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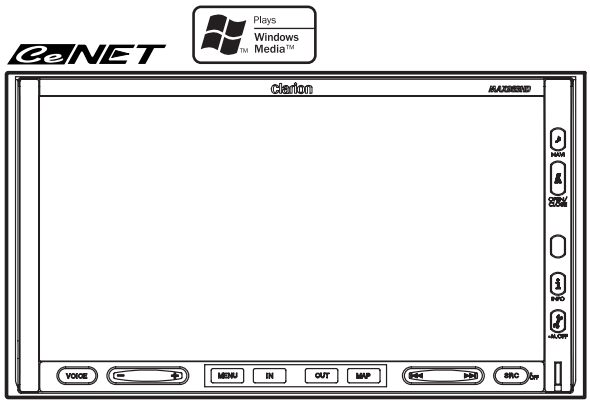
Service Manual



HDD Navigation System

Model ***MAX983HD***

(QY-5003E-B)

LF

This product is a lead free model.
Lead free solder is used in PWB stamped LF mark.
Please keep the following conditions when you repair.

1. Use lead free solder.
   * Koki's lead free solder S3X-55M 0.6mm (CLARION Parts No.642-0231-01)
   * Koki's lead free solder S3X-55M 1.0mm (CLARION Parts No.642-0231-02)
2. Use a nitrogen solder system.
3. Do not use "General solder" and "Lead free solder" together.

ORIGINAL SERVICE MANUAL

This additional service manual is designed to be used together with Model QY-5003E-A/MAX973HD
This manual has described only the difference point with the original service manual.

Original model	Manual No.
QY-5003E-A	298-6481-00

DIFFERENCE FROM ORIGINAL MANUAL

1.WIRE CONNECTION
2.EXPLANATION OF IC
3.EXPLODED VIEW/PARTS LIST
4.ELECTRICAL PARTS LIST

NOTES

* The FM/AM tuner(BL200) of this unit is DSP type. When you exchange the tuner pack(880-2091E), it is necessary to adjust for S-meter etc. The special JIG is used for an accurate adjustment.
* IC401(S29JL032H70TFI320) of Navi PWB does not have program. Please use special removal JIG at the time of IC ex-change to write the memory.
* Following IC are exposed die soldering pad type. The middle of this IC package is soldered with PWB, and it cannot remove in an ordinary soldering iron. Please use special removal JIG at the time of IC ex-change.
  1. IC201(SAF7730H/N116F) of Audio PWB
  2. IC604(LP2951ACSD/AULF) of Audio PWB
  3. IC103(R8A77700BDA01BGV) of Navi PWB
  4. IC606(D610A003BPYPA225) of Navi PWB
* This player can play the following discs. DVD video discs, Video CDs, CD text, Audio CDs.
* This player can play CD-R/RW discs previously recorded in Audio CD format or format with MP3/WMA files.
* This player can play DVD-R/RW and DVD+R/RW discs previously recorded in DVD video format or format with MP3/WMA files.
* This player cannot play DVD Audio, DVD-RAM, Video CDs, Photo CDs, etc.
* This unit can play back CD-R/RW, DVD-R/RW and DVD+R/RW discs on which MP3/WMA music data have been recorded.
* Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
* This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.
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* This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from MSLGP.

* iPod® is for legal or rightholder-authorized copying only. Don't steal music.
  iPod is a trademark of Apple Computer, Inc., registered in the U.S. and other countries.
* We cannot supply PWB with component parts in principle. When a circuit on PWB has failure, please repair it by component parts base.
  Parts which are not mentioned in service manual are not supplied.
* Specifications and design are subject to change without notice for further improvement.

SPECIFICATIONS

Navigation system

HDD: 30GB
GPS receiving frequency: 1575.42MHz, C/A Code
Sensibility: -130 dBm or better
Number of GPS channels: 15 channels

FM tuner section

Frequency range: 87.5MHz to 108.0MHz
Usable Sensitivity: 9dBf
50dB quieting sensitivity: 15dBf
Alternate channel selectivity: 70dB
Stereo separation: 32dB (1kHz)
Frequency response: 30Hz to 15kHz (-3/+3dB)

AM tuner section

Frequency range: MW;531kHz to 1602kHz
LW;153kHz to 279kHz
Usable sensitivity: 28 dBuV

DVD player section

System: Digital versatile disc system with CDDA capable
Usable discs: DVD video disc, Compact disc
Frequency response: 20Hz to 20kHz(CD)(-1/+1dB /-2dB)
Signal to noise ratio: 80dB (1kHz)
Dynamic range: 80dB (1kHz)
Distortion: 0.05%

MP3 / WMA section

Logical Format: ISO9660 level1, 2
JOLIET or Romeo

MP3
Sampling rate(kHz): MPEG-1; 32, 44.1, 48
MPEG-2; 16, 22.05, 24
Bit rate(kbps): MPEG-1; 32 to 320 /VBR
MPEG-2; 8 to 160 /VBR

WMA
Sampling rate(kHz): 22.05, 32, 44.1, 48
Bit rate(kbps): 32,48,64,80,96,128,160,192

Audio amplifier section

Maximum power output: 200W(50W x 4)
Output power: 27W x 4(DIN 45324, +B = 14.4 V)
Speaker impedance: 4ohm (4 to 8ohm allowable)

Audio/Video input section

Audio input: 130+/-60mVrms(10kohm or more)
Video input: 1.0+/-0.2Vp-p(75ohm)

Video output section

Video output: 1.0+/-0.2Vp-p(75ohm)

LCD monitor section

Screen size(mm): 156.2(W) x 82.3(H)
7-inch wide type
Display method: Transmission type TN liquid crystal
Drive method: TFT active matrix
Pixels: 336,960(480 x 3[RGB] x 234)

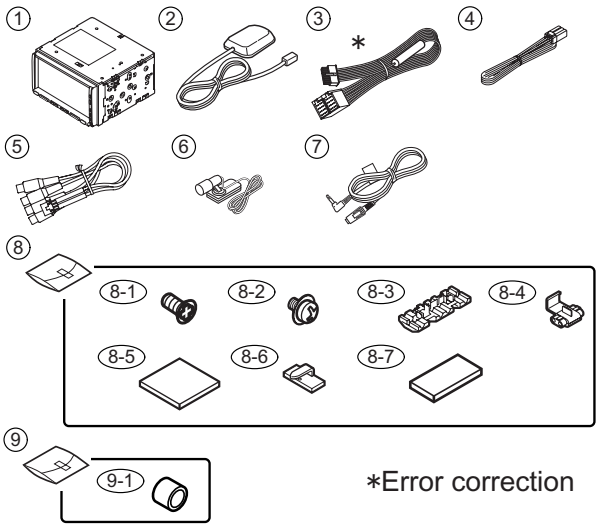
General

Power source voltage: 14.4 V DC
(10.8 to 15.6 V allowable)
Ground: Negative
Current consumption: 4.0A(at 1W)
Auto antenna rated current: 500mA less
Dimensions(mm): 178(W) x 100(H) x 162(D)
Weight: 3.0kg

COMPONENTS

QY-5003E-B

1.	Main unit	----------	1
2.	GPS antenna	096-0146-00	1
3.	Power supply lead	854-6462-50	1
	(10A Fuse	120-0100-00	1)
4.	Vehicle signal lead	854-6463-50	1
5.	RCA pin cord	855-5533-00	1
6.	Microphone	081-0030-00	1
7.	Microphone extension lead	855-0620-00	1
8.	Parts bag	----------	1
8-1.	Flat head screw(M5x8)	714-5008-4B	8
8-2.	Sems hexagonal screw(M5x8)	716-0496-51	8
8-3.	Electro tap	060-0305-00	1
8-4.	Electro tap(speed sensor)	060-0018-00	2
8-5.	Double-sided tape (ANT 28 x 28)	347-6369-00	1
8-6.	Lead holder	321-1026-01	10
8-7.	Double-sided tape (MIC 26 x 15)	347-8400-00	1
9.	Parts bag	----------	1
9-1.	Rubber cap(RCA)	345-3799-20	6



*Error correction

To engineers in charge of repair or inspection of our products.

Before repair or inspection, make sure to follow the instructions so that customers and Engineers in charge of repair or inspection can avoid suffering any risk or injury.

1. Use specified parts.
   The system uses parts with special safety features against fire and voltage. Use only parts with equivalent characteristics when replacing them.
   The use of unspecified parts shall be regarded as remodeling for which we shall not be liable. The onus of product liability (PL) shall not be our responsibility in cases where an accident or failure is as a result of unspecified parts being used.
2. Place the parts and wiring back in their original positions after replacement or re-wiring.
   For proper circuit construction, use of insulation tubes, bonding, gaps to PWB, etc, is involved. The wiring connection and routing to the PWB are specially planned using clamps to keep away from heated and high voltage parts. Ensure that they are placed back in their original positions after repair or inspection.
   If extended damage is caused due to negligence during repair, the legal responsibility shall be with the repairing company.
3. Check for safety after repair.
   Check that the screws, parts and wires are put back securely in their original position after repair. Ensure for safety reasons there is no possibility of secondary ploblems around the repaired spots.
   If extended damage is caused due to negligence of repair, the legal responsibility shall be with the repairing company.
4. Caution in removal and making wiring connection to the parts for the automobile.
   Disconnect the battery terminal after turning the ignition key off. If wrong wiring connections are made with the battery connected, a short circuit and/or fire may occur. If extensive damage is caused due to negligence of repair, the legal responsibility shall be with the repairing company.
5. Cautions in soldering
   Please do not spread liquid flux in soldering.
   Please do not wash the soldering point after soldering.
6. Cautions in soldering for chip capacitors
   Please solder the chip capacitors after pre-heating for replacement because they are very weak to heat.
   Please do not heat the chip capacitors with a soldering iron directly.
7. Cautions in handling for chip parts.
   Do not reuse removed chips even when no abnormality is observed in their appearance. Always replace them with new ones. (The chip parts include resistors, capacitors, diodes, transistors, etc).
   Please make an operation test after replacement.
8. Cautions in handling flexible PWB
   Before working with a soldering iron, make sure that the iron tip temperature is around 270℃. Take care not to apply the iron tip repeatedly(more than three times)to the same patterns. Also take care not to apply the tip with force.
9. Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.
10. Cautions in checking that the optical pickup lights up.
    The laser is focused on the disc reflection surface through the lens of the optical pickup. When checking that the laser optical diode lights up, keep your eyes more than 30cms away from the lens. Prolonged viewing of the laser within 30cms may damage your eyesight.
11. Cautions in handling the optical pickup
    The laser diode of the optical pickup can be damaged by electrostatic charge caused by your clothes and body. Make sure to avoid electrostatic charges on your clothes or body, or discharge static electricity before handling the optical pickup.

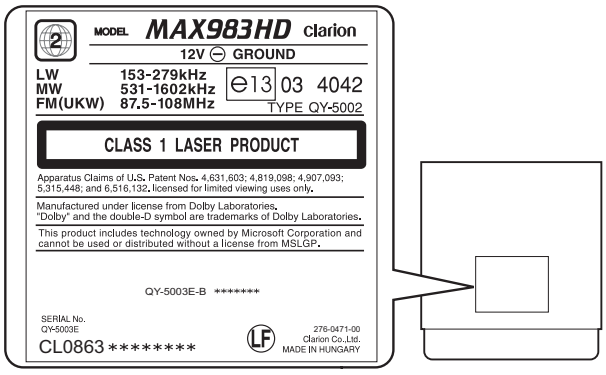
11-1. Laser diode
The laser diode terminals are shorted for transportation in order to prevent electrostatic damage. After replacement, open the shorted circuit. When removing the pickup from the mechanism, short the terminals by soldering them to prevent this damage.

11-2. Actuator
The actuator has a powerful magnetic circuit. If a magnetic material is put close to it. Its characteristics will change. Ensure that no foreign substances enter through the ventilation slots in the cover.

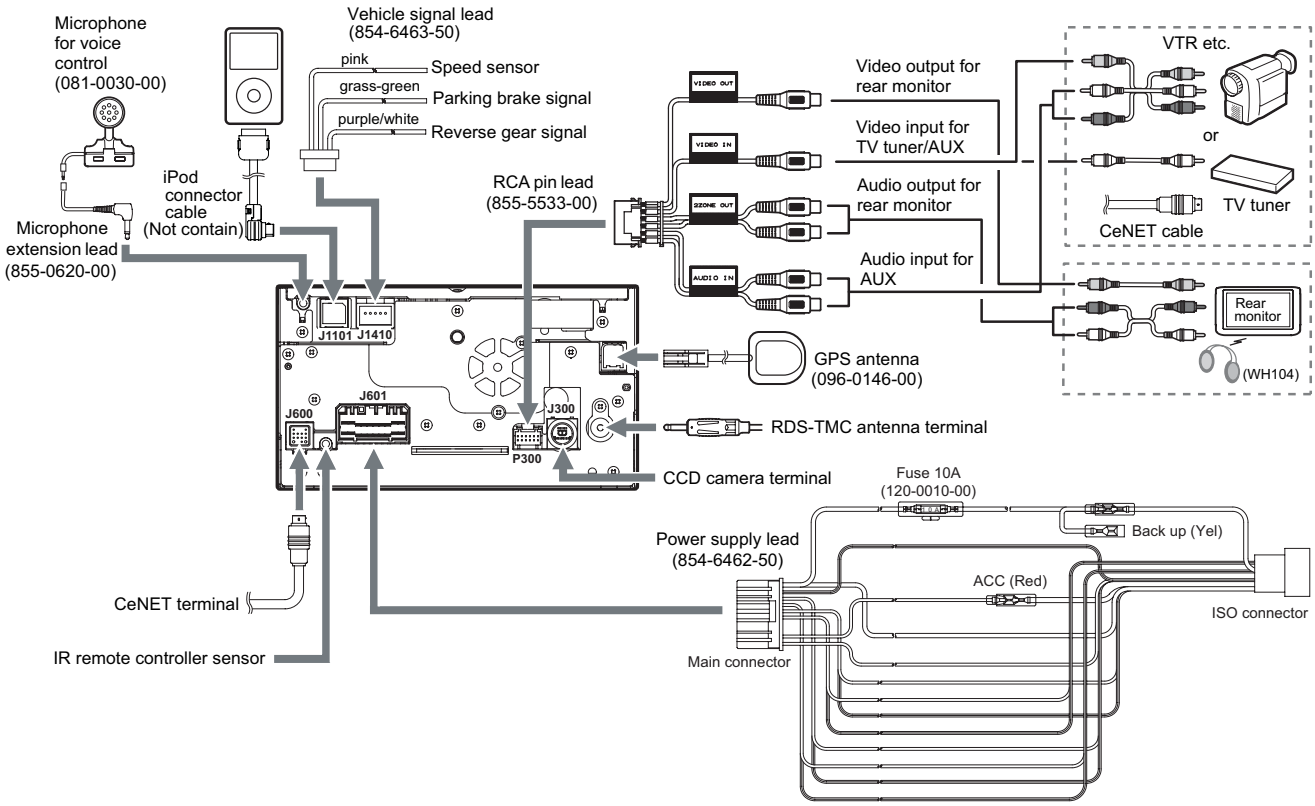
11-3. Cleaning the lens
Dust on the optical lens affects performance.
To clean the lens, apply a small amount of isopropyl alcohol to lens paper and wipe the lens gently.

CAUTION

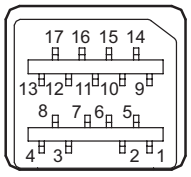
This appilance contains a laser system and is classified as a "CLASS 1 LASER PRODUCT" . In case of any trouble with this player, please contact your nearest "authorized service station" . To prevent direct exposure to the laser beam, do not to open the enclosure.



WIRE CONNECTION



J1101
iPod

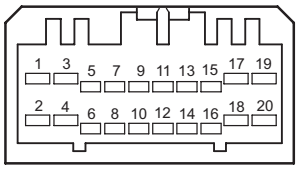


1	AUDIO-L-IN	10	N.C.
2	AUDIO-R-IN	11	N.C.
3	VIDEO GND	12	iPod-NAVI
4	VIDEO-IN	13	NAVI-iPod
5	AUDIO GND	14	N.C.
* 6	DETECT	15	N.C.
7	iPod-3.3V IN	16	N.C.
8	iPod-10V OUT	17	GND
9	IDENTFY		

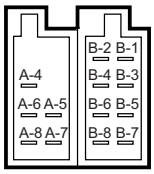
J600
Ce-NET

1	GND	8	BUS R-ch(-)
2	B/U-OUT	9	SYS-ACC
3	BUS L-ch(+)	10	BUS(-)
4	N.C.	11	BUS L-ch(-)
5	N.C.	12	ILL +B
6	BUS(+)	13	N.C.
7	BUS R-ch(+)		

J601
Main connector

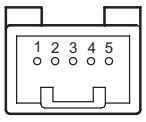


ISO connector



	Main connector		ISO connector
1	TUNER +B	BLU	A-5
* 2	N.C.	---	---
3	ACC	RED	A-7
4	N.C.	---	---
5	N.C.	---	---
6	N.C.	---	---
7	N.C.	---	---
* 8	N.C.	---	---
9	REAR R-CH(+)	PUR	B-1
10	REAR R-CH(-)	PUR/BLK	B-2
11	REAR L-CH(+)	GRN	B-7
12	REAR L-CH(-)	GRN/BLK	B-8
13	FRONT R-CH(+)	GRY	B-3
14	FRONT R-CH(-)	GRY/BLK	B-4
15	FRONT L-CH(+)	WHT	B-5
16	FRONT L-CH(-)	WHT/BLK	B-6
17	ILL	ORG/WHT	A-6
18	ILL CONT	---	---
19	BACK UP(10A)	YEL	A-4
20	GND	BLK	A-8

J1410
Vehicle signal

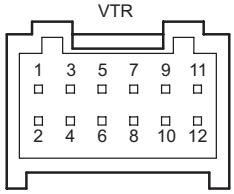


1	PKB
2	RVS
3	SPEED
4	N.C.
5	N.C.

J300
CCD

1	CAMERA-DET
2	N.C.
3	N.C.
4	VIDEO-IN
5	N.C.
6	N.C.
7	VIDEO-GND
8	N.C.

P300
VTR



1	AUDIO-R	7	2ZONE-L
2	S-GND	8	2ZONE-GND
3	AUDIO-L	9	VIDEO-IN
4	S-GND	10	VIDEO-GND
5	2ZONE-R	11	VIDEO-OUT
6	2ZONE-GND	12	VIDEO-GND

∗Error correction

EXPLANATION OF IC

052-7080-30 uPD70F3276YGJ-UEN-A

Audio System Controller

Terminal	Description		
pin 1:	A Vref 0	: - :	Reference voltage for the internal ADC.
pin 2:	A VSS	: - :	Negative voltage supply for analog section.
pin 3:	SYS ACC	: O :	ACC detect signal output.
pin 4:	SUB MUTE	: O :	Sub-zone audio mute signal output.
pin 5:	A Vref 1	: - :	Reference voltage for the internal DAC.
pin 6:	RDS CLK	: IN :	RDS clock pulse input.
pin 7:	AV ON	: O :	The ON command output to the power supply section.
pin 8:	FLASH	: IN :	The signal input for the flash memory control.
pin 9:	VDD	: - :	Positive voltage supply.
pin 10:	REG C	: - :	The capacitor connection.
pin 11:	GND	: - :	Ground.
pin 12:	X in	: IN :	Crystal connection.
pin 13:	X out	: O :	Crystal connection.
pin 14:	RESET	: IN :	Reset signal input.
pin 15:	XT I	: IN :	Oscillation terminal.
pin 16:	XT O	: O :	Oscillation terminal.
pin 17:	POWER KEY	: IN :	Power key input.
pin 18:	BU 9V DET	: IN :	Backup 9V detection.
pin 19:	BU 6V DET	: IN :	Backup 6V detection.
pin 20:	EJECT	: IN :	Eject key signal input.
pin 21:	CATS DET	: IN :	CATS detection signal input.
pin 22:	TUN SDA	:I/O:	I2BUS serial data input/output for the tuner pack.
pin 23:	TUN SCL	: O :	I2BUS serial clock output for the tuner pack.
pin 24:	TP REQ	: IN :	The request signal from the touch panel micro computer.
pin 25:	Navi/FLASH O	: O :	Serial data output to Navicore or flash memory.
pin 26:	Navi/FLASH IN	: IN :	Serial data input from Navicore or flash memory.
pin 27:	TP RST	: O :	The reset pulse output to the touch panel micro computer.
pin 28:	DIMMER	: O :	PWM output.
pin 29:	Motor Pulse	: IN :	Motor pulse input.
pin 30:	AUX/TV(CeNET)	: O :	H=AUX, L=TV(CeNET).
pin 31:	IE BUS TX	: O :	IE Bus serial data output.
pin 32:	IE BUS RX	: IN :	IE Bus serial data input.
pin 33:	GND	: - :	Ground.
pin 34:	E VDD	: - :	Positive voltage supply.
pin 35:	DSP SDA	:I/O:	The serial data input/output for the digital signal processor.
pin 36:	DSP SCL	: O :	SCL output to the digital signal processor.
pin 37:	MOTOR 1 F	: O :	The forward command output to the slide motor.
pin 38:	MOTOR 1 R	: O :	The reverse command output to the slide motor.
pin 39:	NU	: O :	Not in use.
pin 40:	NU	: O :	Not in use.
pin 41:	OFFSET DET	: IN :	The emergency signal input from the power IC.
pin 42:	Amp Standby	: O :	Standby signal output to internal amplifier.
pin 43:	NU	: IN :	Not in use.
pin 44:	NU	: IN :	Not in use.
pin 45:	TEL ON	: IN :	L = Telephone ON.
pin 46:	NU	: IN :	Not in use.
pin 47:	CARD IN	: IN :	L = SD CARD inserted.
pin 48:	CARD SNS	: IN :	L = SD CARD connected.
pin 49:	NU	: IN :	Not in use.
pin 50:	NU	: IN :	Not in use.
pin 51:	FLMD OUT	: O :	H = Flash memory rewrite.
pin 52:	N STATUS 2	: IN :	P-OFF input.
pin 53:	IRI	: IN :	The remote control signal input.
pin 54:	N STATUS 1	: IN :	H = The trouble is occurring in NAVI.
pin 55:	SPEED P	: IN :	Speed pulse input.
pin 56:	NU	: IN :	Not in use.
pin 57:	NU	: IN :	Not in use.
pin 58:	NU	: IN :	Not in use.
pin 59:	TP RX	: IN :	The serial data input from the touch panel micro computer.
pin 60:	TP TX	: O :	The serial data output to the touch panel micro computer.
pin 61:	DVD TX	: O :	The serial data output to the DVD mechanism.
pin 62:	DVD RX	: IN :	The serial data input from the DVD mechanism.
pin 63:	W REMCOM	: IN :	Wired remote controller signal input.
pin 64:	FL ENA	: O :	H = LCD power supply ON.
pin 65:	ILL C	: IN :	H = Illumination signal cancel.
pin 66:	FL ON	: O :	H = The fluorescent light of the LCD ON.
pin 67:	BEEP	: O :	Beep out.
pin 68:	NU	: IN :	Not in use.
pin 69:	NU	: IN :	Not in use.
pin 70:	NU	: IN :	Not in use.
pin 71:	NAVI MUTE	: IN :	H = Audio Mute ON.
pin 72:	LINE MUTE	: O :	Mute signal output.
pin 73:	TEST MODE	: O :	For the test.
pin 74:	OPN/CL SW	: IN :	Open/Close switch signal input.
pin 75:	VOL CCW	: IN :	Volume control pulse input from the rotary encoder.
pin 76:	VOL CW	: IN :	Volume control pulse input from the rotary encoder.
pin 77:	NU	: IN :	Not in use.
pin 78:	INES ON	: O :	Inner escutcheon illumination ON signal output.
pin 79:	NU	: IN :	Not in use.
pin 80:	NU	: IN :	Not in use.
pin 81:	LCD ON	: O :	LCD panel ON signal output.
pin 82:	FAN ON	: O :	The fan on signal output.
pin 83:	NU	: IN :	Not in use.
pin 84:	NU	: IN :	Not in use.
pin 85:	EEP DO	: O :	The serial data output to the EEP-ROM.
pin 86:	CLK out	: O :	Clock pulse output.
pin 87:	EEP CK	: O :	The clock pulse output to the EEP-ROM.
pin 88:	EEP CE 1	: O :	The chip enable signal output to the EEP-ROM.
pin 89:	EEP DI	: IN :	The serial data input from the EEP-ROM.
pin 90:	NU	: IN :	Not in use.
pin 91:	NU	: IN :	Not in use.
pin 92:	NU	: IN :	Not in use.
pin 93:	NU	: IN :	Not in use.
pin 94:	NU	: IN :	Not in use.
pin 95:	NU	: IN :	Not in use.
pin 96:	NU	: IN :	Not in use.
pin 97:	EEP CE 2	: O :	The chip enable signal output to the EEP-ROM.
pin 98:	DVD IND	: O :	DVD eject LED control.
pin 99:	AM / OEM	: IN :	L = OEM.
pin100:	EU / USA	: IN :	H = Matsushita DVD mechanism.
pin101:	NU	: IN :	Not in use.
pin102:	NTSC/PAL	: IN :	NTSC/PAL select signal input.

pin103: B VSS : - : Ground for the bus interface section.
pin104: B VDD : - : Positive voltage supply for the bus interface section.
pin105: ILL DET : IN : Illumination ON signal input.
pin106: BUS ILL : O : Illumination-ON signal output for Ce-NET.
pin107: ILL ON : O : The illumination ON signal output.
pin108: BLINK LED : O : Signal output for the LED.
pin109: DVD ON : O : DVD ON signal output.
pin110: FLMD1 : IN : Pull down.
pin111: DVD RST : O : The reset signal output to the DVD mechanism.
pin112: DSP RST : O : Reset pulse output to the DSP IC.
pin113: DSP INIT : IN : The initial finished signal input from the Radio-Audio-DSP.
pin114: SAMPLE : IN : Not in use.
pin115: NU : - : Not in use.
pin116: AM/FM 8V ON : O : AM/FM 8V ON signal output.
pin117: RDS DATA : IN : RDS serial data input.
pin118: AM/FM 5V ON : O : AM/FM 5V ON signal output.
pin119: REM ON : O : H = REM+B ON.
pin120: NU : - : Not in use.
pin121: DAC RESET : O : Reset pulse output to DAC. L = reset.
pin122: SYS MUTE : O : System muting signal output.
pin123: AMP MUTE : O : Muting signal output to the Audio Power Amplifier.
pin124: NU : IN : Not in use.
pin125: NU : O : Not in use.
pin126: Photo Sens : IN : Slide door open/close signal input.
pin127: NU : - : Not in use.
pin128: NU : - : Not in use.
pin129: NU : IN : Not in use.
pin130: FAN TEMP : IN : The input terminal of the internal ADC to detect the temperature.
pin131: V Sel 5 : O : Image signal selection.
pin132: V Sel 4 : O : Image signal selection.
pin133: V Sel 3 : O : Image signal selection.
pin134: V Sel 2 : O : Image signal selection.
pin135: V Sel 1 : O : Image signal selection.
pin136: CAMERA DET : IN : CAMERA is connected.
pin137: NU : IN : Not in use.
pin138: NU : IN : Not in use.
pin139: NU : IN : Not in use.
pin140: DSP KAGC : IN : Connect to ground.
pin141: REM DET : IN : Remote controller wire short detection.
pin142: ST REM O : IN : Remote controller signal input.
pin143: AUTO ANT : O : Motor antenna control signal output.
pin144: ACC IN : IN : ACC ON flag input.

DIFFERENCE EXPLODED VIEW/PARTS LIST

Main section

(Refer to page 24-25 of the original service manual.)
The following parts are difference parts.

NO.	PART NO.	DESCRIPTION	Q'TY
1	940-8178-01	IN-ES-ASSY	1
49	276-0471-00	SETPLATE	1

Escutcheon section

(Refer to page 26 of the original service manual.)
The following parts are difference parts.

NO.	PART NO.	DESCRIPTION	Q'TY
1	370-6230-11	ESCUTCHEON	1

DIFFERENCE ELECTRICAL PARTS LIST

Audio PWB section(B1)

(Refer to the original service manual,page 28.)
The following parts are difference parts.

REF No.	PART No.	DESCRIPTION
IC102	052-7080-30	uPD70F3276YGJ-UEN-A