SERVICE MANUAL

Color Television Receiver

Model: PHILIPS TDA9378 SERIES

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner when operating chassis.

These receivers have a “polarized” AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the “ground side” and the narrow blade connects to the hot “side” of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the “polarized” type.

Since the chassis of this receive is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain High voltage (HV) maybe cause X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receive that could cause a rise in high voltage, or operating supply voltages. No changes should be made the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts man creats may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and he CRT dag grounding device. When servicing the High Voltage System remove static charges from it by connecting a 10K Ohm resistor in series Wan insulated wire(such as test probe) between the picture tube dag and 2^{nd} anode lead(Have AC line cord disconnected from AC supply).

The picture tube use in this receiver employ integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely, Keep others without shatter proof goggles away.

Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers of shiedls, isolation resistor-capacitor networks, mechanical insulators etc.

3. To be sure that not shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V, AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to owner.

If a reliable leakage current tester is not available, this allernate method of measurement should be used. Using two clip leads, connect a 1500 Ohm, 10 watt resistor paralleled by a 0.15uF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 Ohms per Volt, or higher, sensitivity to measure this AC voltage drop across the resistor,. Any reading of 0.35 volt RMS of more is excessive and indicates potential shock hazard which must be corrected before returning he receiver to the owner.

ALIGNMENT PROCEDURES

PLEASE READ BEFORE ATTEMPTING SERVICE

1. Use an Isolation Transformer when performing any service on this chassis.
2. Never disconnect any leads while receiver is in operation.
3. Disconnect all power before attempting an repairs.
4. Do not short any porsition of the circuit while the power is on.
5. For safety reasons, replacing any components should be according with identical replacement parts (SEE PARTS LIST).
6. Before testing, warm up the TV for at least 30 minutes and demagnetize the CRT with an external degaussing coil.
7. When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
8. Inferior silicon grease can damage IC’s and transistors. When replacing IC’s and transistors, use only specified silicon grease,. Remove all old silicon when applying new silicon.
9. Before removing the anode cap, discharge eiecticity because it contains high voltage.

Service Flow Chart

Power supply

Check input voltage

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Check voltage of C911+(12V)

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Check voltage of C919+(5V)

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Check voltage of C155+(3.3V)

↓

Check RY901 turn on

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Check voltage of C929+(135V)

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Check voltage of C945+(48V)

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Check voltage of C939+(12V)

↓

Check voltage of C946+(-12V)

↓

Check voltage of C994+(9V)

↓

Check voltage of C933+(8V)

↓

Check voltage of C930+(5V)

CPU circuit

Check voltage of N103 pin54,pin56,pin61(3.3V)

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Check waveform of N103 pin58,pin59

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Check waveform of N103 pin2,pin3

↓

Check voltage of N602 pin8 (5V)

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Check waveform of N602 pin5,pin6

Vertical circuit

Check voltage of N103 pin14,pin39(8V)

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Check waveform of N103 pin26

↓

Check waveform of N103 pin21,pin22

↓

Check voltage of N401 pin3(48V)

↓

Check voltage of N401 pin2(12V)

↓

Check voltage of N401 pin4(-12V)

↓

Check waveform of N401 pin1,pin7

↓

Check waveform of N401 pin5

Horizontal circuit

Check voltage of N103 pin14,pin39(8V)

Check waveform of N103 pin33

Check voltage of C945+(48V)

Check waveform of V401-B

Check waveform of V401-C

Check voltage of C929+(135V)

Check waveform of V402-B

Check waveform of V402-C

Check voltage of C415+(200V)

Video circuit

Check voltage of C109+(33V)

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Check voltage of C106+(5V)

↓

Check waveform of tuner pin4,pin5

↓

Check waveform of tuner pin11(IF)

↓

Check voltage of L103 and L104(8V)

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Check waveform of N103 pin23,pin24

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Check waveform of N103 pin38

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Check waveform of N103 pin40

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Check waveform of N802 pin12, pin13

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Check waveform of N302 pin12, pin14, pin16

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Check waveform of N103 pin42, pin43

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Check waveform of N103 pin51,pin52,pin53

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Check video amplify circuit

Audio circuit

Check waveform of N103 pin28

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Check waveform of N103 pin44

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Check waveform of N201 pin11

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Check voltage of N201 pin10(9V)

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Check waveform of N201 pin8, pin9

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Check waveform of N201 pin21, pin27

↓

Check waveform of N801 pin3,pin5

↓

Check voltage of N801 pin6(8V)

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Check waveform of N801 pin16,pin17

↓

Check waveform of N801 pin15,pin18

↓

Check waveform of N202 pin1,pin9

↓

Check voltage of N202 pin7

↓

Check waveform of N202 pin4,pin6

↓

Check waveform of speaker

TEST EQUIPMENT

1. Standard Signal Generator (PT5820)
2. Oscilloscope
3. Digital Voltmeter
4. High Voltage Meter(40KV)
5. Demagnetizing Coil

Tip: some adjustments must be performed in the SERVICE menu. You can enter the SERVICE menu in the following way:

1. Press the MENU button on the remote control then press the INFO button on the remote control at least 5 times immediately.
2. Press the CH+/- buttons to select the desired mode or press 0-9 number buttons to enter the SERVICE "X" menu directly and then press the CH+/- buttons to select the desired mode.
3. Press the VOL+/- buttons to change the settings.

IF ADJUSTMENT

1.Enter the SERVICE menu and press the number button "4" on the remote control to bring up SERVICE 4.

2.Set the IFFS to "1".

B+ ADJUSTMENT

TEST EQUIPMENT: DIGITAL METER

1.Operate the TV set with AC 120V.

2.Connect the digital voltmeter + lead to C929 and GND. Adjust the RP901 until the meter reading DC135±0.5V.

GEOMETRY ADJUSMENT

1.Receive a geometry pattern.

2.Enter the SERVICE menu (SERVICE 1 for horizontal and SERVICE 2 for vertical).

3.Select a value between 0 and 63, and the changed value is stored immediately.

Horizontal:

6PAR: Horizontal Parallelogram

Set the horizontal parallelogram to change to rectangle or trapezium.

6BOW: Horizontal Bow

Set the vertical lines straight.

6HSH: Horizontal Delay (horizontal shift)

Set the horizontal centre of the picture at the centre of the tube.

6EWW: Horizontal Width

Set the correct picture width.

6EWP: East-west parabola correction

Set the vertical lines at the sides of the screen straight.

6UCR: East-west corner-correction

Set the vertical lines in the upper corners straight.

6LCR: East-west corner-correction

Set the vertical lines in the lower corners straight.

6EWT: Trapezium correction

Set the vertical lines as vertical as possible.

Vertical:

6VSL: Vertical S-correction

Set the vertical lines as vertical as possible.

6VAM: Vertical Amplitude (picture height)

Set the correct picture height.

6SCL: Vertical Linearity

Set the height of the squares in the top and bottom of the picture so that they are equal of the height.

6VSH: Vertical Shift

Set the vertical centre of the picture at the centre of the tube.

WHITE BALANCE ADJUSTMENT

1.Enter the TV menu and set the color mode to “NORMAL”.

2.Receive a black-white pattern with color sync signal.

3.Adjust the CONTRAST and BRIGHTNESS in such a way that the brightness value of the black area is 5 nit and the white is 80 nit.

4.Enter the SERVICE 3 menu and adjust RED, GRN, WPR, WPG and WPB in such a way that X and Y have the following values:
X=0.248, Y=0.299

FOCUS ADJUSTMENT

1.Set CONTRAST control to maximum position and BRIGHTNESS control to middle position.

2.Adjust FOCUS control (on the FBT) to obtain the sharpest and clearest picture on the CRT.

RF AGC

1.Receive the signal of channel 13 (VHF HIGH).

2.Set the input field strength to 60 dBμV.

3.Adjust RF AGC (TOP, in SERVICE 4) control to the point where noise is the least.

OSD ADJUSTMENT

1.Receive the TV Signal with caption text.

2.Enter the SERVICE 2 menu..

3.Select a correct value for the items below.

6VOF: Vertical OSD position alignment

6CCV: Vertical OSD of CCD position alignment

HOF: Horizontal OSD position alignment

CCHF: Horizontal OSD of CCD position alignment

VX: Vertical Zoom (select 25)

KP2152WY

TO KEY BOAD XP601

TO CRT DRIVER XP601

MAIN BOARD

SOUND PROCESS

VID3

OPTION

KEY

CRT DRIVER

NOTE:

(1) ALL CAPACITORS ARE IN μF UNLESS OTHERWISE NOTED.
ALL CAPACITORS ARE 50V UNLESS OTHERWISE NOTED.
(2) CAPACITORS NOT SPECIFICALLY DESIGNATED ARE CERAMIC CAPACITORS.
(3) ALL RESISTORS ARE IN OHM 1/6 WATT UNLESS OTHERWISE NOTED.
(4) RISISTORS NOT SPECIFICALLY DESIGNATED ARE CARSON FILM RESISTORS.
(5) THIS CIRCIUT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
(6) ⚠ DESIGNATES A SAFETY CRITICAL COMPONENT.

媒体编号	旧底图总号	底图总号	日期	签名

标记	数量	分区	更改单号	签名	日期	标记	数量	分区	更改单号	签名	日期	等级	标记

拟制			第	张
审核			共	张
工艺				
标准化				
批准				

格式(3) 制图± 幅面±1