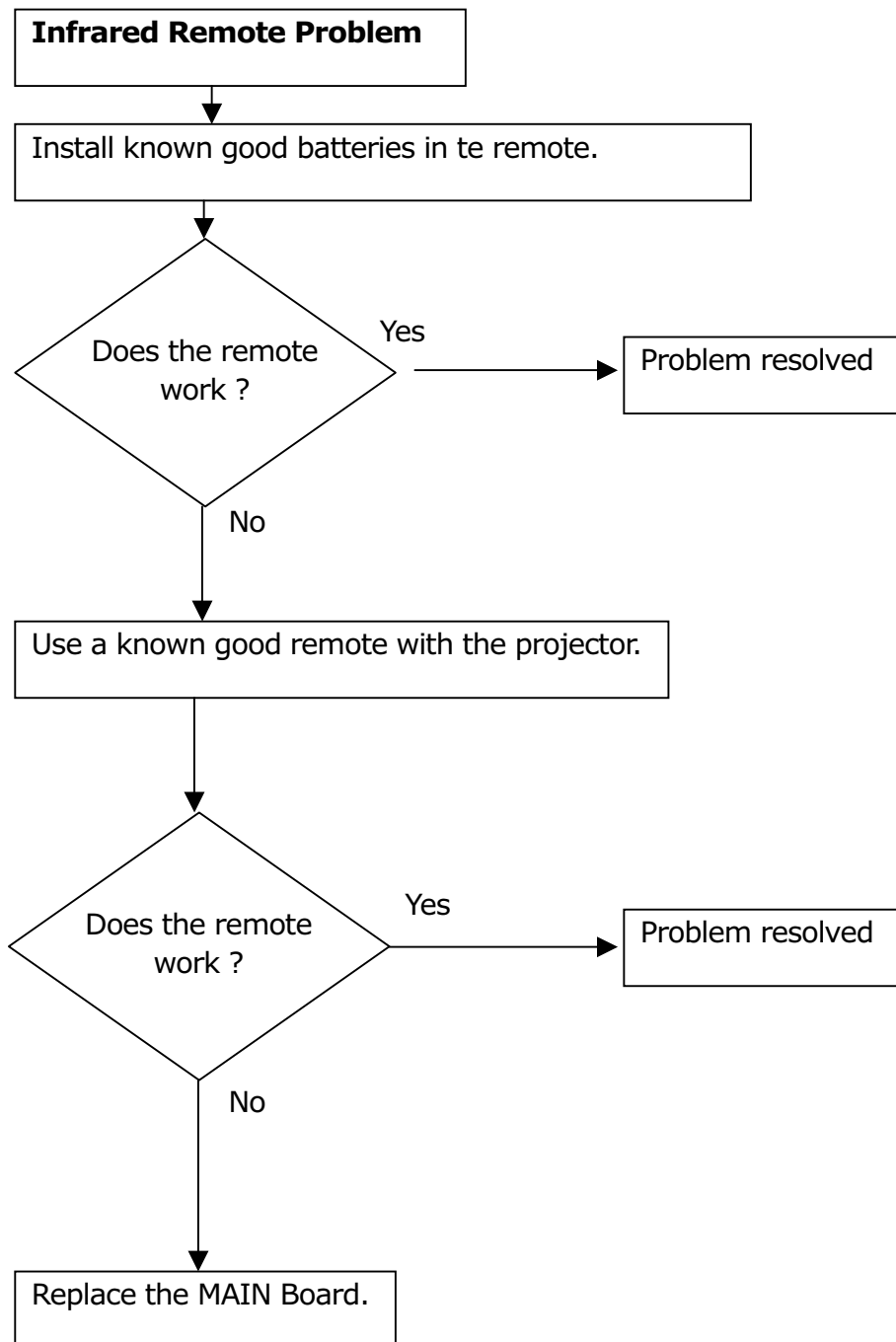
Troubleshooting Audio Problems



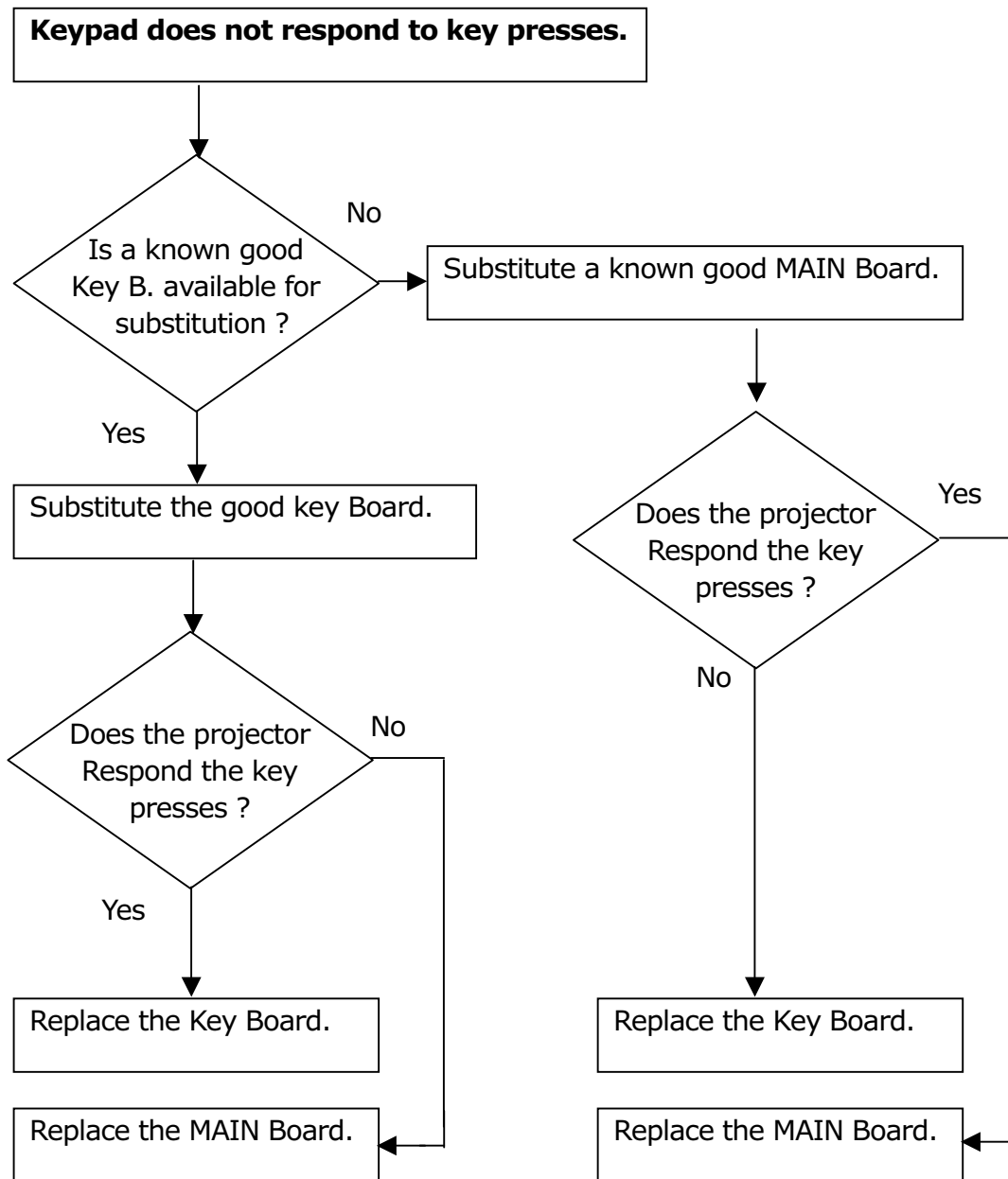




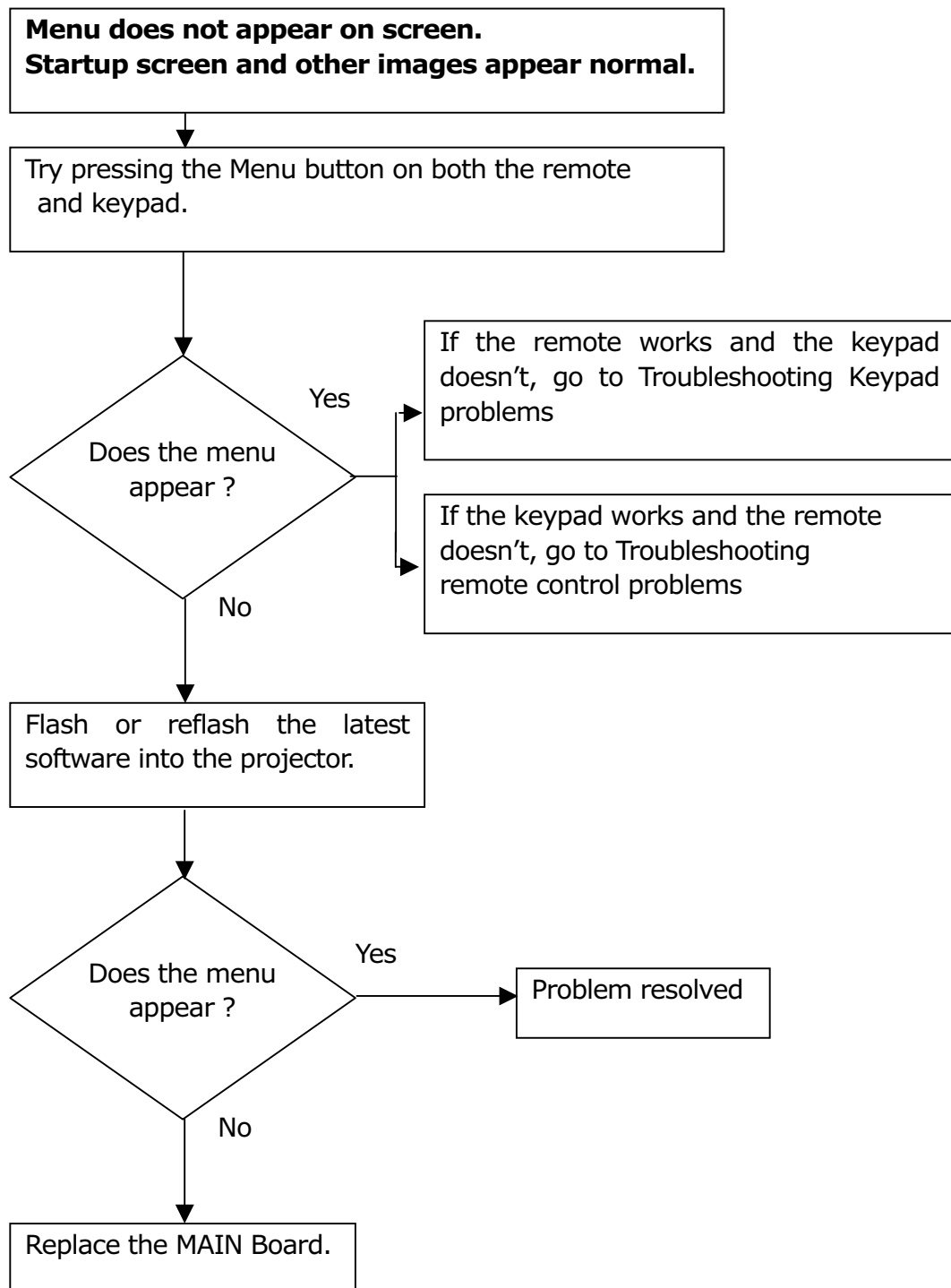
Troubleshooting Remote Control Problems



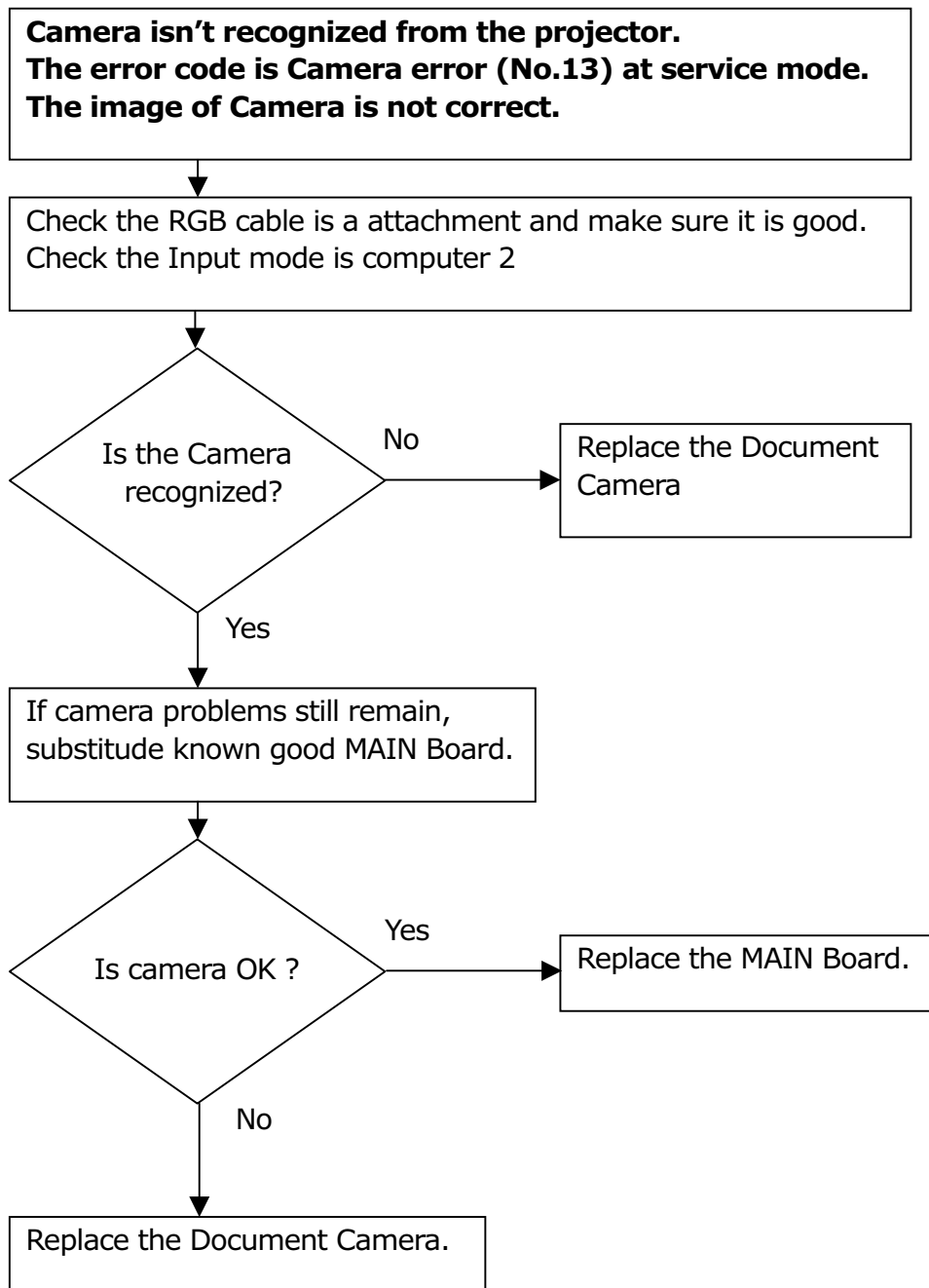
Troubleshooting Keypad Problems



Troubleshooting Menu Problems



Troubleshooting Camera Problems



Troubleshooting for Wireless Utility & PC card viewer functions

I. Display JPEG images stored on a memory PC card.

The blue screen of "Wireless/Card input" is not displayed.

The picture in a PC memory card is not displayed.

II. Transfer images displayed on a PC.

The blue screen of "Wireless/Card input" is not displayed.

Projector is not found in Wireless Utility.

Although a projector is chosen in Wireless Utility and
[Go] button is pushed, the target image is not displayed.
(Screen image (automatically, manually), File)

During updating automatically of the screen image by
Wireless Utility, the updating speed is slow, or the
network connection breaks off.

Go to START 1

Go to START 2

Go to START 3

Go to START 4

Go to START 5

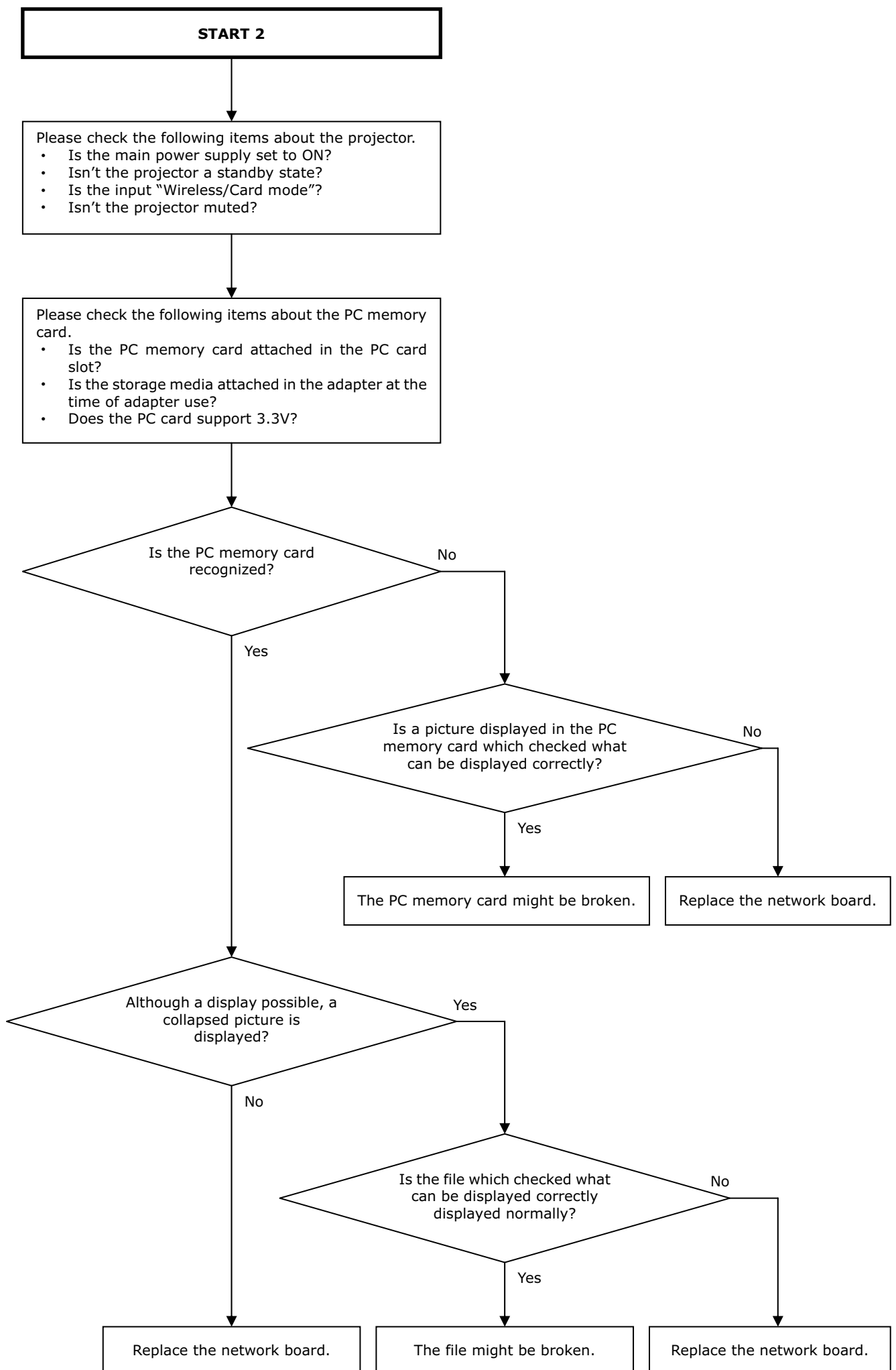
III. Configure a projector using a WEB browser.

The blue screen of "Wireless/Card input" is not displayed.

Projector cannot be accessed by a Web browser.

Go to START 6





START 3

Please end once and reboot Wireless Utility.

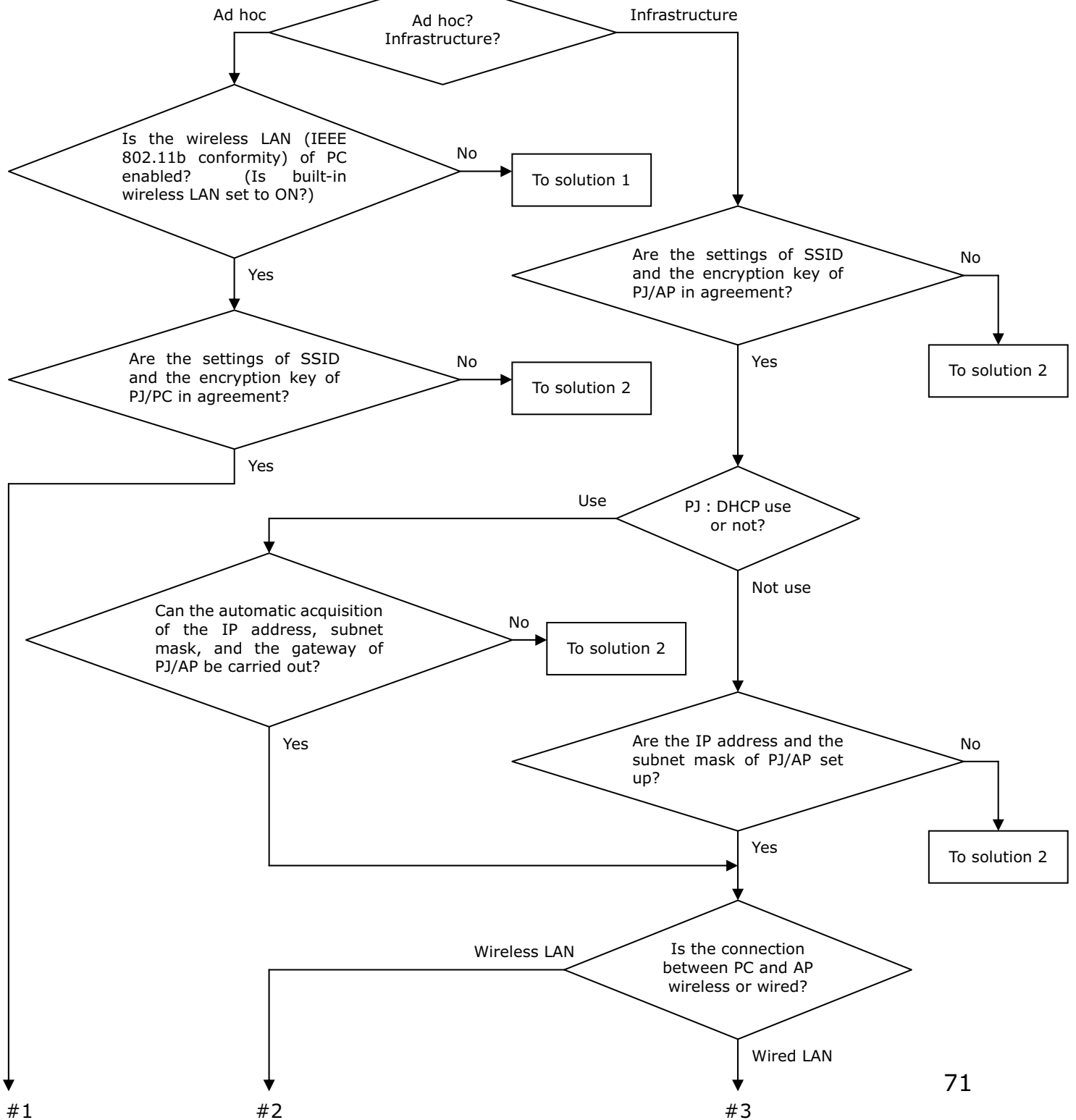
Please check the following items.

- Is the main power supply of PJ set to ON?
- Is the wireless LAN PC card attached in the PC card slot?
- Is LED of wireless LAN PC card turned on?
- Is LED of the CARD indicator of PJ turned on green?

PJ : Projector

PC : Computer

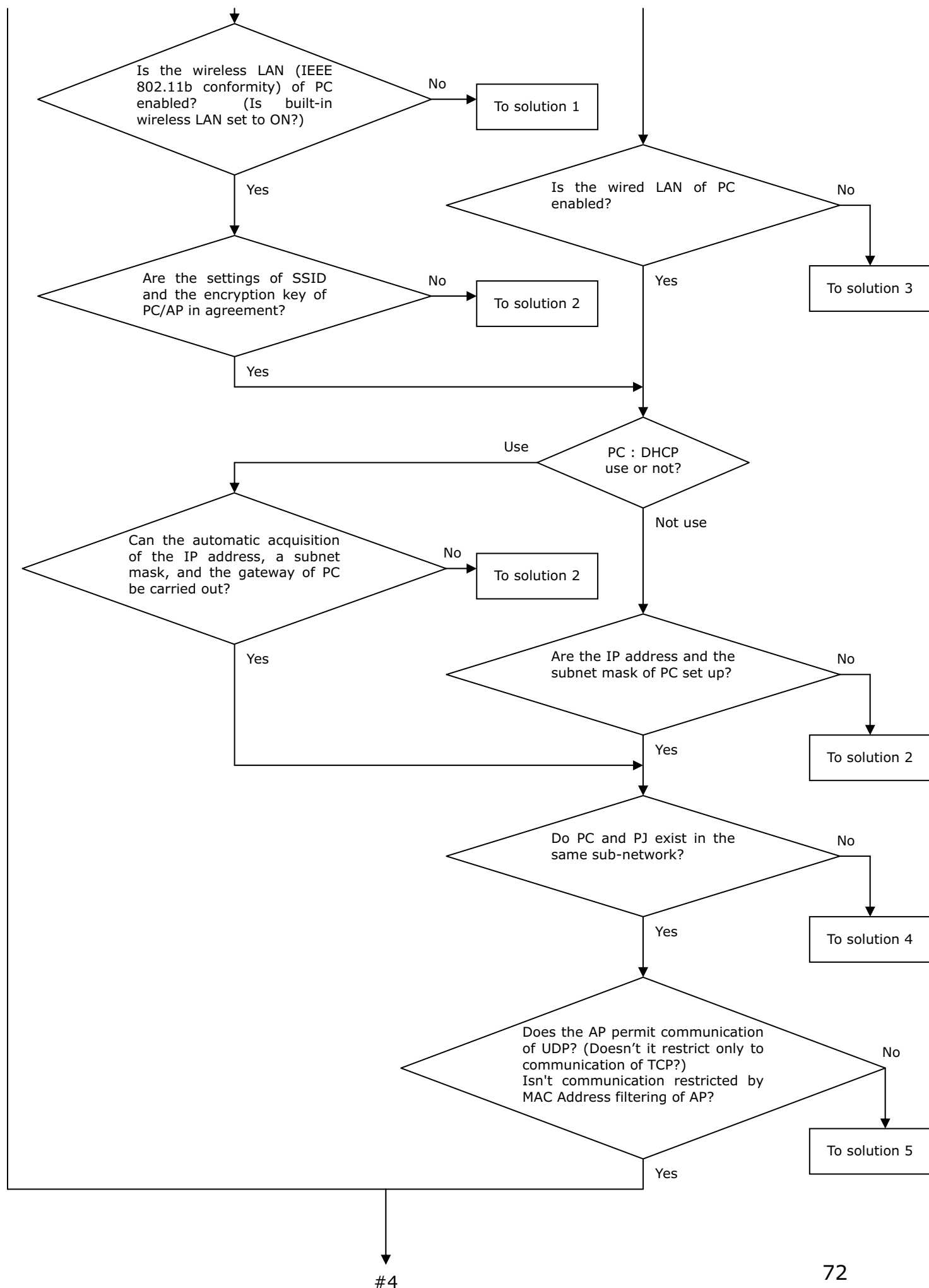
AP : Access point

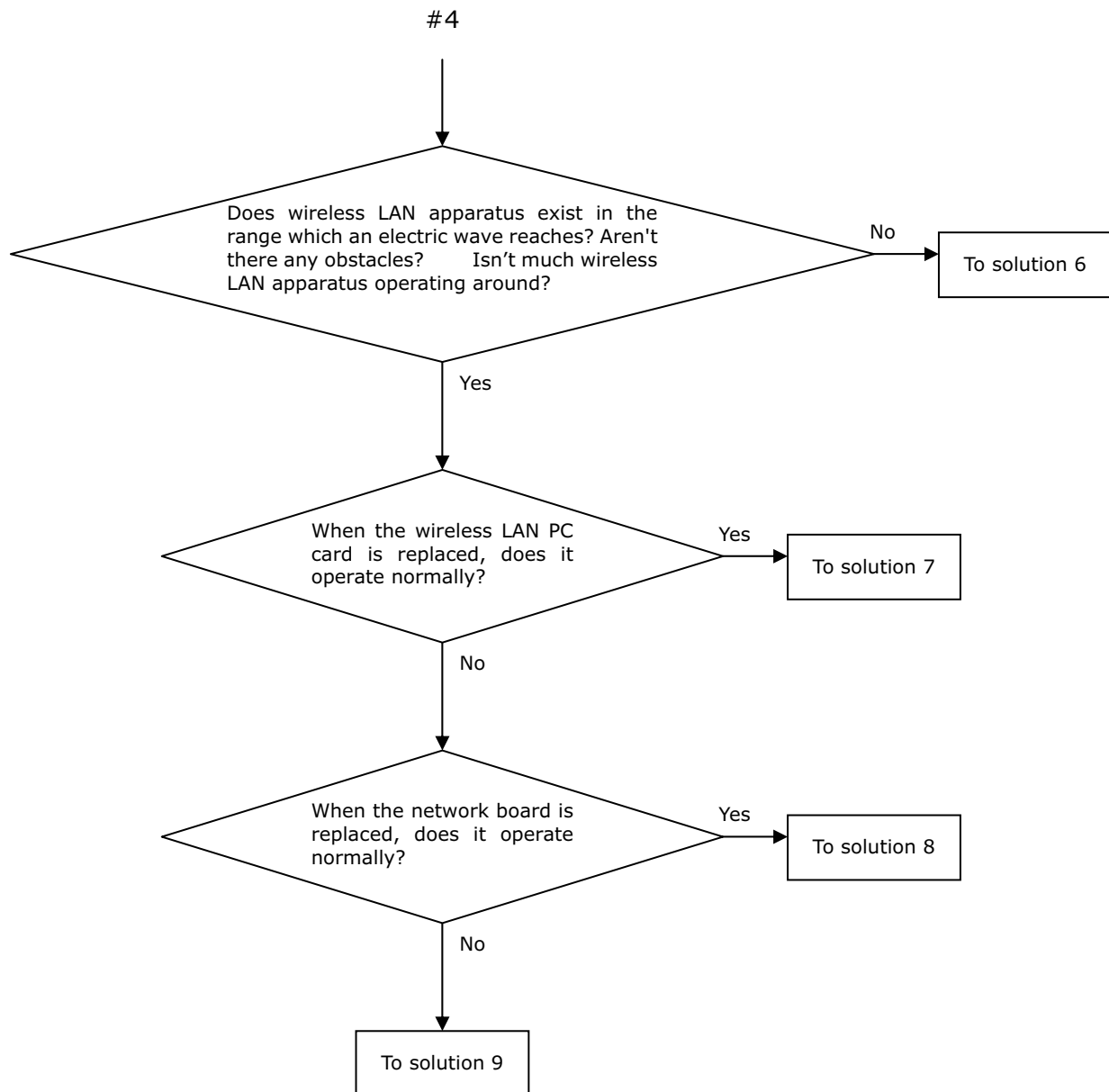


#1

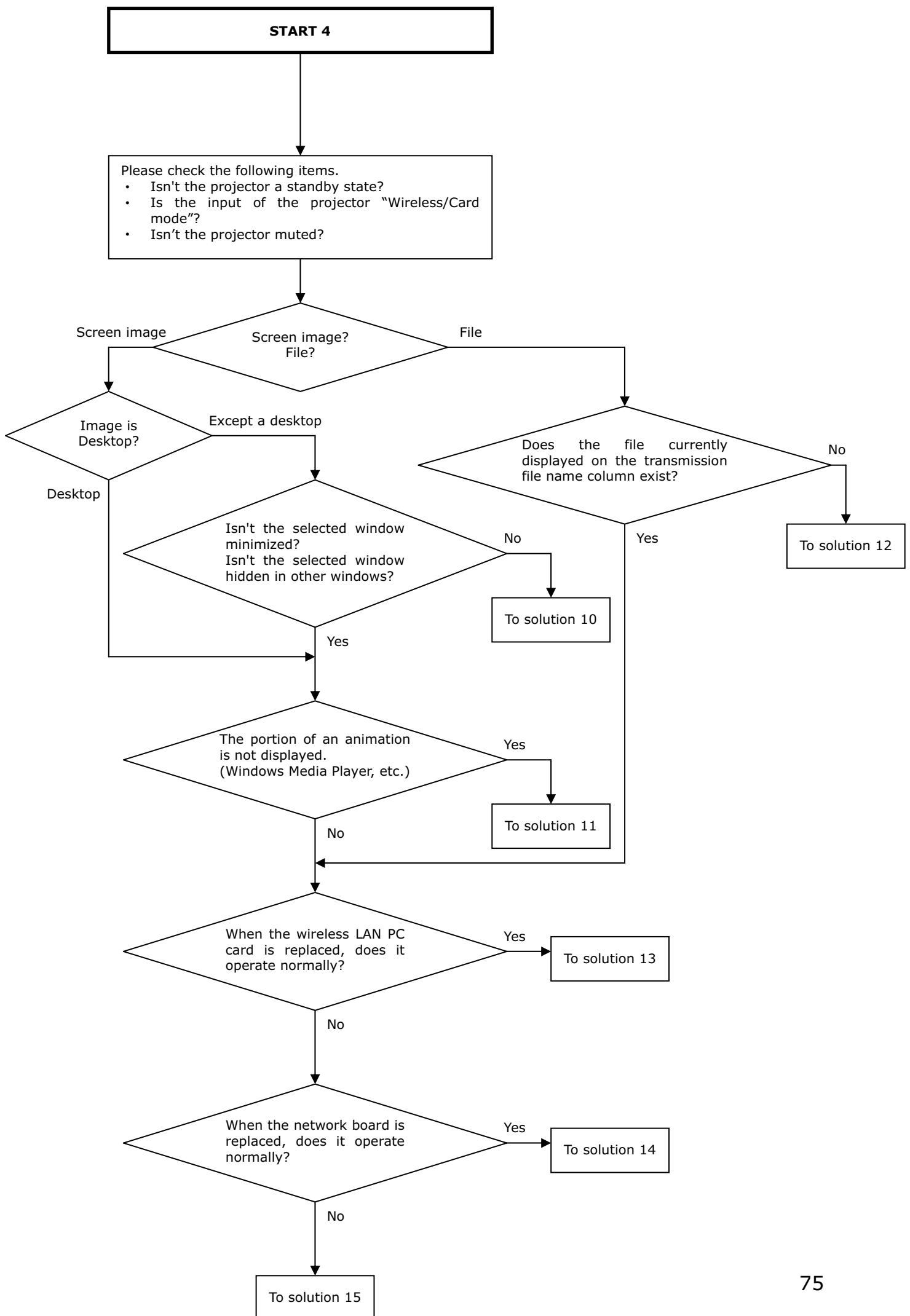
#2

#3

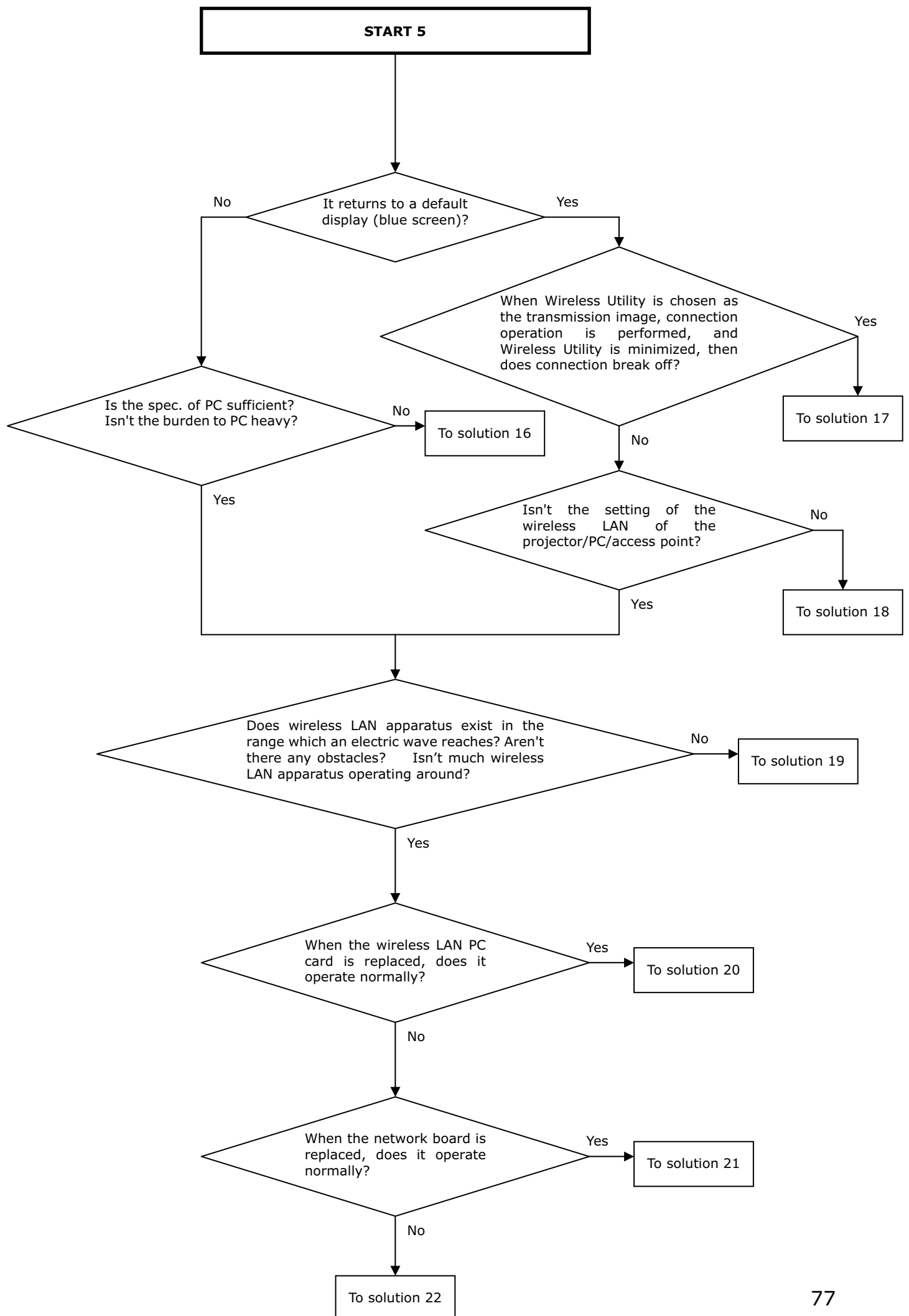




Solution 1	<ul style="list-style-type: none"> • It is necessary to communicate by IEEE802.11b or IEEE802.11g. • When using a wireless LAN PC card, please attach the card correctly to PC and enable the wireless function. (Please refer to the manual of a wireless LAN PC card for details.) • When using a built-in wireless LAN, please enable the wireless LAN function of PC, according to the manual of PC.
Solution 2	<ul style="list-style-type: none"> • Please check the setting of the network or wireless LAN.
Solution 3	<ul style="list-style-type: none"> • Please attach a LAN cable to PC and enable wired LAN.
Solution 4	<ul style="list-style-type: none"> • Cannot communicate when there are not PC and a projector in the same sub-network. Please set up TCP/IP setting anew.
Solution 5	<ul style="list-style-type: none"> • Please permit communication of UDP data by the setting of the access point. • Please permit access from the MAC address of the wireless LAN PC card of the projector attachment by the setting of the access point. (When using the built-in wireless LAN for PC side, please permit access from the MAC address of the wireless LAN device of PC) <p>(Please refer to the manual of the access point for details.)</p>
Solution 6	<ul style="list-style-type: none"> • Please install apparatus in the range which the electric wave of wireless LAN reaches. • Even if there are some obstacles, communication is possible, but please install apparatus in the good place of a prospect. • Please change the channel setting, in order to avoid interference of the electric wave. (Don't use the adjoining channel.) <p>[Note] After turning OFF the power supply of the other apparatuses which operate by the same SSID (after the apparatus which operates by the target SSID is set only to one), it is necessary to change the channel setting.</p> <ul style="list-style-type: none"> • When the apparatus (other IEEE802.11b/g or Bluetooth apparatus, a microwave oven, etc.) which uses the frequency of a 2.4GHz bandwidth for the circumference exists, communication may not work.
Solution 7	<ul style="list-style-type: none"> • Please replace the wireless LAN PC card of projector attachment.
Solution 8	<ul style="list-style-type: none"> • Please replace the network board.
Solution 9	<ul style="list-style-type: none"> • It is thought that a cause is in the affinity of a wireless LAN device. Please use the other network devices (wireless LAN PC card etc.) by the PC side, or use the other access point, and try again.



Solution 10	<ul style="list-style-type: none"> • Please activate the selected window. • Please move in the window currently displayed by overlapping on the selected window not to become obstructive.
Solution 11	<ul style="list-style-type: none"> • An animation may not be displayed when a multi-monitor setting of PC is on. Please turn OFF a multi-monitor function and re-connect. (Refer to the manual of PC for the setting method.) • There are some which cannot be displayed depending on an animation.
Solution 12	<ul style="list-style-type: none"> • There is possibility of the file having been deleted or the file name having been changed, after choosing a JPEG file. Please re-choose a file. • There is a possibility that the file specified by the file name direct entry is not a JPEG format (the content differs although the extension shows JPEG). Please re-choose a file.
Solution 13	<ul style="list-style-type: none"> • Please replace the wireless LAN PC card of projector attachment.
Solution 14	<ul style="list-style-type: none"> • Please replace the substrate of the network unit.
Solution 15	<ul style="list-style-type: none"> • There is the possibility that network is unstable. • It is thought that a cause is in the affinity of a wireless LAN device. Please use the other network devices (wireless LAN PC card etc.) by the PC side, or use the other access point, and try again.



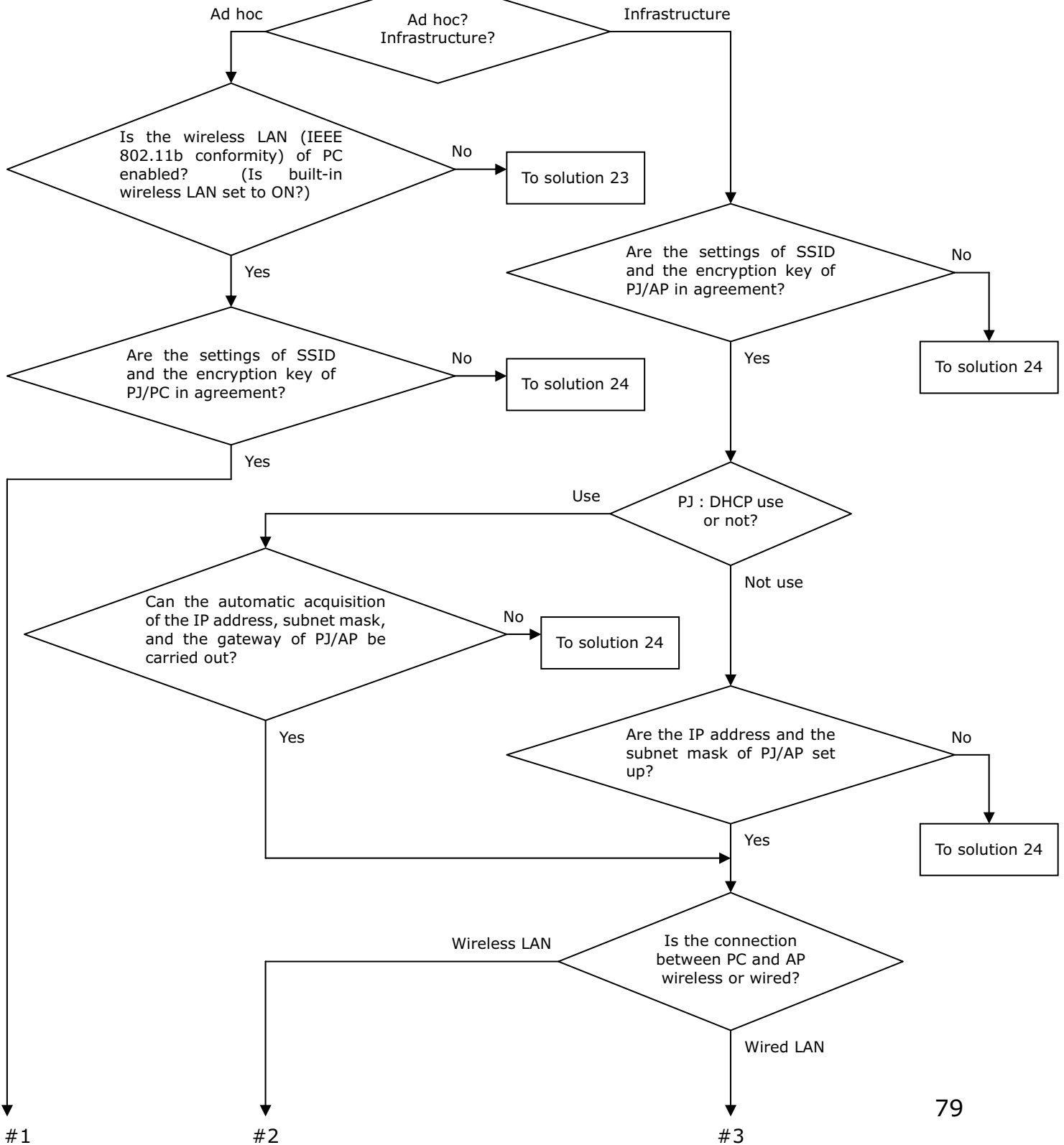
Solution 16	<ul style="list-style-type: none"> As for the spec. of PC, the following value is recommended. CPU is more than Pentium III 750MHz, memory is more than 256MB, and resolution of a screen is XGA (1024x724 pixels). Display speed may become slow if resources run short for the reason of using application in large quantities. Please do not use unnecessary application. When there is change to the contents of a display at high speed over the range with large PC screen, the amount of communication data increases and display speed may fall.
Solution 17	<ul style="list-style-type: none"> After Wireless Utility is chosen as a transmission image and the transmission is started, if Wireless Utility is minimized and stored in a task tray, connection will stop (specification). Please push the [Advanced...] button in the main window of Wireless Utility, remove the check [Place in task tray at the start of transmission], and do not minimize it.
Solution 18	<ul style="list-style-type: none"> Please set up a wireless LAN setting of the projector / PC / access point.
Solution 19	<ul style="list-style-type: none"> Please install apparatus in the range which the electric wave of wireless LAN reaches. Even if there are some obstacles, communication is possible, but please install apparatus in the good place of a prospect. Please change the channel setting, in order to avoid interference of the electric wave. (Don't use the adjoining channel.) <p>[Note] After turning OFF the power supply of the other apparatuses which operate by the same SSID (after the apparatus which operates by the target SSID is set only to one), it is necessary to change the channel setting.</p> <ul style="list-style-type: none"> When the apparatus (other IEEE802.11b/g or Bluetooth apparatus, a microwave oven, etc.) which uses the frequency of a 2.4GHz bandwidth for the circumference exists, communication may not work.
Solution 20	<ul style="list-style-type: none"> Please replace the wireless LAN PC card of projector attachment.
Solution 21	<ul style="list-style-type: none"> Please replace the substrate of the network unit.
Solution 22	<ul style="list-style-type: none"> It is thought that a cause is in the affinity of a wireless LAN device. Please use the other network devices (wireless LAN PC card etc.) by the PC side, or use the other access point, and try again.

START 6

PJ : Projector
PC : Computer
AP : Access point

Please check the following items.

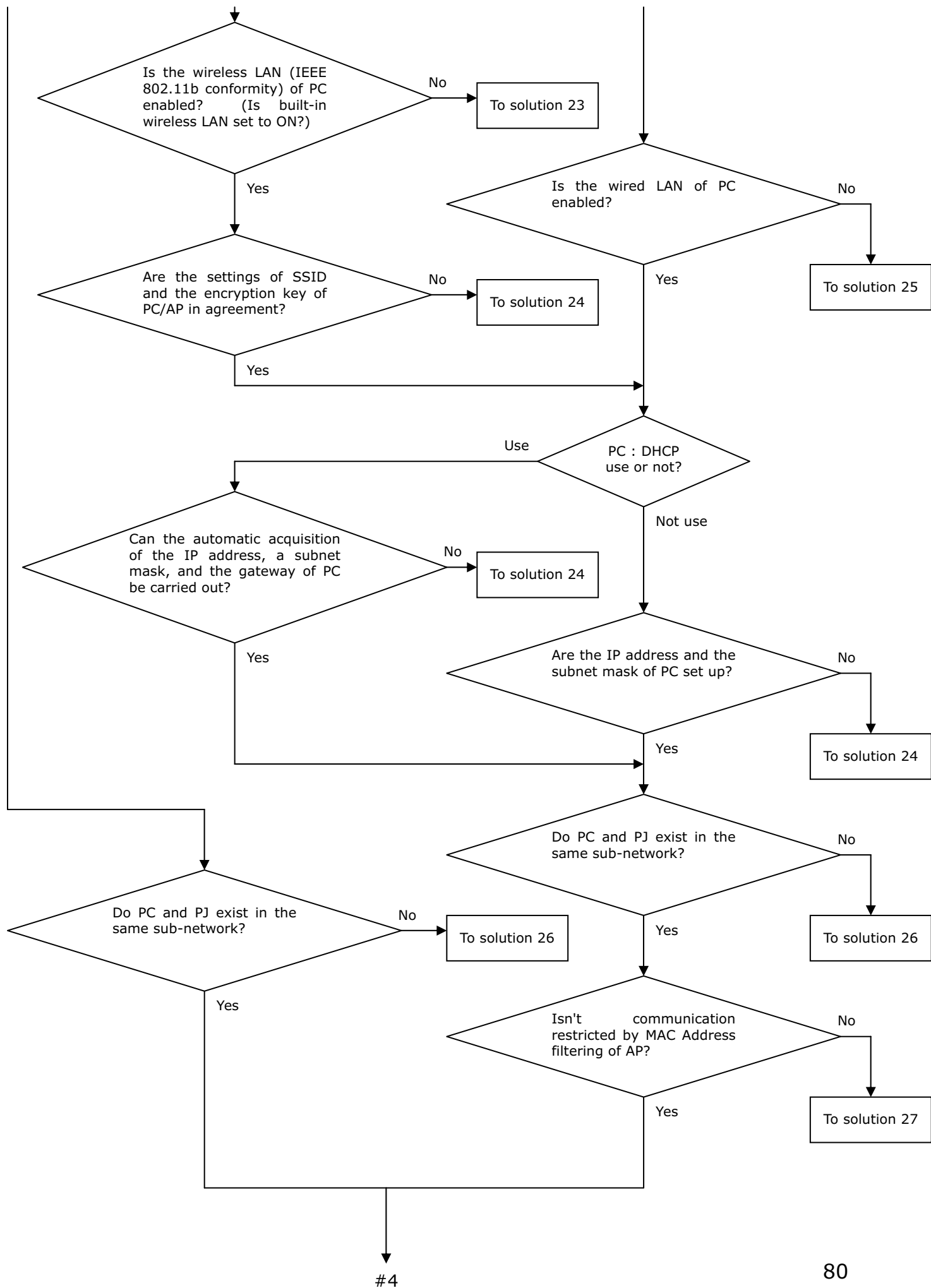
- Is the main power supply of PJ set to ON?
- Is the wireless LAN PC card attached in the PC card slot?
- Is LED of wireless LAN PC card turned on?
- Is LED of the CARD indicator of PJ turned on green?

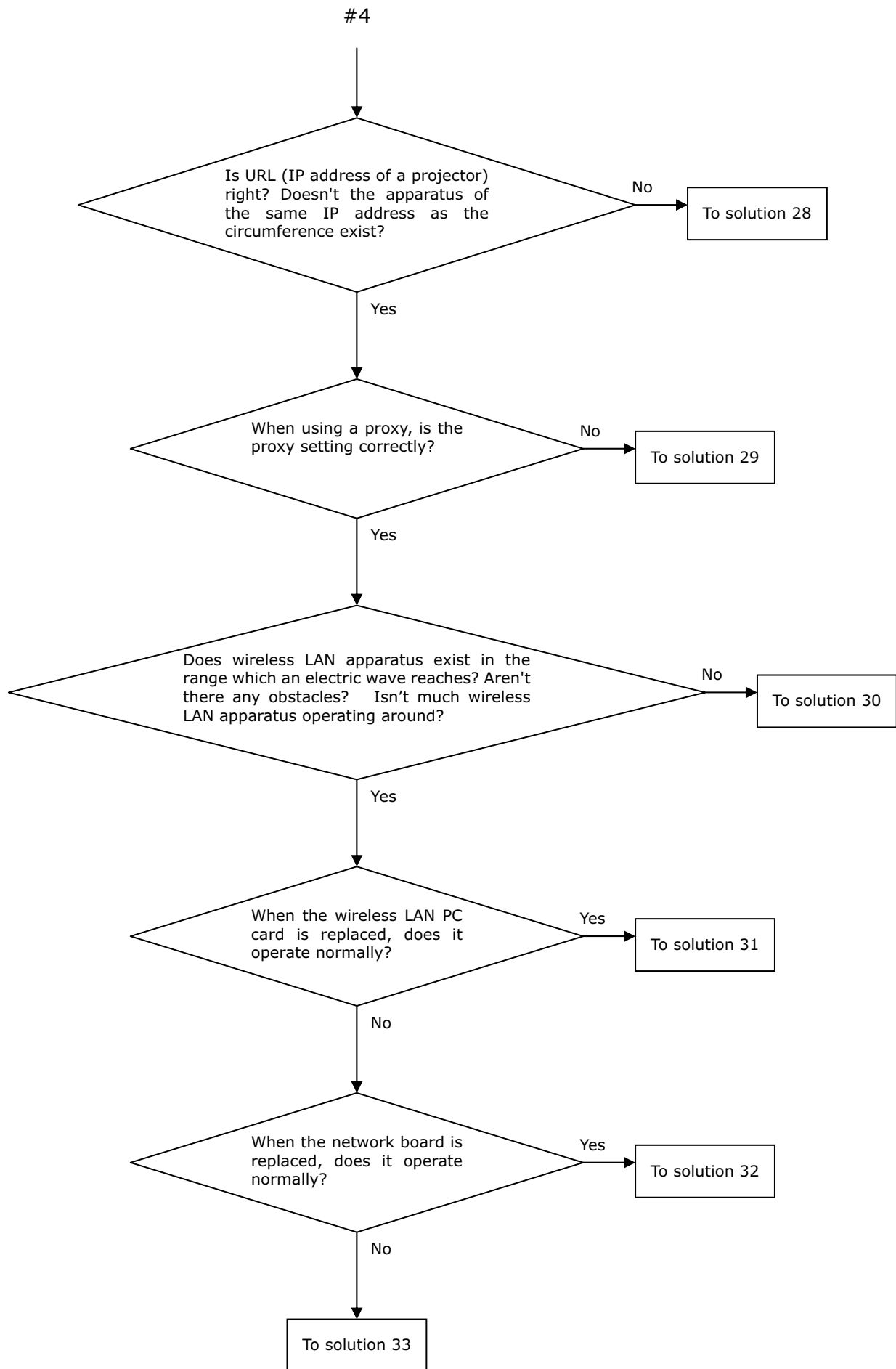


#1

#2

#3



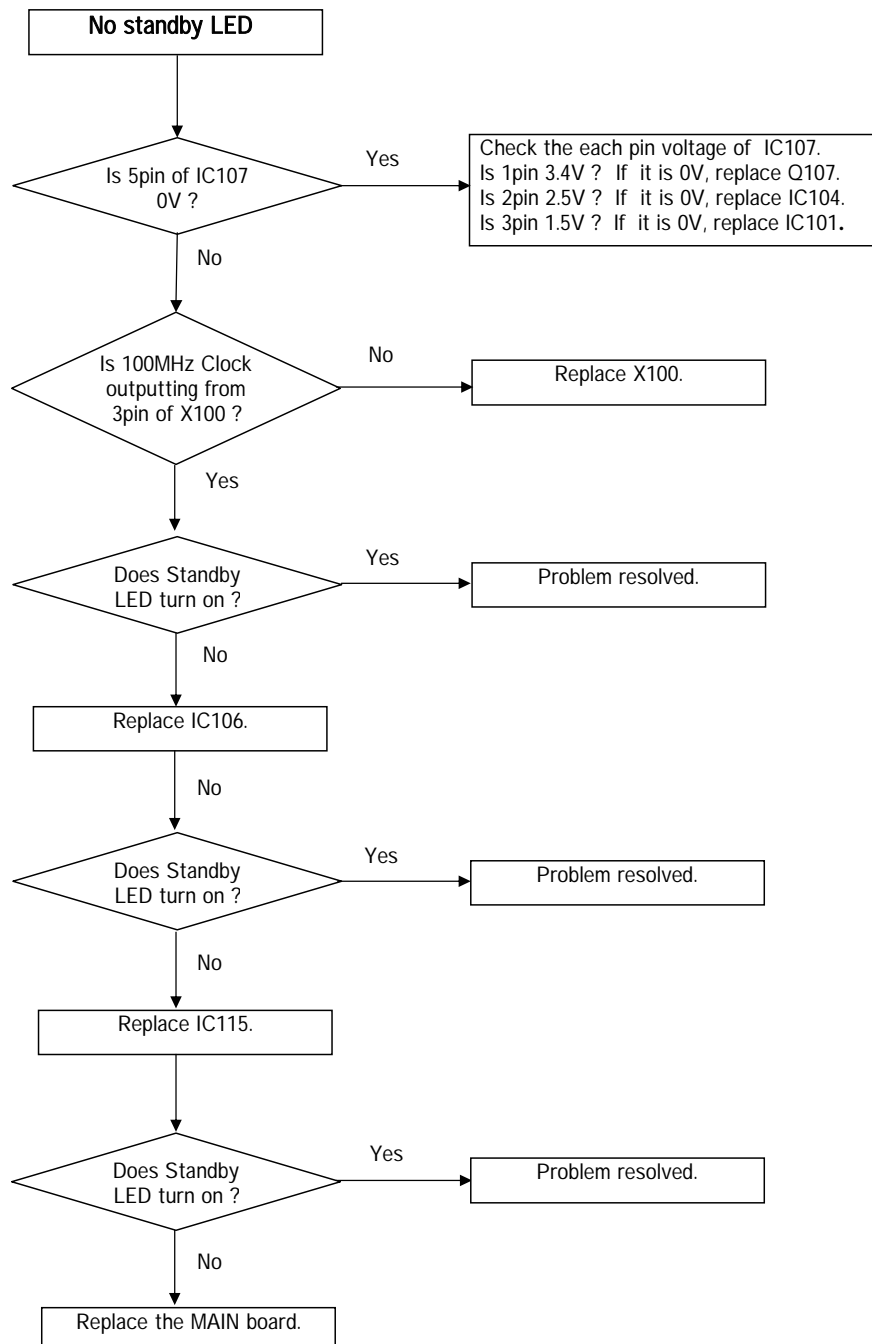


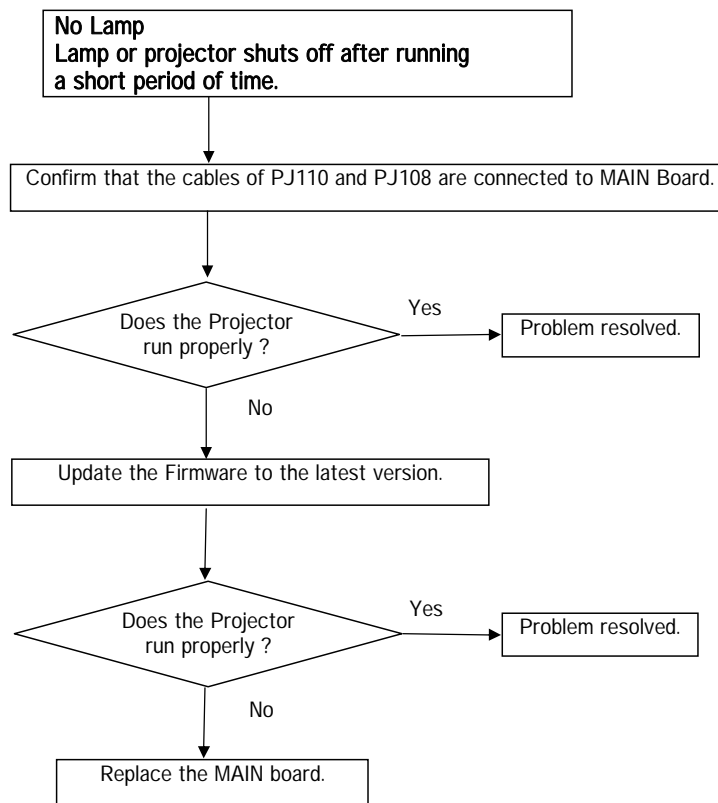
Solution 23	<ul style="list-style-type: none"> • It is necessary to communicate by IEEE802.11b or IEEE802.11g. • When using a wireless LAN PC card, please attach the card correctly to PC and enable the wireless function. (Please refer to the manual of a wireless LAN PC card for details.) • When using a built-in wireless LAN, please enable the wireless LAN function of PC, according to the manual of PC.
Solution 24	<ul style="list-style-type: none"> • Please check the setting of the network or wireless LAN.
Solution 25	<ul style="list-style-type: none"> • Please attach a LAN cable to PC and enable wired LAN.
Solution 26	<ul style="list-style-type: none"> • Cannot communicate when there are not PC and a projector in the same sub-network. Please set up TCP/IP setting anew.
Solution 27	<ul style="list-style-type: none"> • Please permit access from the MAC address of the wireless LAN PC card of the projector attachment by the setting of the access point. (When using the built-in wireless LAN for PC side, please permit access from the MAC address of the wireless LAN device of PC) (Please refer to the manual of the access point for details.)
Solution 28	<ul style="list-style-type: none"> • Please check the IP address on the Status display screen of the Wireless/Card menu of the projector. • The IP address should differ from the apparatus which exists in the circumference.
Solution 29	<ul style="list-style-type: none"> • By the setting of IE, in accessing URL of the projector, please set up not to use a proxy.
Solution 30	<ul style="list-style-type: none"> • Please install apparatus in the range which the electric wave of wireless LAN reaches. • Even if there are some obstacles, communication is possible, but please install apparatus in the good place of a prospect. • Please change the channel setting, in order to avoid interference of the electric wave. (Don't use the adjoining channel.) <p>[Note] After turning OFF the power supply of the other apparatuses which operate by the same SSID (after the apparatus which operates by the target SSID is set only to one), it is necessary to change the channel setting.</p> <ul style="list-style-type: none"> • When the apparatus (other IEEE802.11b/g or Bluetooth apparatus, a microwave oven, etc.) which uses the frequency of a 2.4GHz bandwidth for the circumference exists, communication may not work.
Solution 31	<ul style="list-style-type: none"> • Please replace the wireless LAN PC card of projector attachment.
Solution 32	<ul style="list-style-type: none"> • Please replace the network board.
Solution 33	<ul style="list-style-type: none"> • It is thought that a cause is in the affinity of a wireless LAN device. Please use the other network devices (wireless LAN PC card etc.) by the PC side, or use the other access point, and try again.

Troubleshooting the MAIN Board

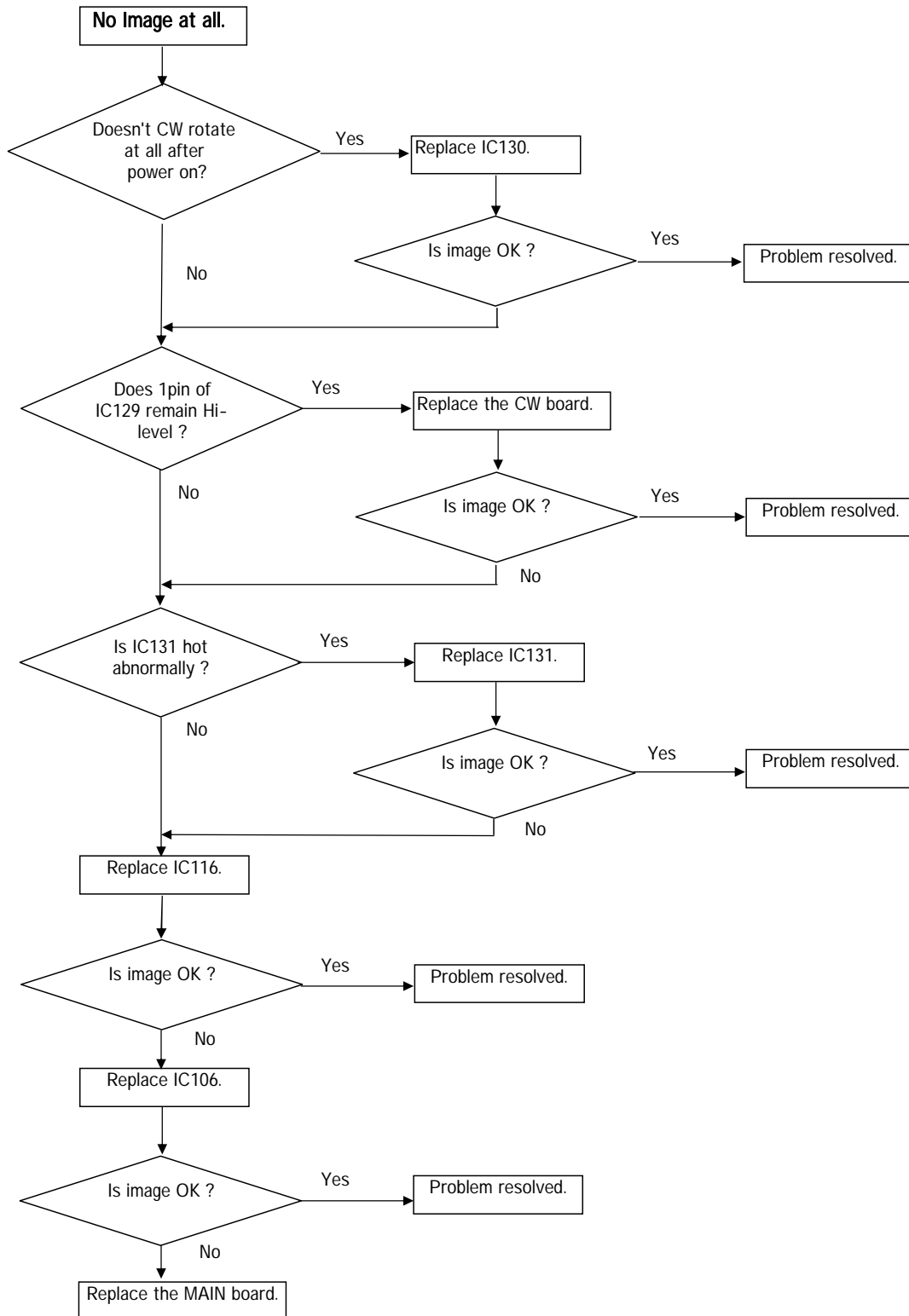
1. For Power problems, see below
2. For Image problems, see page
3. For Audio problems, see page
4. For Remote problems, see page
5. For Keypad problems, see page
6. For Menu problems, see page
7. For Camera problems, see page

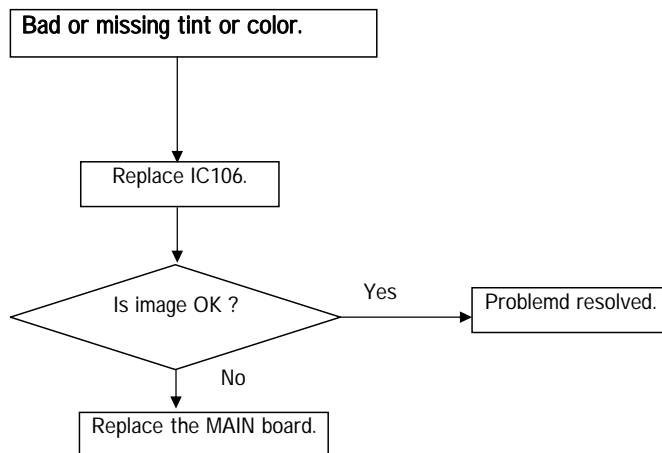
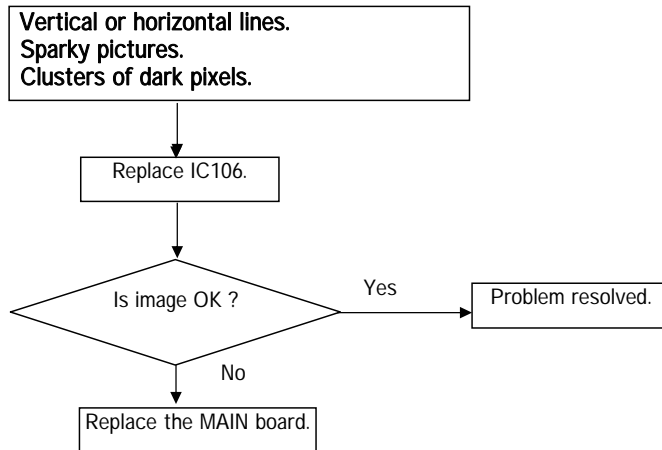
Troubleshooting Power Problems



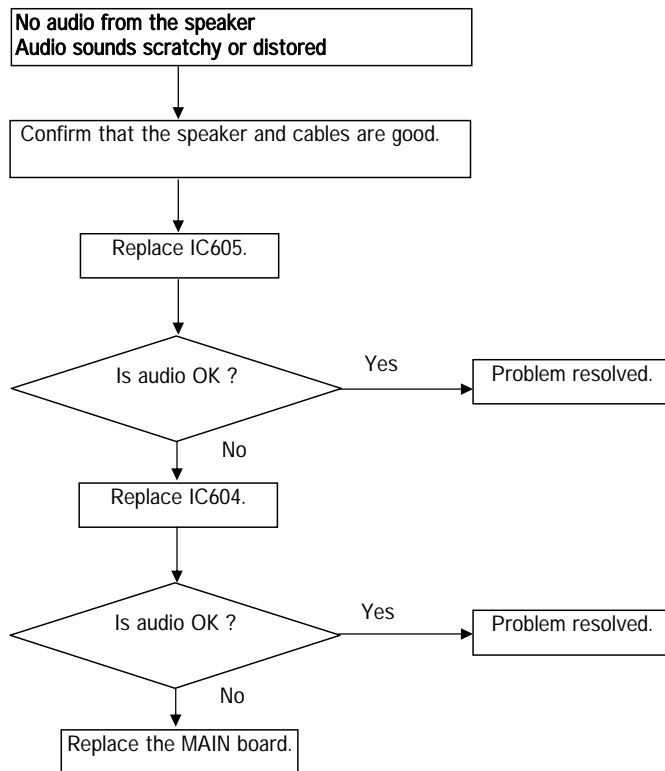


Troubleshooting Image Problems

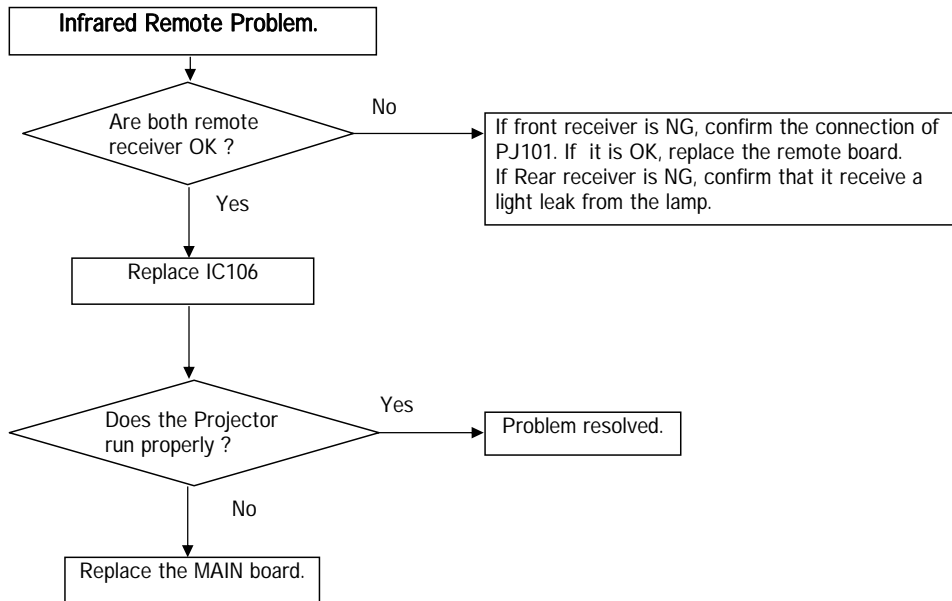




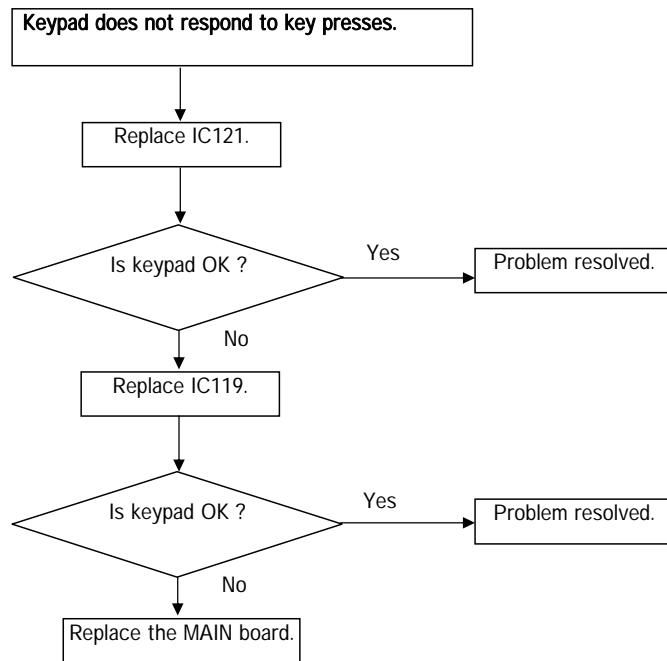
Troubleshooting Audio Problems



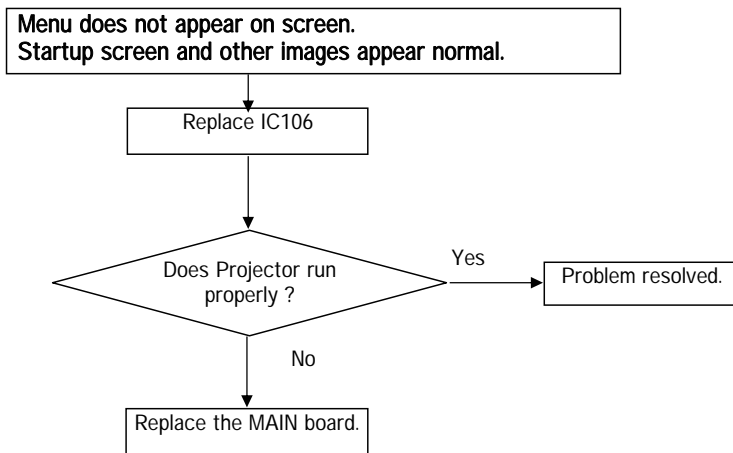
Troubleshooting Remote Problems



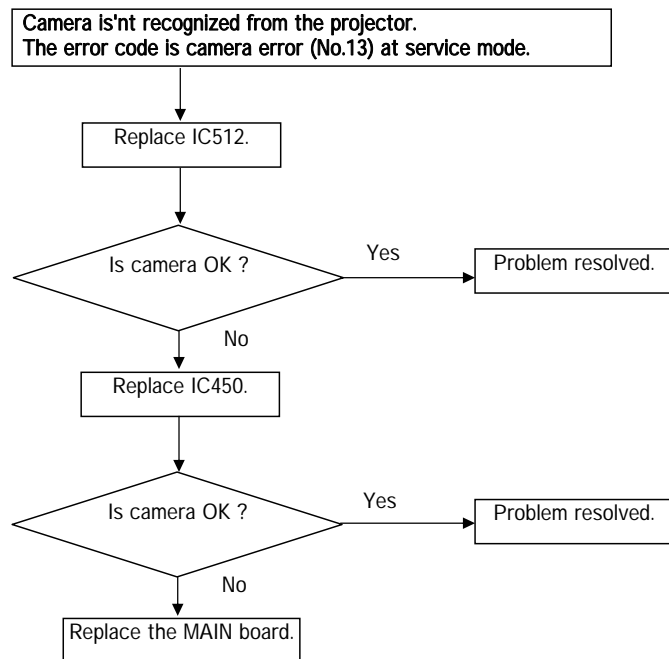
Troubleshooting Keypad Problems



Troubleshooting Menu Problems



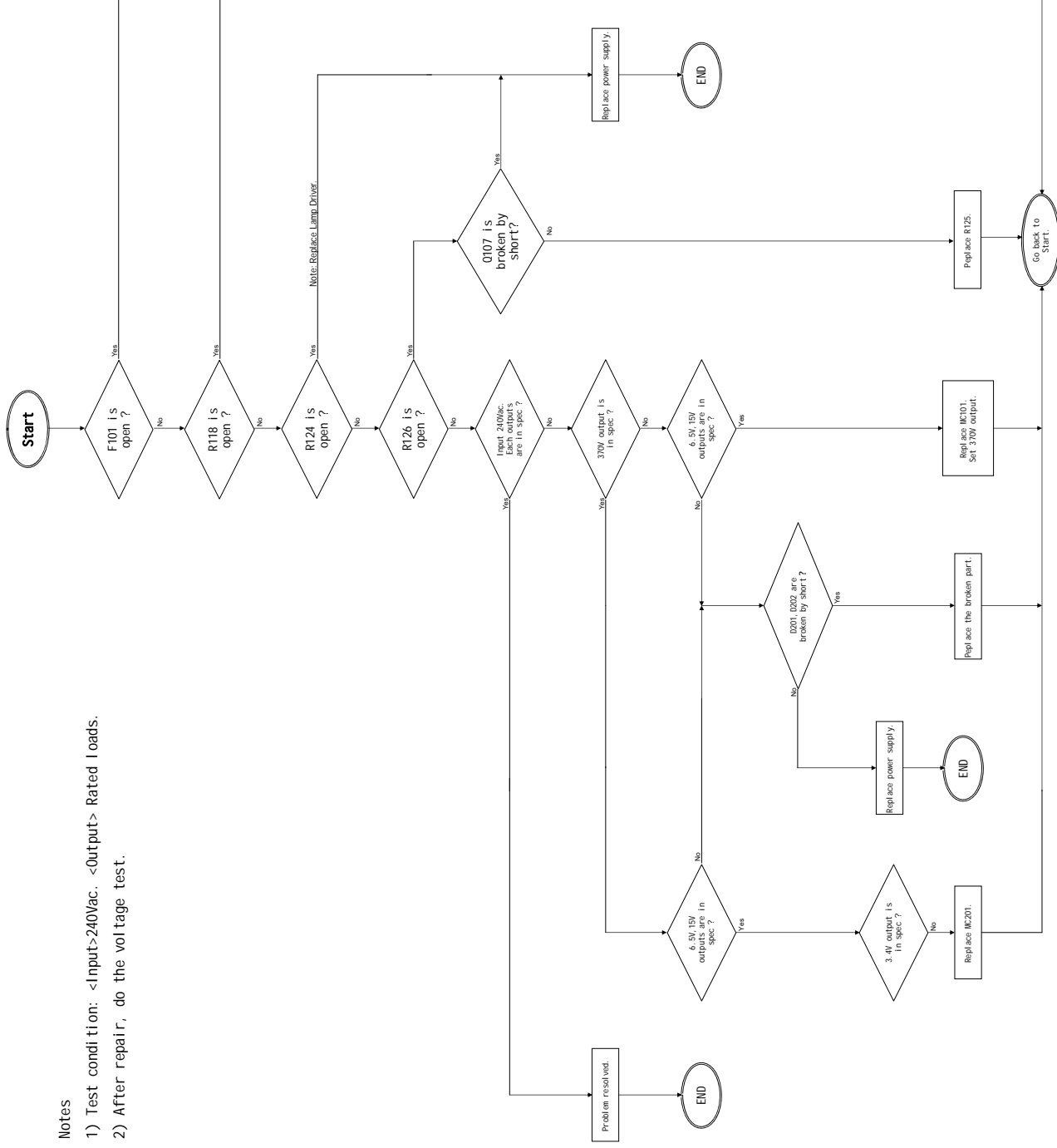
Troubleshooting Camera Problems



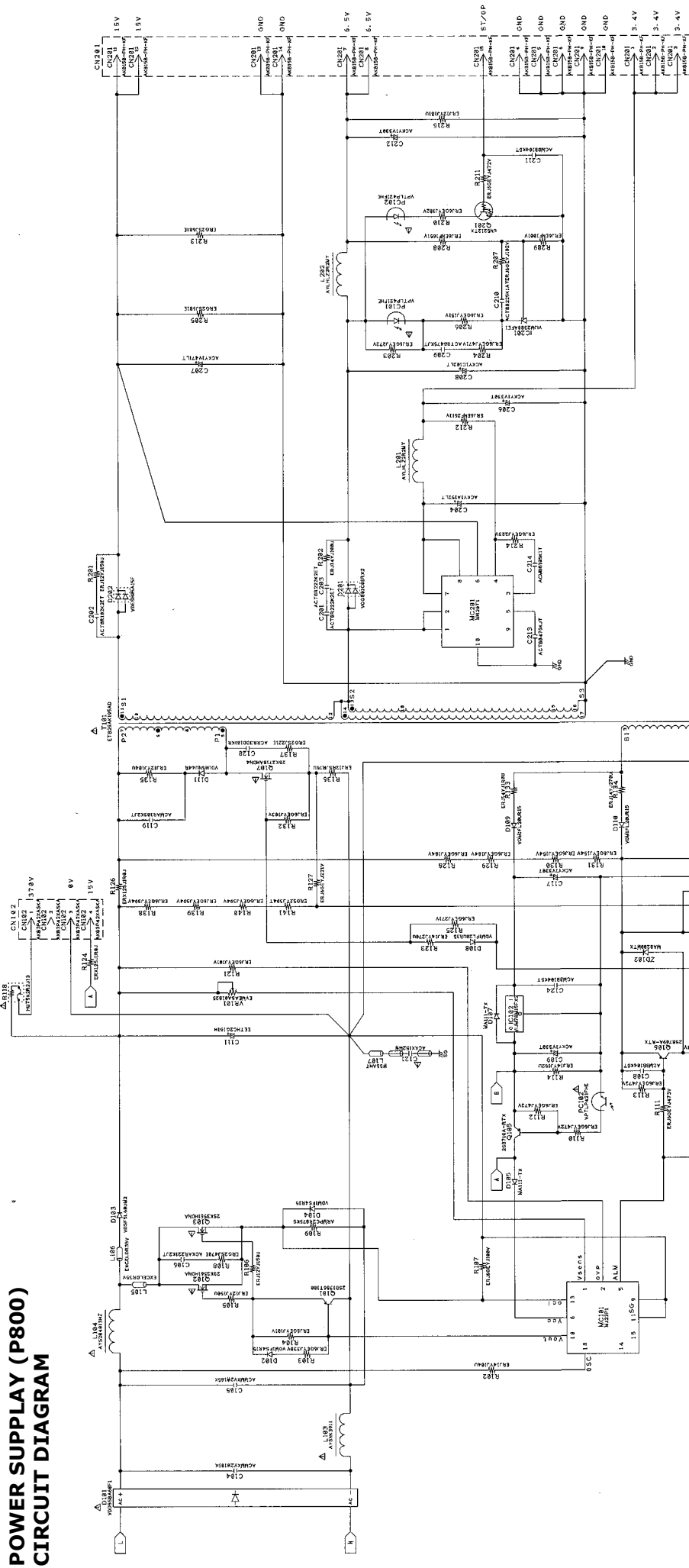
Troubleshooting Power Supply (P800)

Notes

- 1) Test condition: <Input>240Vac. <Output> Rated loads.
- 2) After repair, do the voltage test.



POWER SUPPLY (P800) CIRCUIT DIAGRAM



Operating of Power Supply APS-M526

Contents

Operating of Power Supply

1. The AC-DC Converter

- 1) Input Line Filter**
- 2) Power Factor Correction Control Circuit**
- 3) Switching Converter**
- 4) Feedback Control**
- 5) Rectifier & Output Filter**

2. Time Sharing Multi-output Control Circuit

Operation of Power Supply

The APS-M526 power supply circuit can be divided into 2 main blocks (Fig.1)

1.the AC-DC converter, 2.the Time Sharing Multi-output control circuit.

These are shown as below.

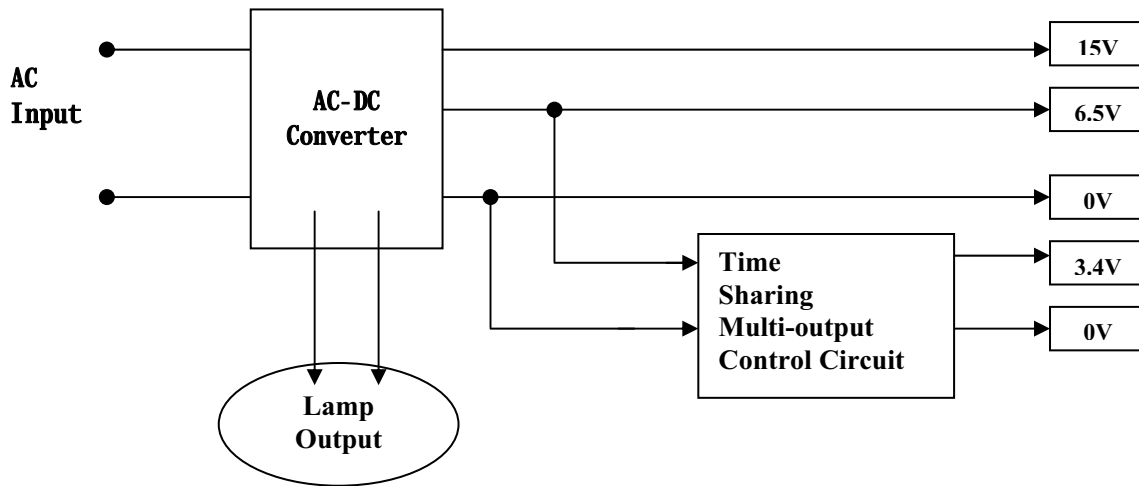


Fig. 1

1. The AC-DC Converter

The AC-DC converter can be further divided into sub-blocks as shown. (Fig. 2)

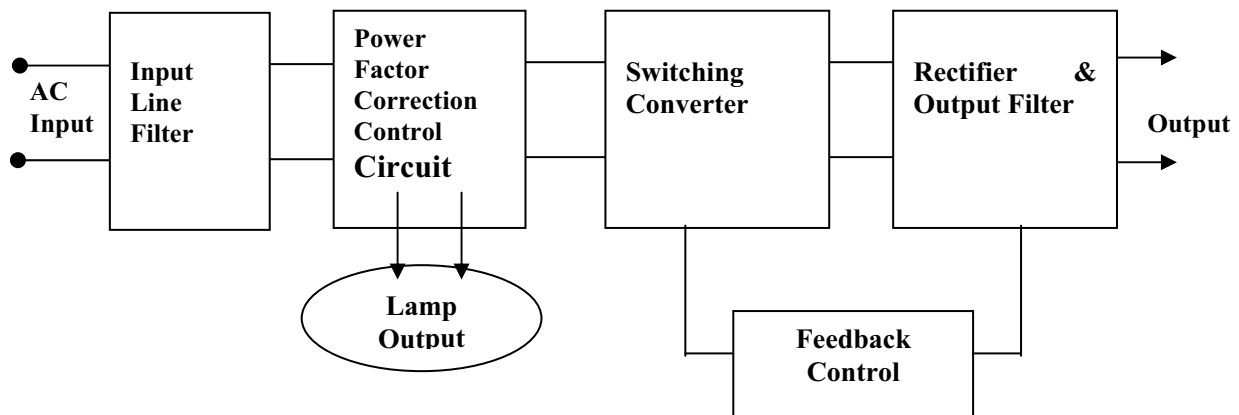


Fig. 2

1) Input Line Filter

A switching power supply generates a lot of electromagnetic noise. The function of the AC line filter, which is made up of capacitors (eg. C101) and inductor choke (eg. L101), is to attenuate these noise so that other equipments may not be affected.

Then, the power thermistor TH101 which restricts inrush current, and the surge absorber Z101 which absorbs high voltage surge from the input lines. These are mounted on the input filter.

※The fuse(F101) becomes open in order to protect other parts, when excessive current flows at abnormal conditions.

2) Power Factor Correction Control Circuit

This circuit has 4 functions as below.

- A) Generate stable voltage
- B) Reduce input harmonic currents
- C) Over current protection
- D) Over voltage protection

A) Generate stable voltage

This circuit operate as step up to 370Vdc(typ.) and voltage control. Actually, Q102 and Q103 are switched by MC101.

Initial voltage setting of 370V output (between pin 1 and pin 3 of CN102) has set at 370V (typ.) by VR101. (Input voltage : 85Vac , max. load)

B) Reduce input harmonic current

Normally switching power supply circuit is capacitor input type. Input current of this power supply has many harmonics, because of the conduction angle of input current is narrow. Therefore, an input current is distorted and this is a cause of low power factor.

Main purpose of Power Factor Correction Control Circuit is reducing input harmonic current.

MC101 senses input voltage (through R102 to pin18 of MC101), then compare the sine waveform and control Q102 and Q103 switching as correct sine waveform.

C) Over current protection

The peak current through Q102 and Q103 is detected at pin 13 of MC101 as the voltage across R109. When the drain current of Q102 and Q103 goes over a certain limit, MC101 turns off.

D) Over voltage protection

Lamp output voltage is adjusted at 1 pin of MC101 voltage by VR101. Even if this Connection to be open, it must be protected. So we prepared other circuit for over voltage protection. Lamp voltage is detected at pin 2 of MC101, when lamp voltage to be abnormal, pin 5 of MC101 to be pulled down, Q106 to be turn on, pin 8 of IC101 to be pulled up, and power supply to be shut down.

3) Switching Converter

The main parts of switching converter are transformer T101, switching MOS FET Q107 and output diode D201. This converter is Fly Back type.

This means that energy is transferred from the primary to secondary when Q107 is off.

The main output is 6.5V output and auxiliary output is 15V output.

4) Feedback Control

A) Start up

When AC input is ON, power source of IC101 is supplied from R128 to R131 and start switching and then the converter is start. Once the converter begins switching, power source of IC101 is supplied from B2-B1 winding of T101.

B) Output Voltage Control

Output voltage is controlled by Pulse Width Modulation (PWM).

6.5V output voltage is sensed at between R208 and R209, it is compared against the reference voltage of IC201. Optoisolator PC101 feeds back the comparison from secondary to primary by adjust the level of current drawn from pin 2 of IC101.

When 6.5V output voltage is above the control level, IC101 to shorten the on-time (duty cycle) of Q107. This cause the average output to decrease. When the output is below the control level, on-time (duty cycle) is increase, thereby increasing the average output voltage.

C) Over Current Control

The peak current through Q107 is detected at pin 3 and pin 4 of IC101 as the voltage across R136.

When the drain current of Q107 goes over a certain limit, IC101 turns off Q107.

D) Over Voltage Limit

Output voltage is detected by winding voltage of B1-B2 (T101). This voltage is same as Vcc of IC101 (pin 6). If output voltage becomes over voltage condition, pin 8 of IC102 to be pulled up through zener diode ZD102, then power supply is shut down

5) Rectifier & Output Filter

The cathode voltage of D201 is pulsating. D201 and C208, which smooth out the pulsation to give a low ripple DC output. L202 and C212 are LC filter, which reduce ripple voltage.

2. Time Sharing Multi-output Control Circuit

This is one of output control method, and 3.4V output is controlled by this method.

Charged primary energy is sent to secondary by transformer T101. Normally, one winding power is used for one output only. But this circuit is added the switching device (diode and FET) on secondary, it control switch timing for sharing primary power by MC201.

The voltage of MC201(between pin 7 and pin 8) is pulsating. The diode (in MC201) and C204, which smooth out the pulsation to give a low ripple DC output. Same as chapter 1-5), L201 and C206 are LC filter, which reduce ripple voltage.

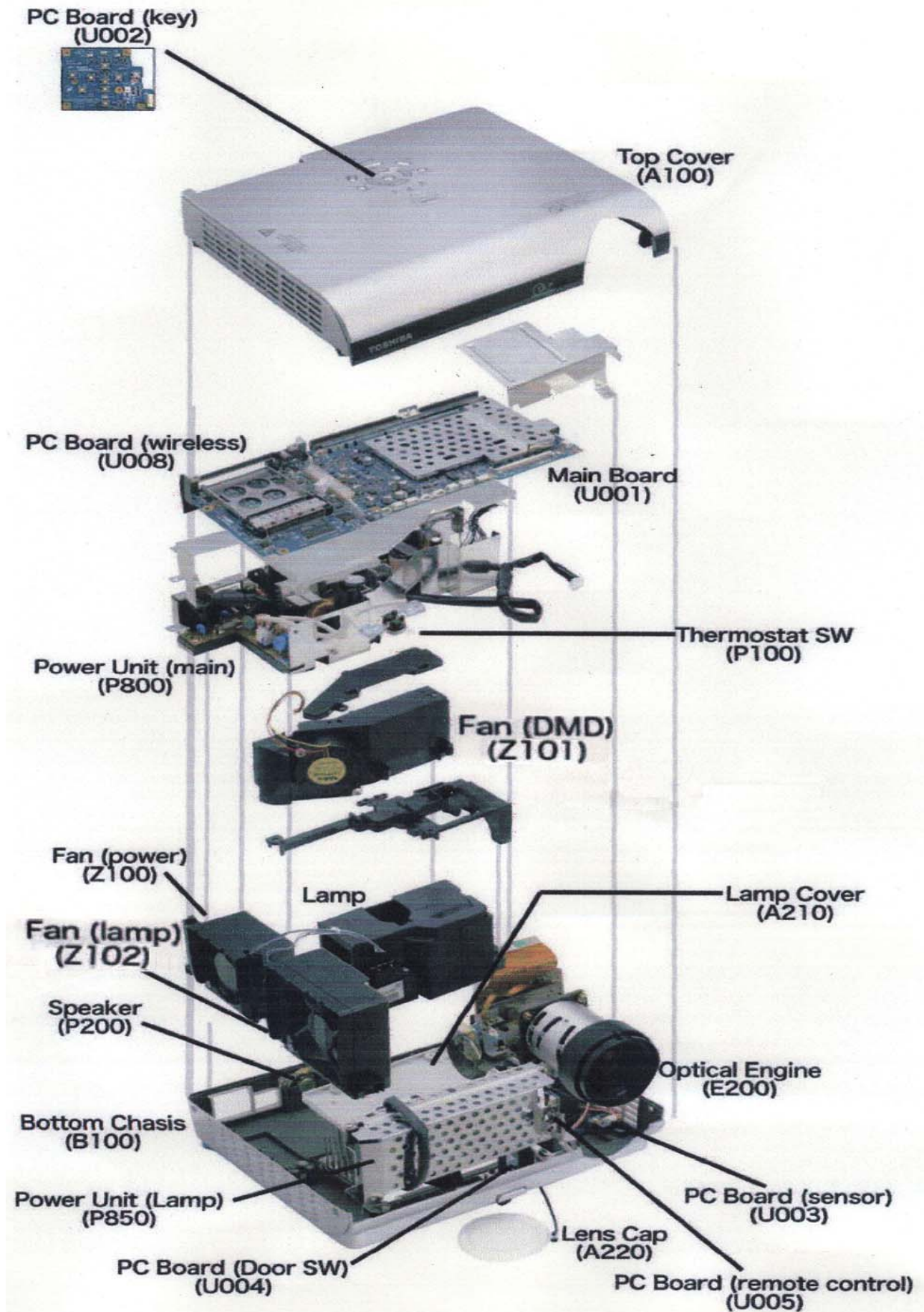
Replaceable Part Hierarchy

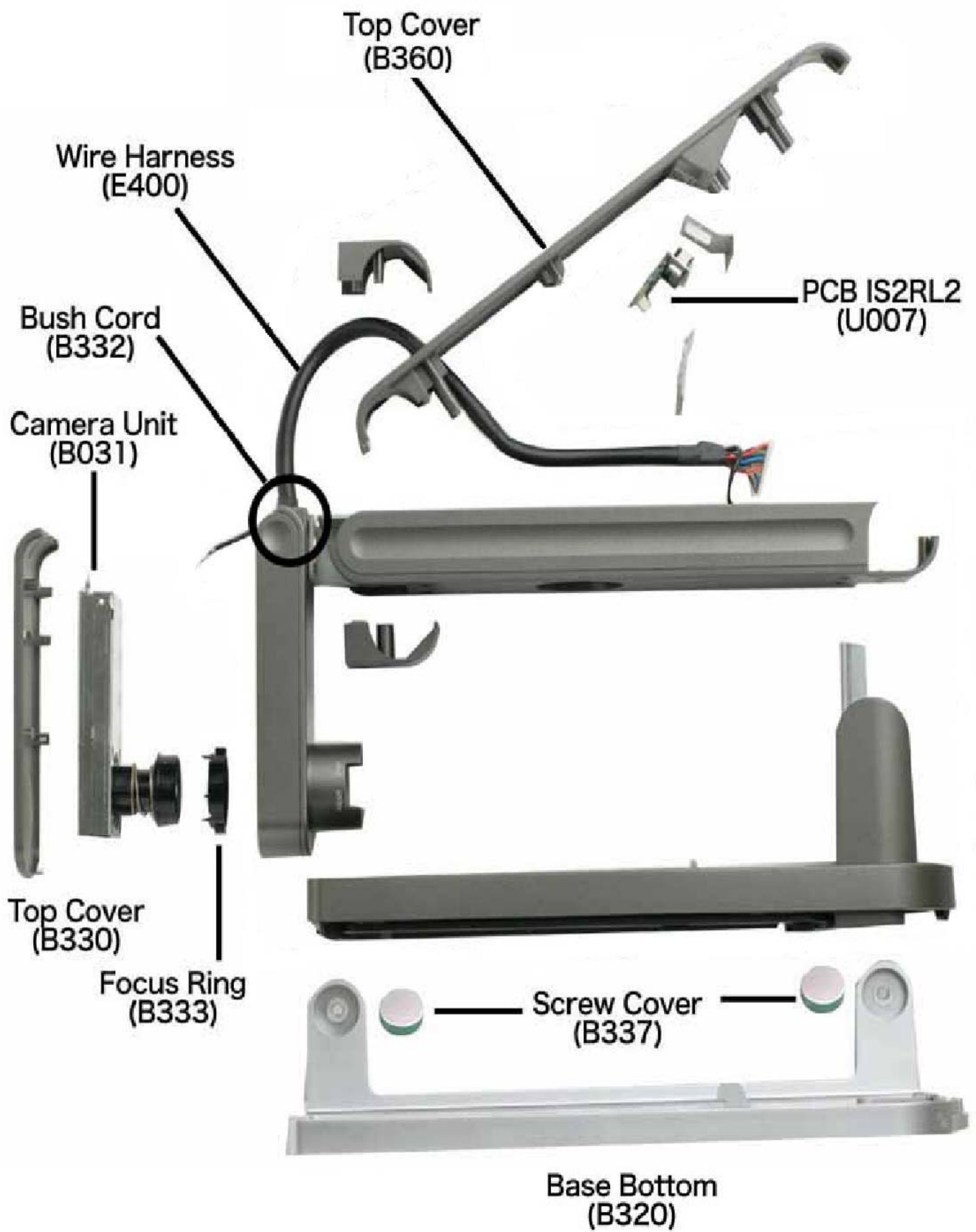
The flow chart below shows what parts must be removed to access each replaceable part in the projector.

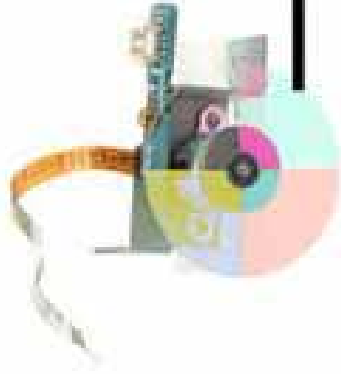
The parts on the first level (Ex. TOP Cover) are accessible without removing any other parts.

The move levels down that a part is, the more parts you need to remove in order to access it.









Color Wheel
(E203)



DMD Board
(E205)

DMD Chip
(E204)



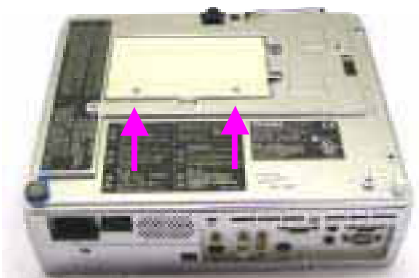
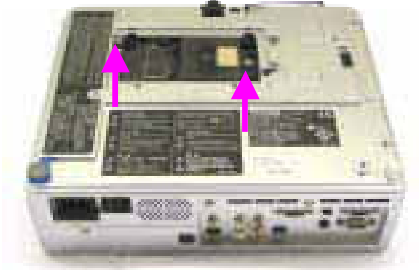
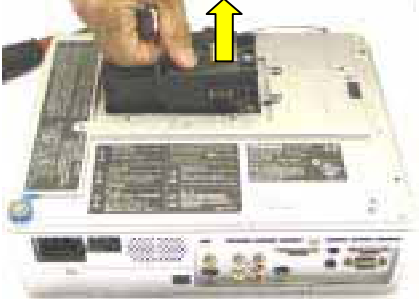

DMD Socket
(E208)



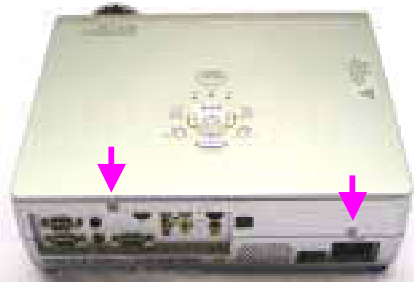



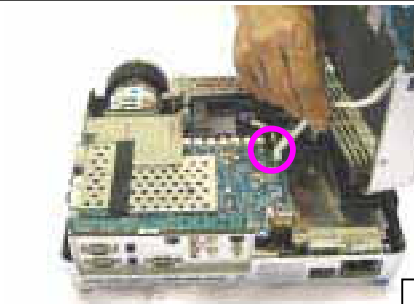
Projection Lens
(E202)

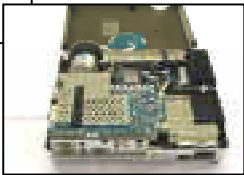


1.Lamp

Step	Figure	Explanation
1		<p>Loosen 2 screws. (These screws are retained with split washers)</p> <p>Remove the lamp cover.</p>
2		<p>Loosen 2 screws that secure the lamp module. (These screws are retained with split washers)</p>
3		<p>Lift the Lamp module and take out from the projector.</p>
4		<p>The state which removed the lamp.</p>

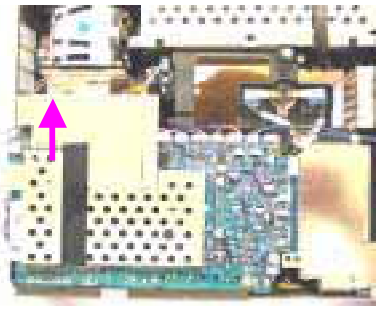
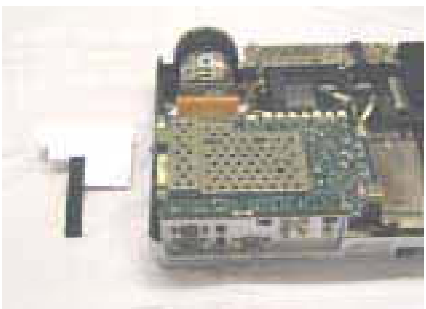
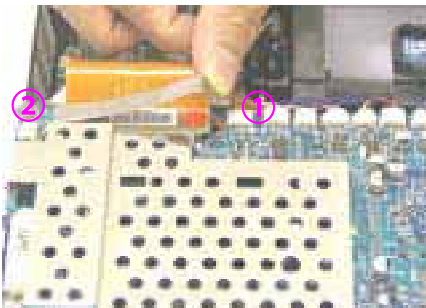
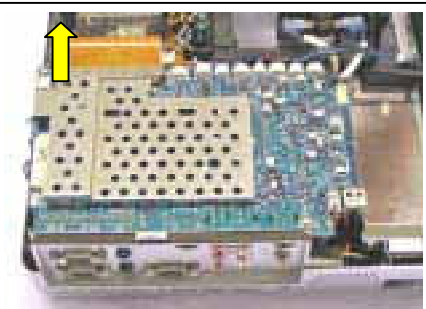
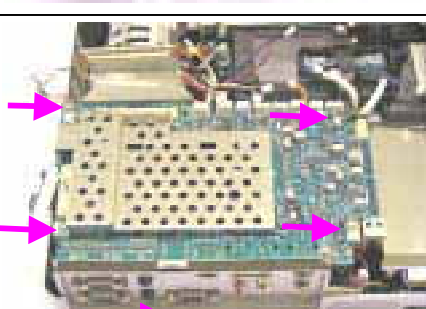
2.Top Cover

Step	Figure	Explanation
1		Remove 2 screws
2		Remove 2 screws
3		Remove 2 screws.
4		Remove 1 screw. (Bottom side)
5		Remove 1 connector.

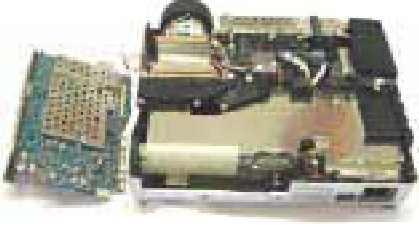




← The state which removed the top cocver.

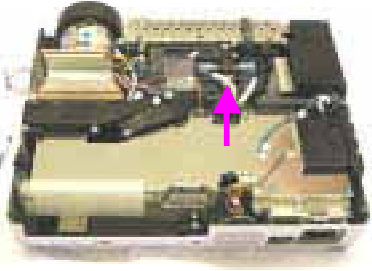
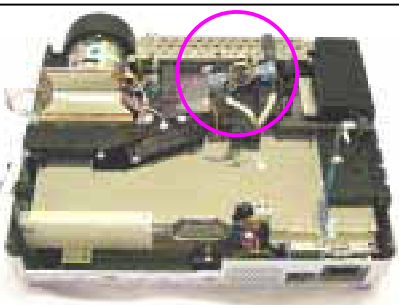
3.Main Board

Step	Figure	Explanation
1		Remove 1 screw.
2		Remove a shield board together with a tape.
3		Remove connector holder. Note: For remove, Take an action from (1) to (2)for attach. Take an action from (2) to (1)for attach.
4		Remove all off connectors. Attention) Since there are same shape of connectors been used on this main board , in order to avoid any confusion, use color making on each male and female side before disconnecting.
5		Remove 5 screws.

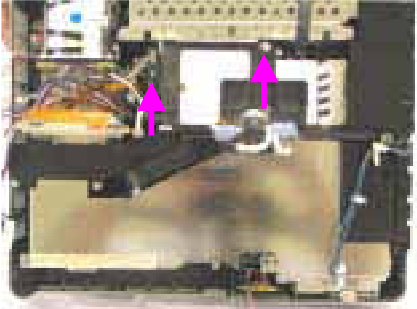
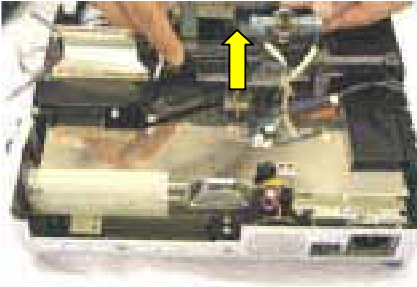

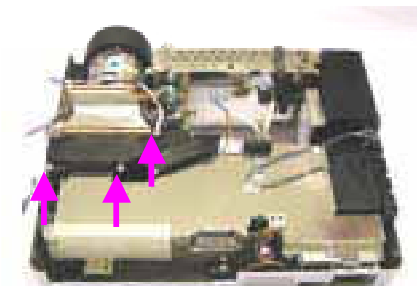
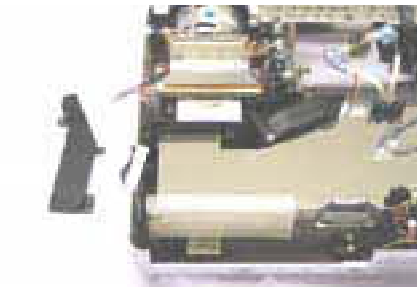
3.Main Board

Step	Figure	Explanation
6		Main Board is removed from a set.
7		Remove 1 screw.
8		Input terminal cover is removed.4

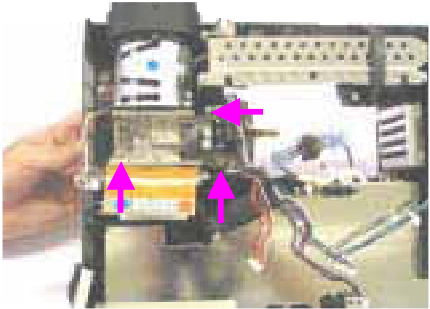
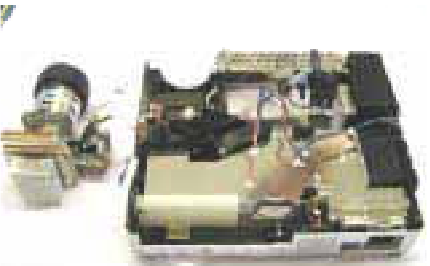
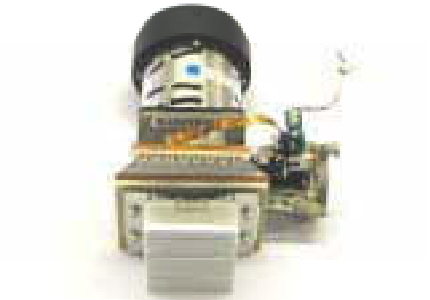
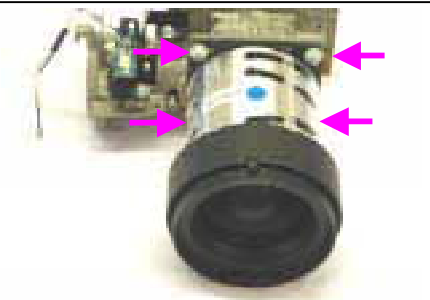

4.Thermal Switch

1		Remove 1 screw.
2		Remove thermal switch from a lamp holder.

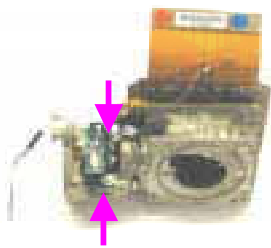

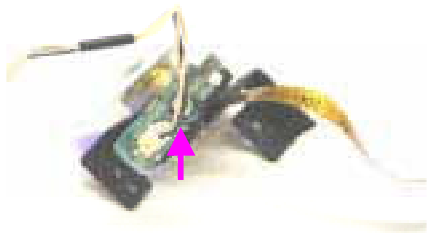


5.Lamp Frame

Step	Figure	Explanation
1		Remove 2 screws.
2		Remove lamp frame.
3		The state which removed the lamp frame.
4		Remove 3 screws.
5		Remove plate as shown.


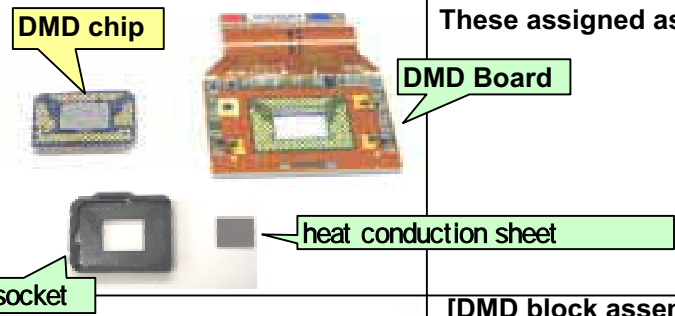
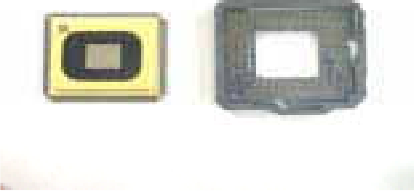
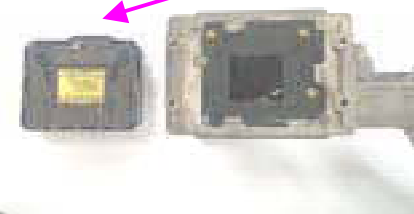
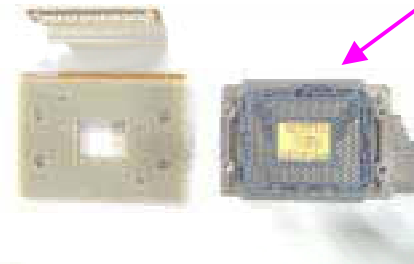
6.Optical engine

Step	Figure	Explanation
1		Remove 3 screws.
2		Take opticalengine off from bottom chassis.
3		Optical engine is take out.
4		Remove 4 screws.
5		Remove projection lens.

6.Optical engine

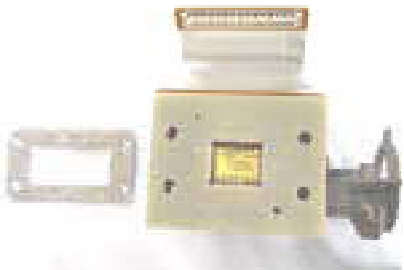

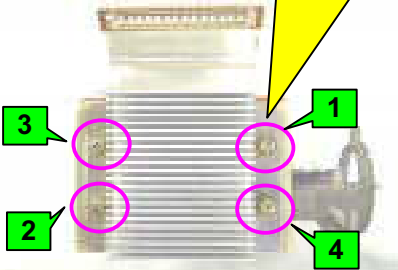
Step	Figure	Explanation
6		Remove 2 screws.
7		Remove Color wheel. (C/W) Attention) It takes care so that neither a crack nor a fingerprint may be attached.
8		Remove 1 screw.
9		Remove C/W sensor board.
10		Remove 4 screws.

6.Optical engine

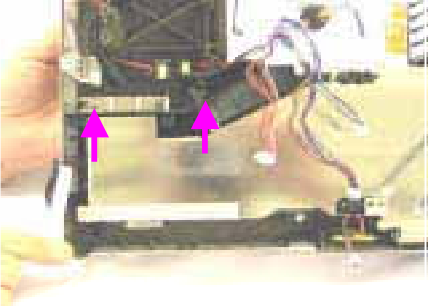
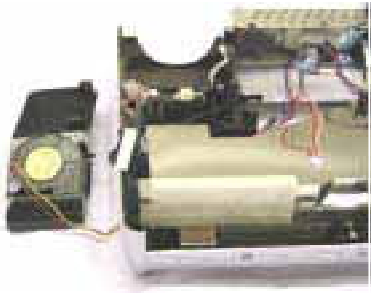

Step	Figure	Explanation
11		Composition parts for DMD chip attachment .
12		These assigned as spare parts.
13		<p>[DMD block assembly]</p> <p>DMD chip and a DMD socket are coalesced.</p> <p>Attention) In replacement of DMD, it takes measures against static electricity, such as a list strap.</p>
14		<p>Coalesced the DMD chip and the DMD socket a put on an engine frame.</p>
15		DMD Board is piled up.

Attention)
 (Remove the dust from DMD and feld lens by applying air presurs,
 (Wipe DMD terminal side by cling Alcohol to prevent bad contact.
 (The removed heat conduction sheet is not used again.

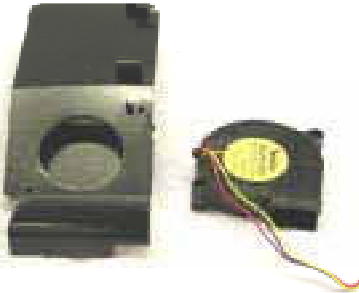
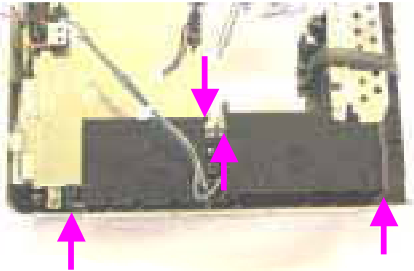

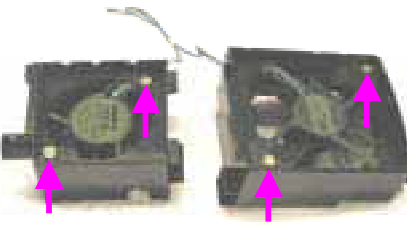

6.Optical engine

Step	Figure	Explanation
16		<p>Spacer is piled up.</p> <p>Attention) Use torque dreverr. employment. (4 Screw) Driver bolting torque : 2.5kgf·cm=24.5cN·m</p>
17	 <p>Heat sink is piled up.</p> 	<p>Fixes with 4 screws.</p> <p>Screw bolting turn.</p>

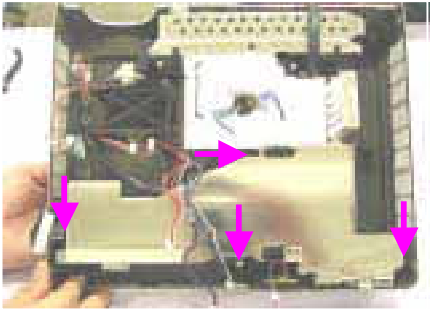

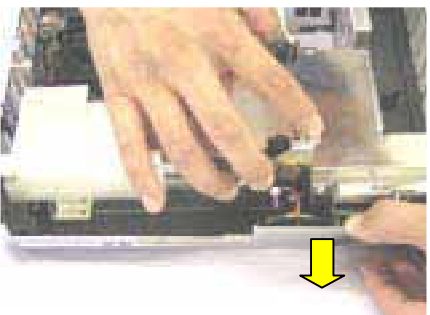
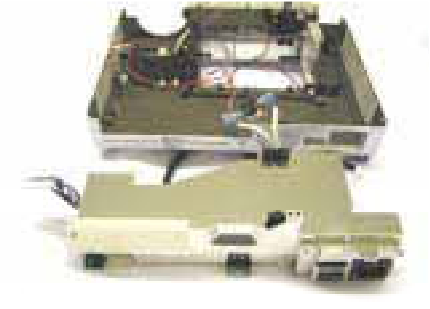
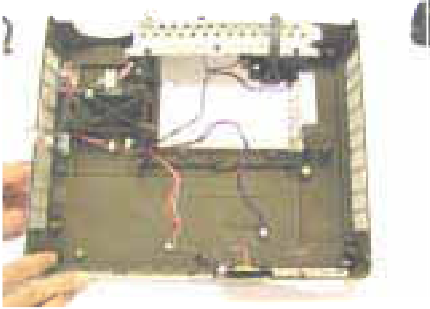
7.Fan

1		Remove 2 screws.
2		Remove DMD fan block.
3		Remove 2 screws.

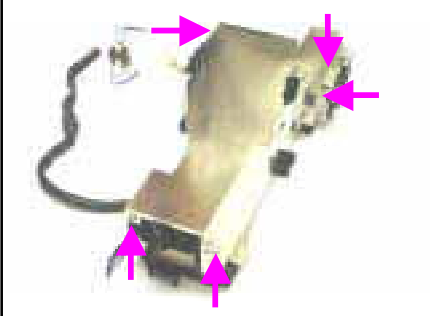

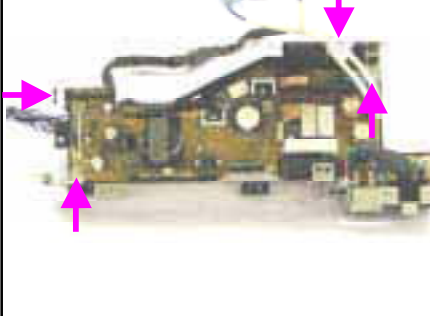

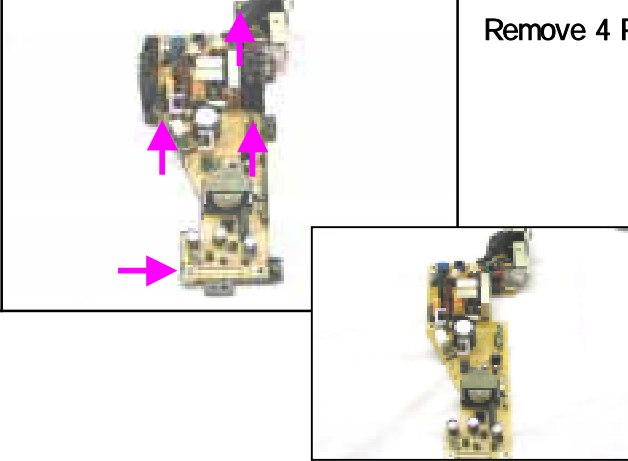

7.Fan

Step	Figure	Explanation
4		Fan is removed from a fan frame.
5		Remove 4 screws. Power supply fan block (left) 2 screws Lamp fan block (right) 2 screws
6		Fan block is removed from a bottom chassis.
7		Remove 2 screws. (Power supply fan block) Remove 2 screws. (Lamp fan block)
8		Fan is removed from a fan frame.

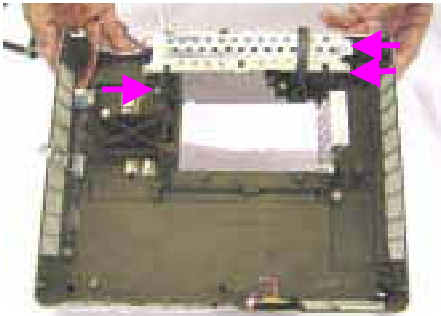
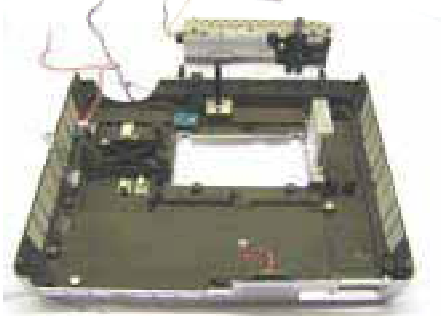
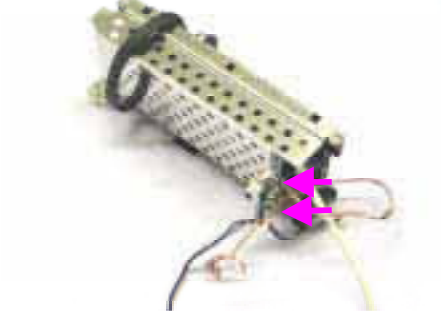
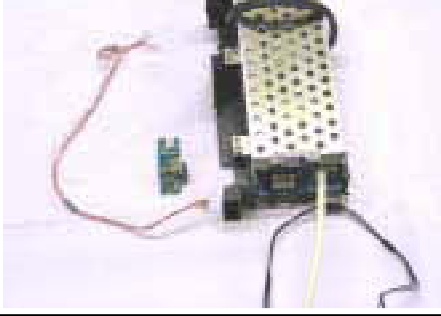
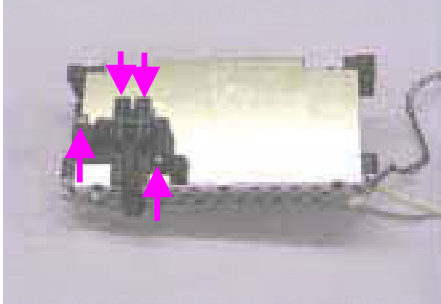
8.Power supply

Step	Figure	Explanation
1		Remove 4 screws.
2		One connector for lamp power output cable removed. (Lamp driver output cable)
3		Take out power supply from bottom chassis. (Teke action while pulling a bottom chassis outside)
4		The state power block taken out.
5		Cable wiring condition.

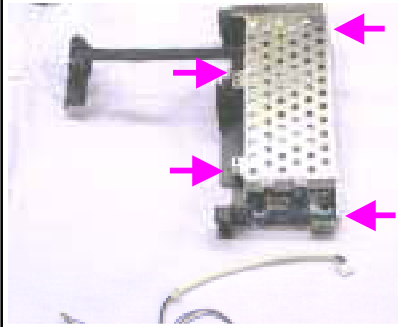
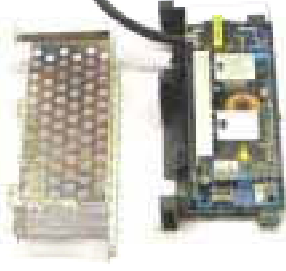
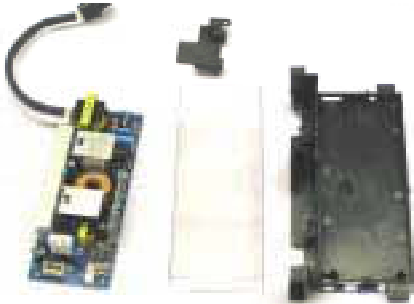
9.Power supply bloc

Step	Figure	Explanation
1		Remove 5 screws.
2		Remove top cover.
3		Remove 4 screws.
4		Shield metallic of both sides are removed.
5		Remove 4 PC board fix screws.
		 PC board

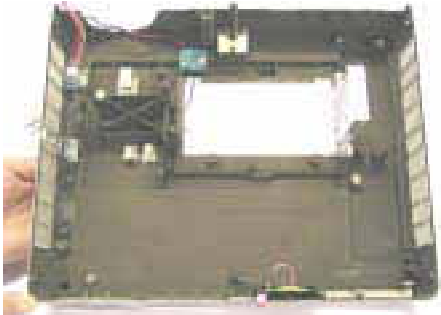
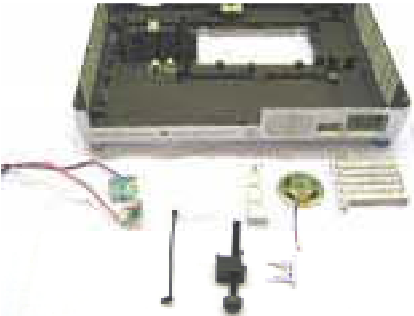
10.Lamp Driver

Step	Figure	Explanation
1		Remove 3 screws.
2		Take lamp driver out from bottom chassis.
3		Remove 2 screws.
4		Remove remote control PC board.
5		Remove 4 screws. Lamp connector is removed from a lamp driver.

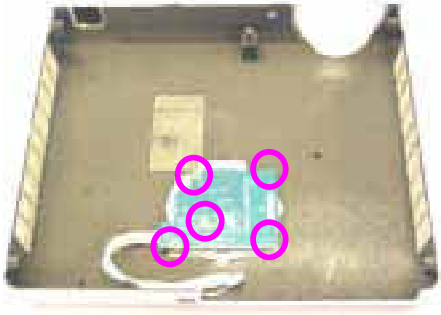

10.Lamp Driver

Step	Figure	Explanation
6		Remove 4 screws.
7		Remove shield cover.
8		Lamp driver PC board, frame, insulated sheet, and connector frame are separated.

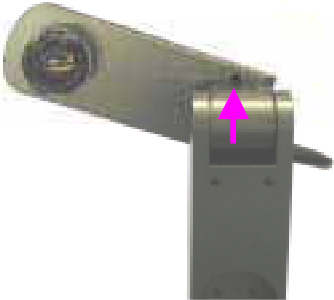
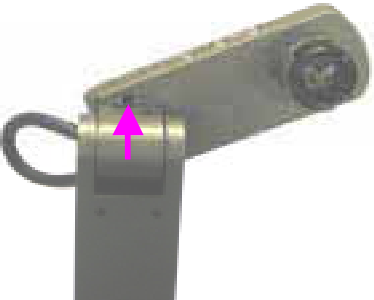

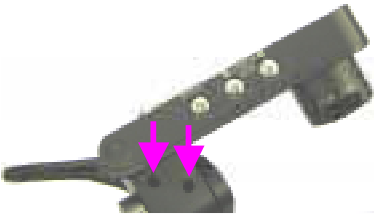

11. Bottom chassis

Step	Figure	Explanation
1		Remove door switch PC board, sensor PC board, speaker, and foot adjuster.
2		<ul style="list-style-type: none"> * Bottom chassis * Door switch PC board * Sensor PC board * Speaker * Foot adjuster

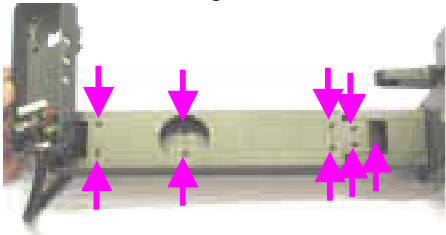
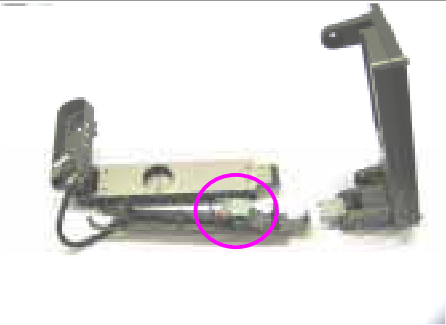
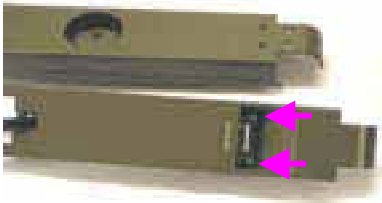


12. Key button PC board

1		Remove 5 screws.
2		Remove key button PC board.



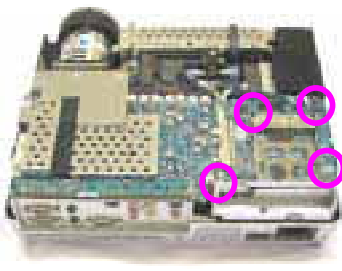
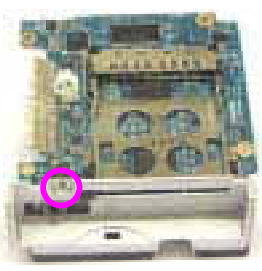
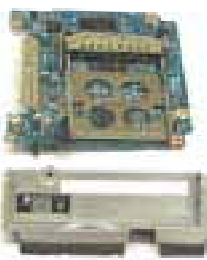
13.Document camera

Step	Figure	Explanation
1		Remove 1 screw.
2		Remove 1 screw.
3		Remove 5 screws and camera unit is taken out.
4		Remove 2 screws and arm cover is taken out.
5		The state which removed the camera unit and the focus ring.

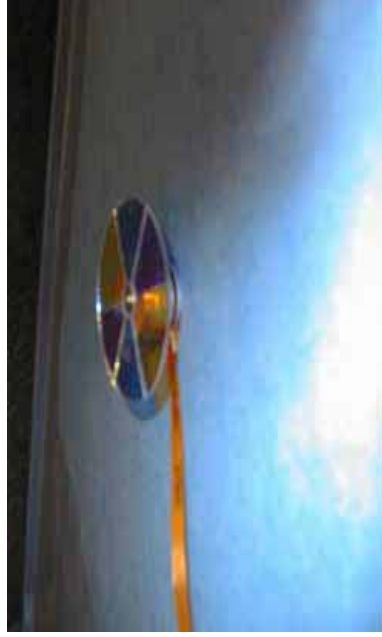
13.Document camera

Step	Figure	Explanation
6		Remove 9 screws.
7		PC board fixed metallic ornaments are removed from arm.
8		Remove 2 RGB connector fixed by nuts.
9		PC board and fixed metallic ornaments are separated.
10		Camera arm exterior parts.

14. Wireless LAN PC board

Step	Figure	Explanation
1		Wireless LAN model appearance (TDP-SW20)
2		Remove LAN card holder cover.
3		Remove 4 screws. Wireless PC board is removed.
4		Remove 1 screw.
5		Wireless PC board and cover plate are separated.

Color Wheel Handling (1)



Do not rest Color Wheel on Bearings



Do not hold Color Wheel by FPC Cable

Color Wheel Handling (2)



Hold Color Wheel by Outer Edge



Do not Apply Force to Bearing



**Use Isopropyl Alcohol, Q-tips &
Lint Free Tissue to clean glass**

Combination of Repair Parts (CW/CW Sensor Board/Main board)

◆Repair mode

	CW	CW Sensor Board	Main Board	Comment
Failure Part	×			CW Trouble
Old Sensor	Replacement	Old		When CW sensor board is old things, it is replaced with an old board.
New Sensor	Replacement	New		When CW sensor board is new things, it is replaced with a new board.
Failure Part		×		CW Sensor Board Trouble
Old Sensor		Old		When CW sensor board is old things, it is replaced with an old board.
New Sensor		New		When CW sensor board is new things, it is replaced with a new board.
Failure Part			×	Main Board Trouble
Old Sensor		New	Replacement	When CW sensor board is old things, it is replaced with a new board.
New Sensor			Replacement	When CW sensor board is new, it is not necessary to exchange.
Failure Part	×	×		Optical Engine Trouble
Old Sensor		Old		When CW sensor board is old things, replace a CW sensor board from Optical Engine.(*)
New Sensor				When CW sensor board is new, it is not necessary to replace.

(*)Optical engine for repair has CW and new CW sensor board.

◆How to recognize an old and new CW sensor board (Figure 1)

- The form of an attachment hole differs, a circle hole as the old board and an ellipse hole as a new board.
- The sizes of a board also differ.

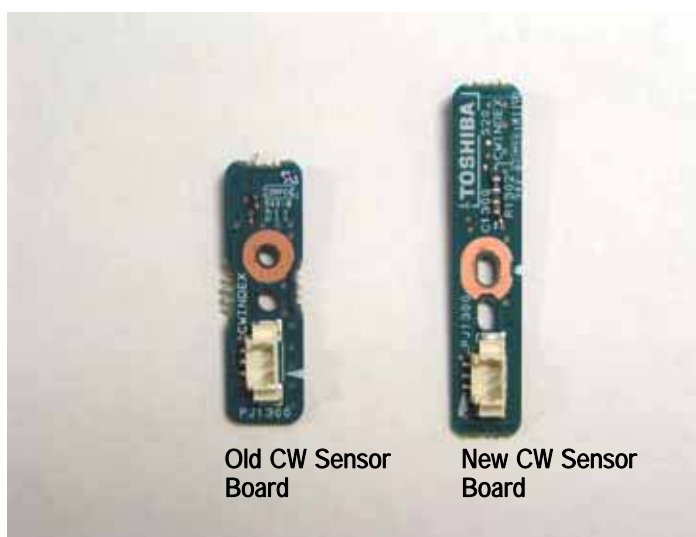
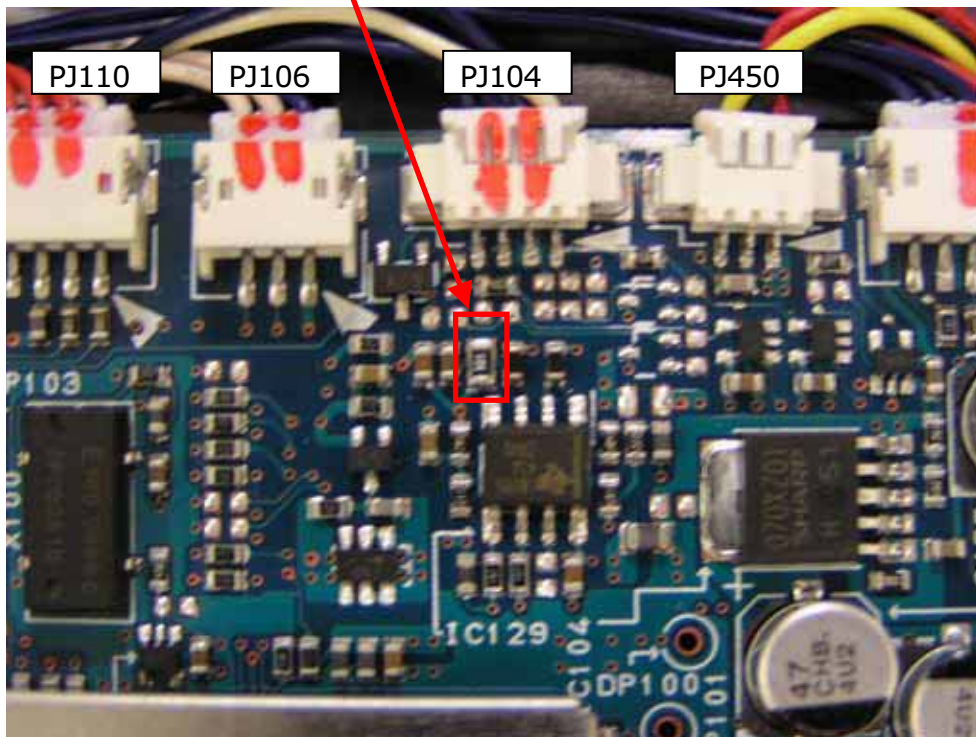


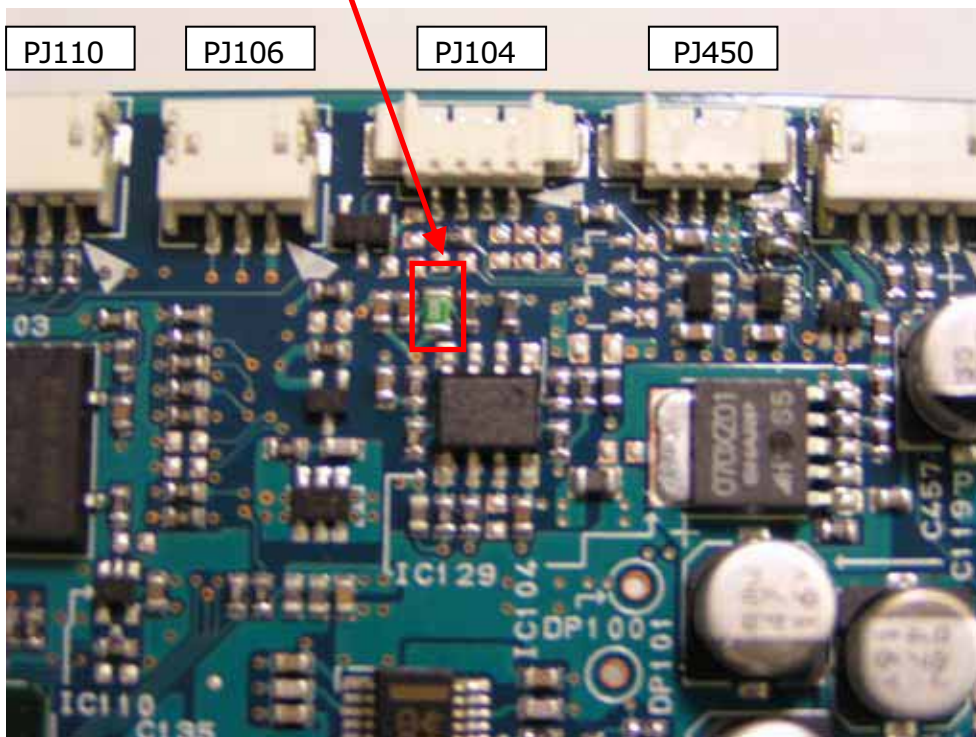
Figure 1

◆ How to recognize the MAIN Board

1. Old MAIN Board R308 -> 100 ohm



2. New MAIN Board R308 -> 0 ohm (Jumper)



Parts lists (TDP-S20)

Location No.	Description	Part Number	Block
P800	POWER UNIT (MAIN)	23122469	Main power supply
C101	CAPACITOR	23587212	
C102/103	CAPACITOR	23587213	
C111	CAPACITOR	23587214	
C121	CAPACITOR	23587215	
C122/123	CAPACITOR	23587216	
CN103	WIRE HARNESS	23587217	
D101	DIODE	23587218	
D103	DIODE	23587219	
D201	DIODE	23587220	
D202	DIODE	23587221	
F101	FUSE	23587222	
MC101	PFC MODULE	23587223	
MC201	OUTPUT MODULE	23587224	
PC101/102	PHOTO COUPLER	23587225	
Q102/103	FET	23587226	
Q107	FET	23587227	
R118	RESISTOR	23587228	
R126	RESISTOR	23587229	
SW101	SWITCH	23587230	
T101	TRANSFORMER	23587231	
Z101	VARISTOR	23587232	
P850	POWER UNIT (LAMP)	23122470	Electric parts
P100	SWITCH, THERMOSTAT	23344476	
P200	SPEAKER	23351250	
Z100	FAN (POWER)	23125922	
Z101	FAN (DMD)	23125911	
Z102	FAN (LAMP)	23125921	
A100	TOP COVER	23532845	Coating and packing parts
A210	LAMP COVER	23532847	
A220	LENS CAP	23890113	
A300	TOP TAG	23541160	
A301	LABEL RATING	23511887	
A400	CARTON, BOX	23067795	
A401	PACKING, PULP MOLD S20	23946797	
A402	CARTON, PARTITION	23067752	
A403	CARTON, PROTECTOR	23067753	
B100	BTM CHASSIS	23429133	
B110	FOOT ADJUSTER	23436845	
B111	CAP, FOOT PUSH	23890112	
E200	OPTICAL ENGINE, PJ-TB23B	23405425	Optical parts
E202	PROJECTION LENS	23405388	
E203	COLOR WHEEL	23125925	
E204	DMD CHIP	23301632	
E205	DMD BOARD	23763019	
E206	C/ W BOARD	23763020	
E207	C/ W BOARD	23763021	
E208	DMD SOCKET	23903238	
E209	THERMAL SHEET	23937056	

U001/006	PC BOARD MAIN & AV	75000812	PC Board
IC100	LOW POWER-LOSS VOLTAGE REGULATOR	75000883	
IC101	VOLTAGE REGULATOR	75000881	
IC102	LOW POWER-LOSS VOLTAGE REGULATOR	75000883	
IC104	VOLTAGE REGULATOR	75000888	
IC105	VOLTAGE REGULATOR	75000888	
IC106	DLP IMAGE PROCESSOR	75000874	
IC107	TRIPLE PROCESSOR SUPERVISORS	75000878	
IC109	WATCHDOG TIMER AND MANUAL RESET	75000889	
IC110	INVERTER	75000871	
IC112	2-INPUT AND GATE	75000891	
IC113	DIRECT RAMBUS CLOCK GENERATOR	75000879	
IC114	LOW-VOLTAGE OCTAL D-TYPE FLIP-FLOP	75000895	
IC115	16M(1MX16)BIT FLASH MEMORY	75000887	
IC116	128M(256KX16X32)BIT RDRAM	75000876	
IC119	OCTAL BUFFER/LINE DRIVER	75000892	
IC121	OCTAL BUFFER/LINE DRIVER	75000892	
IC122	LOW-VOLTAGE OCTAL D-TYPE FLIP-FLOP	75000895	
IC123	PD WITH REMOTE CONTROL	75000893	
IC125	2-INPUT AND GATE	75000891	
IC126	RS-232 LINE DRIVER/RECEIVER	75000873	
IC129	DUAL DIFFERENTIAL COMPARATORS	75000880	
IC130	DC MOTOR CONTROLLER/DRIVER	75000877	
IC131	DMD POWER AND RESET DRIVER	75000875	
IC132	2-INPUT OR GATE	75000870	
IC134	16K(2KX8)BIT EEPROM	75000872	
IC135	DUAL BUS SWITCH	75000896	
IC137	2-INPUT AND GATE	75000891	
IC138	2-INPUT AND GATE	75000891	
IC139	2-INPUT AND GATE	75000891	
IC450	VOLTAGE REGULATOR	75000903	
IC451	VOLTAGE REGULATOR	75000903	
IC452	VOLTAGE REGULATOR	75000903	
IC453	VOLTAGE REGULATOR	75000903	
IC454	8BIT 4CH D/A CONVERTER	75000884	
IC503	INVERTER GATE	75000890	
IC504	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC505	TRIPLE 2:1 MULTIPLEXERS	75000886	
IC507	SWITCHED CAPACITOR VOLTAGE CONTROLLER	75000899	
IC508	DUAL AND TRIPLE OPERATIONAL AMPLIFIERS	75000898	
IC509	ANALOG FLAT PANEL INTERFACE	75000885	
IC510	INVERTER GATE	75000890	
IC511	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC512	DUAL BUS SWITCH	75000896	
IC601	DIGITAL VIDEO DECODER	75000897	
IC603	VOLTAGE REGULATOR	75000903	
IC604	AUDIO PROCESSOR	75000882	
IC605	3W MONO BTL AUDIO AMPLIFIER	75000902	
IC606	POSITIVE VOLTAGE REGULATOR	75000901	
IC607	VOLTAGE REGULATOR	75000903	
U002	PC BOARD KEY	75000814	
U003	PC BOARD SENSOR	75000815	
U004	PC BOARD DOOR	75000816	

U005	PC BOARD REMOTE CONTROL	75000817	
IC1100	PD WITH REMOTE CONT	75000893	
			Accessory
Y100	CABLE, RGB	23368818	
Y101	CABLE, PIN-PIN 3M	23368800	
Y102	CABLE, ST-MINI--ST-MINI 3	23368798	
Y103	CABLE, MINI-PINX2 3M	23368799	
Y120	BAG, SOFT	23542013	
Y200	CD-ROM OWNERS MANUAL	23771416	
Y201	OWNERS MANUAL US,EU,UK,TW	23566404	
Y201	OWNERS MANUAL CH	23566405	
Y230	REMOCON HAND UNIT	23306561	
Y260	POWER CORD US,TW	23372148	
Y260	POWER CORD EU	23372167	
Y260	POWER CORD UK	23372149	
Y260	POWER CORD CH	23372155	
Y291	SUPPLEMENT, S20MANUAL	23589668	

Parts lists (TDP-SW20)

Location No.	Description	Part Number	Block
P800	POWER UNIT (MAIN)	23122469	Main power supply
C101	CAPACITOR	23587212	
C102/103	CAPACITOR	23587213	
C111	CAPACITOR	23587214	
C121	CAPACITOR	23587215	
C122/123	CAPACITOR	23587216	
CN103	WIRE HARNESS	23587217	
D101	DIODE	23587218	
D103	DIODE	23587219	
D201	DIODE	23587220	
D202	DIODE	23587221	
F101	FUSE	23587222	
MC101	PFC MODULE	23587223	
MC201	OUTPUT MODULE	23587224	
PC101/102	PHOTO COUPLER	23587225	
Q102/103	FET	23587226	
Q107	FET	23587227	
R118	RESISTOR	23587228	
R126	RESISTOR	23587229	
SW101	SWITCH	23587230	
T101	TRANSFORMER	23587231	
Z101	VARISTOR	23587232	
P850	POWER UNIT (LAMP)	23122470	Electric parts
P100	SWITCH, THERMOSTAT	23344476	
P200	SPEAKER	23351250	
Z100	FAN (POWER)	23125922	
Z101	FAN (DMD)	23125911	
Z102	FAN (LAMP)	23125921	
A100	TOP COVER	23532850	
A210	LAMP COVER	23532847	

A220	LENS CAP	23890113	Coating and packing parts
A300	TOP TAG	23541162	
A301	LABEL RATING	23511778	
A400	CARTON, BOX	23067751	
A401	PACKING	23946797	
A402	CARTON, PARTITION	23067752	
A403	CARTON, PROTECTOR	23067753	
B100	BTM CHASSIS	23429133	
B110	FOOT, ADJUSTER	23436845	
B111	CAP, FOOT PUSH	23890112	Optical parts
E200	OPTICAL ENGINE, PJ-TB23B	23405425	
E202	PROJECTION LENS	23405388	
E203	COLOR WHEEL	23125925	
E204	DMD CHIP	23301632	
E205	DMD BOARD	23763019	
E206	C/ W BOARD	23763020	
E207	C/ W BOARD	23763021	
E208	DMD SOCKET	23903238	
E209	THERMAL SHEET	23937056	PC Board
U001/006	PC BOARD MAIN & AV	75000868	
IC100	LOW POWER-LOSS VOLTAGE REGULA	75000883	
IC101	VOLTAGE REGULATOR	75000881	
IC102	LOW POWER-LOSS VOLTAGE REGULA	75000883	
IC104	VOLTAGE REGULATOR	75000888	
IC105	VOLTAGE REGULATOR	75000888	
IC106	DLP IMAGE PROCESSOR	75000874	
IC107	TRIPLE PROCESSOR SUPERVISORS	75000878	
IC109	WATCHDOG TIMER AND MANUAL RES	75000889	
IC110	INVERTER	75000871	
IC112	2-INPUT AND GATE	75000891	
IC113	DIRECT RAMBUS CLOCK GENERATOR	75000879	
IC114	LOW-VOLTAGE OCTAL D-TYPE FLIP-	75000895	
IC115	16M(1MX16)BIT FLASH MEMORY	75000887	
IC116	128M(256KX16X32)BIT RDRAM	75000876	
IC119	OCTAL BUFFER/LINE DRIVER	75000892	
IC121	OCTAL BUFFER/LINE DRIVER	75000892	
IC122	LOW-VOLTAGE OCTAL D-TYPE FLIP-	75000895	
IC123	PD WITH REMOTE CONT	75000893	
IC125	2-INPUT AND GATE	75000891	
IC126	RS-232 LINE DRVR/RCVR	75000873	
IC129	DUAL DIFFERENTIAL COMPARATORS	75000880	
IC130	DC MOTOR CONTROLLER/DRIVER	75000877	
IC131	DMD POWER AND RESET DRIVER	75000875	
IC132	2-INPUT OR GATE	75000870	
IC134	16K(2KX8)BIT EEPROM	75000872	
IC135	DUAL BUS SWITCH	75000896	
IC137	2-INPUT AND GATE	75000891	
IC138	2-INPUT AND GATE	75000891	
IC139	2-INPUT AND GATE	75000891	
IC450	VOLTAGE REGULATOR	75000903	
IC451	VOLTAGE REGULATOR	75000903	
IC452	VOLTAGE REGULATOR	75000903	

IC453	VOLTAGE REGULATOR	75000903	
IC454	8BIT 4CH D/A CONVERTER	75000884	
IC503	INVERTER GATE	75000890	
IC504	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC505	TRIPLE 2:1 MULTIPLEXERS	75000886	
IC507	SWITCHED CAPACITOR VOLTAGE CO	75000899	
IC508	DUAL AND TRIPLE OPERATIONAL AM	75000898	
IC509	ANALOG FLAT PANEL INTERFACE	75000885	
IC510	INVERTER GATE	75000890	
IC511	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC512	DUAL BUS SWITCH	75000896	
IC601	DIGITAL VIDEO DECODER	75000897	
IC603	VOLTAGE REGULATOR	75000903	
IC604	AUDIO PROCESSOR	75000882	
IC605	3W MONO BTL AUDIO AMPLIFIER	75000902	
IC606	POSITIVE VOLTAGE REGULATOR	75000901	
IC607	VOLTAGE REGULATOR	75000903	
U002	PC BOARD KEY	75000814	
U003	PC BOARD SENSOR	75000815	
U004	PC BOARD DOOR	75000816	
U005	PC BOARD REMOTE CONTROL	75000817	
IC1100	PD WITH REMOTE CONT	75000893	
			Accessory
Y100	CABLE, RGB	23368818	
Y101	CABLE, PIN-PIN 3M	23368800	
Y102	CABLE, ST-MINI--ST-MINI 3	23368798	
Y103	CABLE, MINI-PINX2 3M	23368799	
Y120	BAG, SOFT	23542013	
Y200	CD-ROM OWNERS MANUAL	23771417	
Y201	OWNERS MANUAL US,EU,UK,TW	23566407	
Y201	OWNERS MANUAL CH	23566411	
Y230	REMOCON HAND UNIT	23306559	
Y260	POWER CORD US,TW	23372148	
Y260	POWER CORD EU	23372167	
Y260	POWER CORD UK	23372149	
Y260	POWER CORD CH	23372155	
Y401	LAN-CARD	23771423	Wireless LAN
U008	PC BOARD FS2NE2	75000869	
IC705	WATCHDOG TIMER AND MANUAL RES	75000889	
IC706	SCHMITT-TRIGGER INVERTERS	23085093	
IC707	OCTAL BUFFER/LINE DRIVER	75000892	
B190	HOLDER PC CARD S20	23528399	
A230	COVER, PC CARD	23532852	

Parts lists (TDP-S21)

Location No.	Description	Part Number	Block
B320	COVER, ASSY-BASE BOTTOM	23532806	Document
B330	COVER, CAMERA COVER TOP	23532807	
B332	PIECE, BUSH CODE	23940106	
B333	FOCUS RING	23532213	

B337	PIECE, SCREW COVER	23940115	camera
B360	TOP COVER S21	23532803	
B031	PRODUCTS, IKK66LC	23771366	
E400	WIRE HARNESS, S21CAMERA	23507337	
U007	PCB FS2RL2	75000867	
P800	POWER UNIT (MAIN)	23122469	Main power supply
C101	CAPACITOR	23587212	
C102/103	CAPACITOR	23587213	
C111	CAPACITOR	23587214	
C121	CAPACITOR	23587215	
C122/123	CAPACITOR	23587216	
CN103	WIRE HARNESS	23587217	
D101	DIODE	23587218	
D103	DIODE	23587219	
D201	DIODE	23587220	
D202	DIODE	23587221	
F101	FUSE	23587222	
MC101	PFC MODULE	23587223	
MC201	OUTPUT MODULE	23587224	
PC101/102	PHOTO COUPLER	23587225	
Q102/103	FET	23587226	
Q107	FET	23587227	
R118	RESISTOR	23587228	
R126	RESISTOR	23587229	
SW101	SWITCH	23587230	
T101	TRANSFORMER	23587231	
Z101	VARISTOR	23587232	
P850	POWER UNIT (LAMP)	23122470	Electric parts
P100	SWITCH, THERMOSTAT	23344476	
P200	SPEAKER	23351250	
Z100	FAN (POWER)	23125922	
Z101	FAN (DMD)	23125911	
Z102	FAN (LAMP)	23125921	
A100	TOP COVER	23532845	Coating and packing parts
A210	LAMP COVER	23532847	
A220	LENS CAP	23890113	
A300	TOP TAG	23541161	
A301	LABEL RATING	23511889	
A400	CARTON, BOX S21	23067796	
A401	PACKING	23946798	
A401B	PACKING REAR	23946818	
A402	CARTON, PARTITION	23067797	
B100	BTM CHASSIS	23429133	
B110	FOOT ADJUSTER	23436845	
B111	CAP, FOOT PUSH	23890112	
E200	OPTICAL ENGINE, PJ-TB23B	23405425	Optical parts
E202	PROJECTION LENS	23405388	
E203	COLOR WHEEL	23125925	
E204	DMD CHIP	23301632	
E205	DMD BOARD	23763019	
E206	C/ W BOARD	23763020	
E207	C/ W BOARD	23763021	

E208	DMD SOCKET	23903238	PC Board
E209	THERMAL SHEET	23937056	
U001/006	PC BOARD MAIN & AV	75000812	
IC100	LOW POWER-LOSS VOLTAGE REGULATOR	75000883	
IC101	VOLTAGE REGULATOR	75000881	
IC102	LOW POWER-LOSS VOLTAGE REGULATOR	75000883	
IC104	VOLTAGE REGULATOR	75000888	
IC105	VOLTAGE REGULATOR	75000888	
IC106	DLP IMAGE PROCESSOR	75000874	
IC107	TRIPLE PROCESSOR SUPERVISORS	75000878	
IC109	WATCHDOG TIMER AND MANUAL RESET	75000889	
IC110	INVERTER	75000871	
IC112	2-INPUT AND GATE	75000891	
IC113	DIRECT RAMBUS CLOCK GENERATOR	75000879	
IC114	LOW-VOLTAGE OCTAL D-TYPE FLIP-FLOP	75000895	
IC115	16M(1MX16)BIT FLASH MEMORY	75000887	
IC116	128M(256KX16X32)BIT RDRAM	75000876	
IC119	OCTAL BUFFER/LINE DRIVER	75000892	
IC121	OCTAL BUFFER/LINE DRIVER	75000892	
IC122	LOW-VOLTAGE OCTAL D-TYPE FLIP-FLOP	75000895	
IC123	PD WITH REMOTE CONTROL	75000893	
IC125	2-INPUT AND GATE	75000891	
IC126	RS-232 LINE DRIVER/RECEIVER	75000873	
IC129	DUAL DIFFERENTIAL COMPARATORS	75000880	
IC130	DC MOTOR CONTROLLER/DRIVER	75000877	
IC131	DMD POWER AND RESET DRIVER	75000875	
IC132	2-INPUT OR GATE	75000870	
IC134	16K(2KX8)BIT EEPROM	75000872	
IC135	DUAL BUS SWITCH	75000896	
IC137	2-INPUT AND GATE	75000891	
IC138	2-INPUT AND GATE	75000891	
IC139	2-INPUT AND GATE	75000891	
IC450	VOLTAGE REGULATOR	75000903	
IC451	VOLTAGE REGULATOR	75000903	
IC452	VOLTAGE REGULATOR	75000903	
IC453	VOLTAGE REGULATOR	75000903	
IC454	8BIT 4CH D/A CONVERTER	75000884	
IC503	INVERTER GATE	75000890	
IC504	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC505	TRIPLE 2:1 MULTIPLEXERS	75000886	
IC507	SWITCHED CAPACITOR VOLTAGE CONTROLLER	75000899	
IC508	DUAL AND TRIPLE OPERATIONAL AMPLIFIERS	75000898	
IC509	ANALOG FLAT PANEL INTERFACE	75000885	
IC510	INVERTER GATE	75000890	
IC511	OCTAL BUFFER/LINE DRIVER WITH	75000894	
IC512	DUAL BUS SWITCH	75000896	
IC601	DIGITAL VIDEO DECODER	75000897	
IC603	VOLTAGE REGULATOR	75000903	
IC604	AUDIO PROCESSOR	75000882	
IC605	3W MONO BTL AUDIO AMPLIFIER	75000902	
IC606	POSITIVE VOLTAGE REGULATOR	75000901	
IC607	VOLTAGE REGULATOR	75000903	

U002	PC BOARD KEY	75000814	
U003	PC BOARD SENSOR	75000815	
U004	PC BOARD DOOR	75000816	
U005	PC BOARD REMOTE CONTROL	75000817	
IC1100	PD WITH REMOTE CONT	75000893	
			Accessory
Y100	CABLE, RGB	23368818	
Y101	CABLE, PIN-PIN 3M	23368800	
Y102	CABLE, ST-MINI--ST-MINI 3	23368798	
Y103	CABLE, MINI-PINX2 3M	23368799	
Y120	BAG, SOFT	23542013	
Y200	CD-ROM OWNERS MANUAL	23771416	
Y201	OWNERS MANUAL US,EU,UK,TW	23566404	
Y201	OWNERS MANUAL CH	23566405	
Y230	REMOCON HAND UNIT	23306561	
Y260	POWER CORD US,TW	23372148	
Y260	POWER CORD EU	23372167	
Y260	POWER CORD UK	23372149	
Y260	POWER CORD CH	23372155	
Y291	SUPPLEMENT MANUAL	23589668	
Y999	CABLE RGB S21	23368870	

All models (Following tools are specially designed for service)

———	Cable extension (power supply)	23507539	Service
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APPENDIX 1

[How to reset the User lamp time and error items]

1. How to reset the User lamp time only

Plug the power cord.

Press and hold the projector's

[Input], **[ON/Standby]**, and **[Menu]** buttons simultaneously, turn on the Main power switch.

The User lamp time is reset and +1 is added to the reset counter.

Power on and Power off (standby) for storing data.

Version	xxxx-0010-1400-1300	
User lamp time	1H-10M-10S	0
Panel time	1H-10M-10S	0
Total time	1H-10M-10S	
Sub B 66- 70- 67	Sub C 147-153-150	
KC0 0-0-0	KC1 0-0-0	
KC2 0-0-0	KC3 0-0-0	
Fan1 5082rpm	Fan2 2766rpm	Fan3 3360rpm
Temp1 28deg	Temp2 60deg	Temp3 38deg
Engine No.	A000000E0360	Altitude 0
C/W delay index	500	DMD bias E
Error count	5	Shut down 5
Err log	1-2-16-1-10-0-0-0-0-0	

2. How to reset Error count, Shut down, Error logs and Burn in mode data

Enter the Adjustment Mode (Factory Mode), press **[Input]** and **[Down]** buttons simultaneously.

Then, press **[Setup]** button for resetting Error items.

Press **[Up]**, **[Down]**, **[Left]** and **[Right]** buttons simultaneously for storing data.

T O S H I B A C O R P O R A T I O N

1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN