Service Manual

PERSONA 9

Hospital-Grade Television

Model P9TV Color Television

Better Solutions Are Within Reach®

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Graphical Symbols

This lightning flash with arrowhead symbol, within an equilateral is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This service manual contains various CAUTIONS and WARNINGS indicated by triangular warning symbols, which should be read and understood in order to minimize the risk of personal injury to service personnel and customers. The possibility exits that improper service methods may damage the equipment or result in property damage or user injury. It also is important to understand that these CAUTIONS and WARNINGS are not exhaustive. PDI could not possibly know, evaluate and advise the service industry of all conceivable methods in which service might be done or of the possible hazardous consequences of each method. Accordingly, a servicer who uses a service procedure or tool which is not recommended by PDI must first satisfy themselves thoroughly that neither their safety nor the safe operation of the equipment will be compromised by the service method selected.

Product Safety Servicing Precautions

1. **MODIFICATIONS** Do not attempt to modify this product in any way without written authorization from PDI. Unauthorized modifications will not only void the warranty, but may lead to your being liable for any resulting property damage or user injury.

Voltage	Range
AC	18-35 Volts
DC	18-33 Volts

2. **POWER SOURCE** Use only a power source from a CSA Certified / UL Approved Class 2 Power Supply suitable for use in a Health Care Facility. This TV will operate on either DC or AC voltage.

3. **X-RAYS** To reduce the risk of possible exposure to X-Radiation, observe the *"X-Ray Radiation"* section in this service manual.

HOT CHASSIS
Use of isolation transformer required.

4. **HOT CHASSIS** This television employs a "HOT CHASSIS". An isolation transformer should be used during any dynamic service to avoid a possible shock hazard.

5. **REPLACEMENT PARTS** Parts critical to the safe operation of this television are marked with a ⚠ on schematics or drawings. Replace only with the part number specified.

6. **SAFETY CHECKS** This hospital grade television requires special safety checks before returning to service. Observe and follow the *"Safety Check"* section in this service manual.

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Copyright, Disclaimer, and Trademarks

Copyright

Disclaimer

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UL Recognition and Product Identification

UL Recognition

The model PDI-P9TV Hospital Grade TV Receiver is a specialized television. This TV is intended for entertainment and educational purposes for use in a hospital, a nursing home, a medical-care center, or a similar health-care facility in which installation is limited to a non-hazardous area in accordance with the National Electrical Code, ANSI/NFPA 70. It is not intended for use in a critical-care area in which a patient may be treated with an externalized electrical conductor, such as a probe, a catheter, or other electrode, connected to the heart: however, the product is likely to be contacted by a patient during his stay in a health-care facility.

This device is safety tested and listed by the Underwriters Laboratories as a product suitable for use in health care facilities in both the United States and Canada.

Hospital Grade
TV Receiver
E235510
3FW0

This device is safety tested and listed by the Underwriters Laboratories as a product suitable for use in health care facilities in both the United States and Canada.

For additional information regarding PDI Communication Systems products, safety testing, and approvals;

1. Go directly to the Underwriter Laboratories web site at

   http://www.ul.com/database

2. Search for PDI products by clicking on ***UL File Number***.

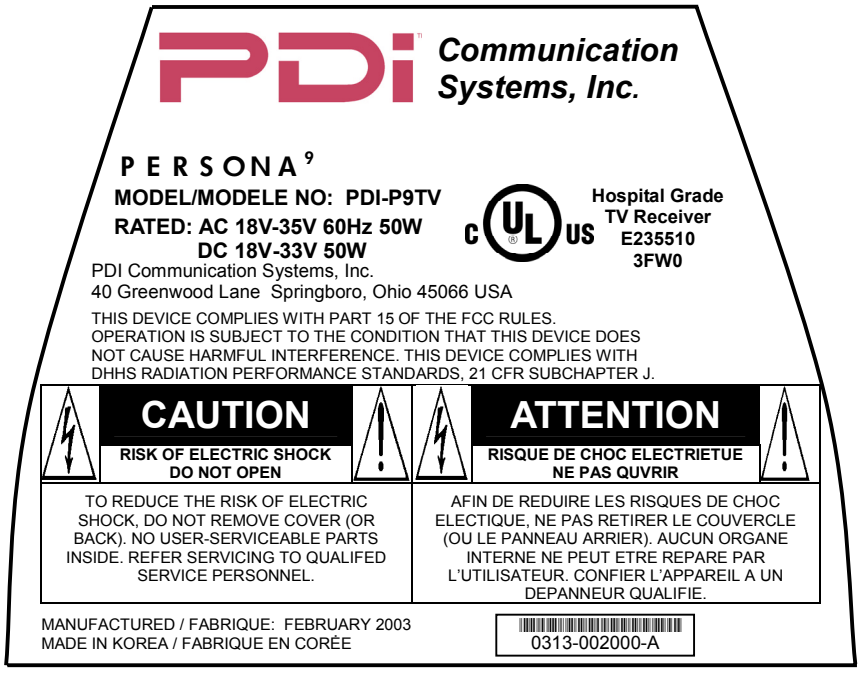
3. Enter one of PDI's health-care products UL file number.

   E136994 E235510

Product Identification

PRODUCT LABEL

The P9TV is easily identified using the product label located in the center of the back cabinet..



SERIAL NUMBER

The serial number is located at the lower right corner of the product label.

Serial Number Format Explanation

a. Digits **01** are year of manufacture. Example year 2003 would be 03.

b. Digits **23** are week of manufacture. Example 13 would be week 13.

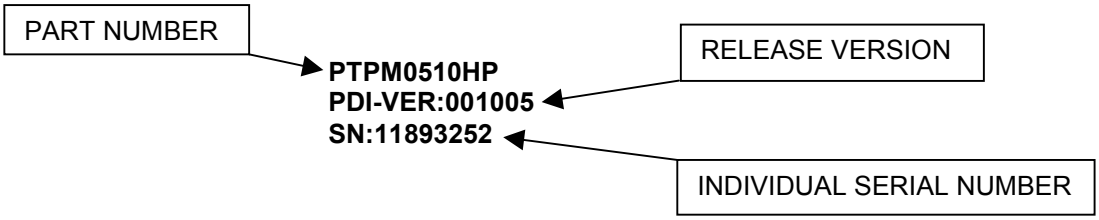
c. Digits **456789** is the TV unit serial number. Example 000001 is the first unit manufactured.

d. Letter **A** is single letter denoting the TV model revision level. Example A would be the initial model. First model revision would be B. The second model revision would be C and so on.

Printed Circuit Board Identification

Main Chassis

The main chassis contains part number, release version, and individual board serial numbers silk-screened on both the top and bottom sides of the board with a location at the back near the LED indicators.



CRT Circuit Board

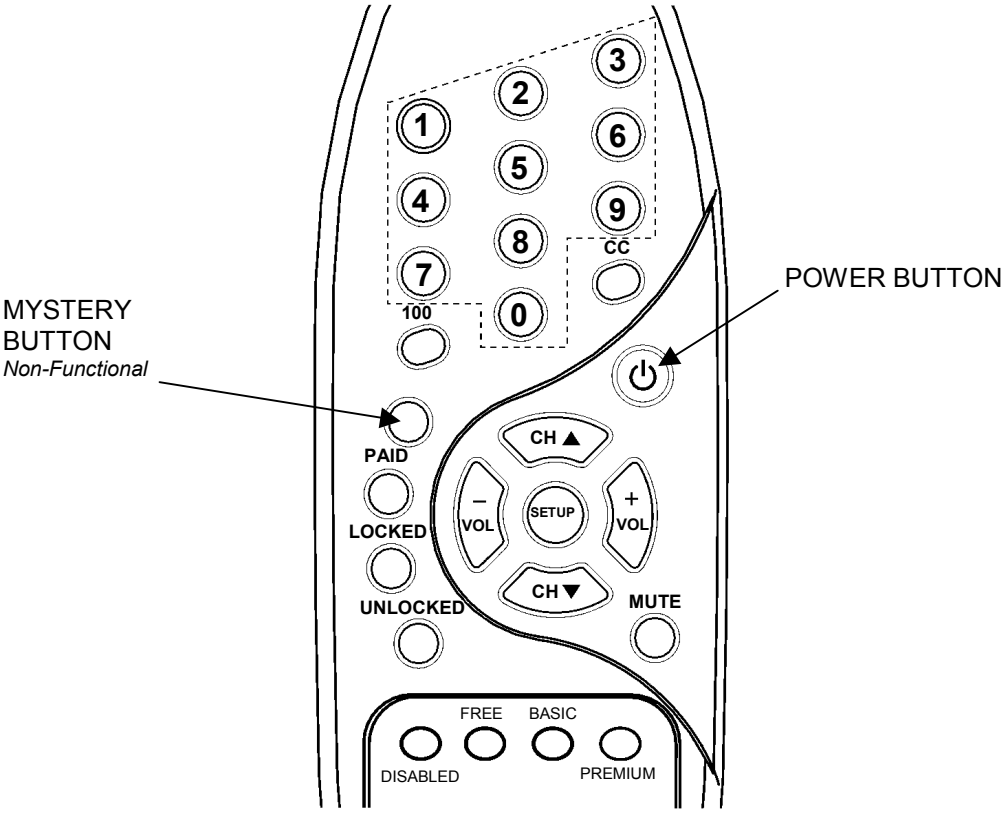
The CRT circuit board also contains the board part number, release version, and individual board serial numbers silk-screened on both the top and bottom side of the board. Due to the boards smaller size, this information is located along the board's edges. NOTE: Chassis and CRT board serial numbers will not be the same**.**

Remote Control

The P9TV requires a remote control (part number PD108-213) to program the set. You will NOT find a remote control packed with the television. The remote control is shipped separate from the television.

The remote control has a limited range to prevent dual programming of an adjacent room TV. Stand within 3 feet from the front of the TV to use the remote.

PROGRAMMING REMOTE (PD108-213)



PATIENT REMOTE

A PDI patient remote control is currently unavailable. However, several universal remote controls will provide simple control of the P9TV. Please note that only channel and volume control functions are typically accessible using the following universal remotes.

BRAND	***CODE***
One For All	0180
Zenith	805, 906

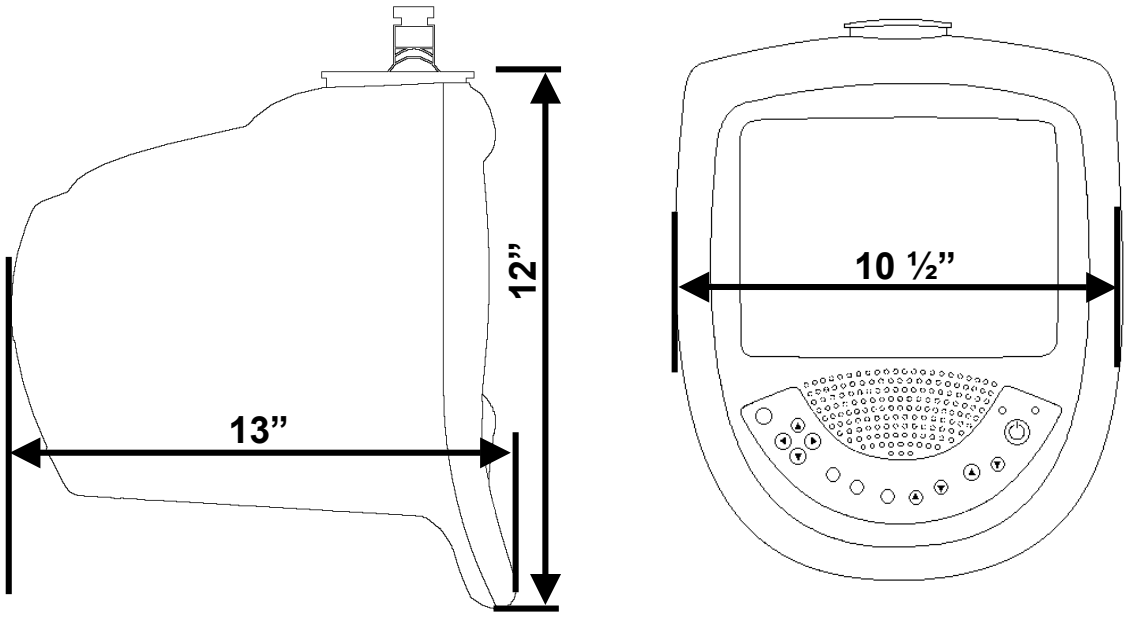
General Specification

1. SYSTEM		
	CRT Size	9”
	Deflection	90 degree
	Color System	NTSC 3.58
	Speaker	1 Speaker
	Position	Front Mounted
	Size	2 13/16” x 1 5/8”
	Impedance	8 ohms
	Output	1.0 Watt Max.
	Distortion	10% at 0.8W
2. TUNING		
	Type	North American NTSC Type M
	System	Frequency Synthesized
	Control	Digital I^2C
	Input Impedance	75 ohms
	Channel Range	VHF: 2 – 13, UHF: 14-69, CABLE 1, 14-125
	Picture IF	45.75 Mhz
	Sound IF	41.17 Mhz
	Color Sub Carrier	42.17 Mhz
	Preset Channels	No
	Stereo Sound	No
	SAP Decoder	No
3. POWER		
	Multi-Voltage	Yes
	DC Voltage	18-33 VDC
	AC Voltage	18-35 VAC
	Power Consumption	50 Watts
	Standby Power	2.5 Watts
	Protection	4A, 125V Fuse
4. REGULATION		
	Safety	UL, cUL
	Interference	FCC
	X-Radiation	DHHS
5. ON SCREEN DISPLAY		
	Menu Type	Character
	Menu Entrance	IR Remote Control Only
	Picture	
	Brightness	Yes
	Contrast	Yes
	Color	Yes
	Tint	Yes
	Sharpness	Yes
	Fine Tune	Yes
	Channel Setup	
	Signal	Air, CATV
	Autoprogram	
	Free	Programmable Tier

	Basic	Programmable Tier
	Premium	Programmable Tier
	Clear Service Level	
	Free	Erasable Tier
	Basic	Erasable Tier
	Premium	Erasable Tier
	Add/Delete Channels	
	Free	Individual Channels
	Basic	Individual Channels
	Premium	Individual Channels
	Copy Service Level	Yes
	Features	
	Power ON Channel & Spkr	
	Free	Start Channel, Speaker On/OFF
	Basic	Start Channel, Speaker On/OFF
	Premium	Start Channel, Speaker On/OFF
	Volume Limiter	Yes
	Caption Text Mode	Enabled, Disabled
	Language	English, French, Spanish
	Service Levels	Disabled, Free, Basic, Premium
	Paid	Yes, No
	Self Rent	Locked, Unlocked
	Channel Number	Yes
	Channel Labels	No
	Sleep Timer	No
	Sound Mute	Yes
	V-Chip Rating	No
5. FEATURES		
	Sleep Timer	No
	On/Off Timer	No
	Auto Shut OFF	Yes - Disable Mode, No Channel Programmed
	Auto Degauss	Yes
	Anti-Theft Alarm	No
	Rental	Yes
	Service Levels	3
	Rental Lamps	3
	Patient Self Rent	Yes – Programmable
	Payment Lamp	Yes
	Attendant Remote Control	Yes
	Patient Remote Control	No
	Non-Volatile Memory	Yes
	Last Channel	Yes
	Last Volume	Yes
	Power On Channel	Yes – Selectable
	SAP	No
	AC Power On Mode	No
	Auto Channel Search	No
	Game Port	No
	Channel Labels	No
	Channel Numbers	Yes
	Full OSD	No
	Comb Filter	No

	Auto Channel Memory	Yes
	Hotel Lock	No
	Closed Captions	Yes
	Speaker Mute	Yes
6. CONTROLS		
	Switch	
	Type	Membrane
	Front	
	Power	Yes
	Volume Up	Yes
	Volume Down	Yes
	Channel Up	Yes
	Channel Down	Yes
	Mute/Enter	Yes
	CC	Yes
	Rent	Yes
	Cursor Up	Yes – Present, Non Functional
	Cursor Down	Yes – Present, Non Functional
	Cursor Left	Yes – Present, Non Functional
	Cursor Right	Yes – Present, Non Functional
	Rear	None
	Indicator	
	Power	Yes
	Stand-By	No
	Terminals	
	Video Input	No
	Audio Input	No
	Video Input	No
	Video Output	No
	Earphone	Yes
	External Speaker	No
	Power/RF Input	F-Type
	AC Line Cord	No
	AC Outlet	No
7. REMOTE		
	IR Format	Custom
	Power Source	“AAA” x 2
	Total Keys	27
	Keys	
	Power	Yes
	1	Yes
	2	Yes
	3	Yes
	4	Yes
	5	Yes
	6	Yes
	7	Yes
	8	Yes
	9	Yes
	0	Yes
	100	Yes

	CH Up	Yes
	CH Down	Yes
	Vol Up	Yes
	Vol Down	Yes
	Setup	Yes
	Mute	Yes
	Paid	Yes
	Locked	Yes
	Unlocked	Yes
	Disabled	Yes
	Free	Yes
	Basic	Yes
	Premium	Yes
	Blank	Yes – Non Functional
8. PHYSICAL		
	Cabinet Size	10.5 x 13 x 12 (W x D x H) inches
	Weight (Approx.)	14.5 lbs.



Disinfecting and Cleaning

The P9TV should be disinfected before performing any service. The following procedure is only a recommendation. Your hospital or company may have a different procedure to follow.

CAUTION – Before using any cleaning or disinfecting agent on the P9TV, perform a spot check by wetting a small area of the cabinet. Verify the agent does not discolor or deteriorate the cabinet.

Disinfecting

1. The P9TV has been designed to withstand up to a 5% chlorine based disinfectant. Many alcohol and ammonia based disinfectants have also been tested with success. However, before using any cleaner or disinfectant, spot check a small area on the cabinet.

2. Apply the cleaner or disinfectant per its recommended instructions. Note – most disinfectants require a waiting time following application and prior to wipe-down.

Cleaning

Stubborn ink and other scratch type marks may prove difficult to remove. A dilute solution of Isopropyl alcohol will generally work when all else fails. However, full strength Isopropyl will remove the cabinet's paint. Use with caution!

Hidden Factory Menu

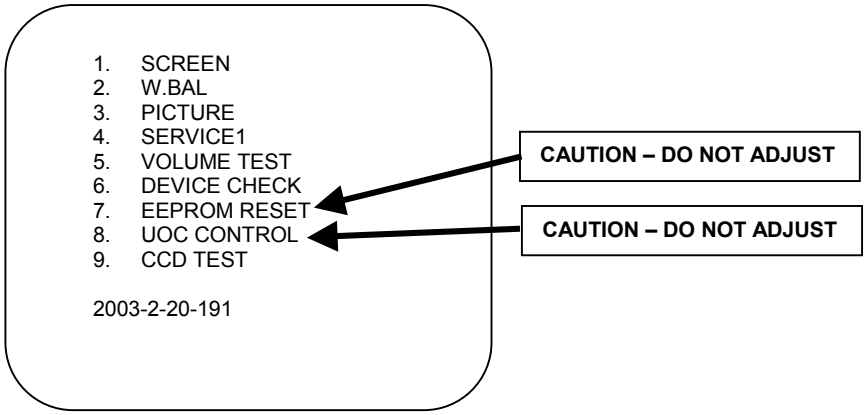
Accessing

A hidden factory adjustment menu is available to the knowledgeable service man using the following procedure. To access the menu use the PDI remote control (part number PD108-213).

1. With the TV turned OFF, activate the hidden factory menu by press the following IR remote key sequence:

   CC + SETUP + 3 + 8 +POWER(ON)

2. The menu for the hidden factory menu should be displayed over the normal picture. The factory menu consists of 9 sub menus.



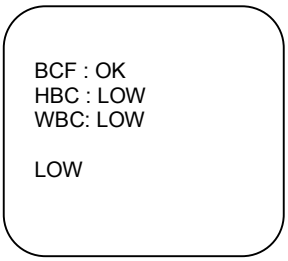
3. Select each adjustment sub menu by pressing the CH▲ or CH▼ button on the IR remote. You may enter the sub menu by pressing VOL+ or VOL–.

DO NOT SELECT sub menu Item 7, EEPROM RESET. Any changes made in this item could render the television inoperative.

DO NOT SELECT sub menu Item 8, UOC CONTROL. Any changes made in this item could render the television inoperative.

1. SCREEN

READ ONLY – Displays the tube's beam current history and settings.



BCF (Black Current Loop False)
READ ONLY
Reflects the condition of the black current loop. Can be used at start-up or for regular check during normal operation to indicate RGB stage malfunctioning.

Default is "OK".

HBC (HELP ABOVE/BELOW BCL WINDOW)
READ ONLY
Indicates the condition of the tube's beam current.

LOW – Beam Current is below 12 microamperes
HIGH – Beam Current is above 12 microamperes

WBC (BCL WINDOW)
READ ONLY
Reading WBC indicates whether the beam current is in the window of 12 - 20 microamperes, while HBC indicates whether the current is above or below the window.

LOW
READ ONLY
Overall summary indication of the beam current. Default is "LOW".

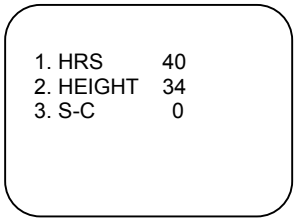
NOTE: The only means to exit this sub menu is to turn the TV OFF.

2. W. BAL
WHITE BALANCE – Provides RGB "Drive" and "Cut" for color balance of the picture. Each signal is displayed at the bottom of the screen with its current value.

Remote Button	Signal	Range	Typical Value
1	R-CUT	0-63	32
5	G-CUT	0-63	32
9	R-DRV	0-63	32
0	G-DRV	0-63	32
100	B-DRV	0-63	32

NOTE: Adjust values using the Vol+ or Vol– keys. The only means to exit this sub menu is to turn the TV OFF.

3. PICTURE
PICTURE – Provides horizontal position, height, and picture stretch adjustments.



HRS – HORIZONTAL SHIFT
Adjusts the horizontal position of the picture on the screen.

HEIGHT – HEIGHT
Adjusts vertical picture size (height).

S-C – VERTICAL S-CORRECTION
Adjusts the vertical S-correction, also known as vertical linearity or picture stretch.

Picture	Range	Typical Value
HRS	0-63	35
HEIGHT	0-63	33
S-C	0-63	7

NOTE: The only means to exit this sub menu is to turn the TV OFF.

4. Service 1
Picture Adjustment Master Range Limits – Allows each picture parameter to have a minimum or maximum range limit and sets the number of discrete steps during adjustment. Current parameter values are also displayed.

For example, setting a parameter to a minimum value of 0 and a maximum value of 63 will allow 64 discrete adjustment steps when that parameter is adjusted in the "SETUP" – "PICTURE" user menu. This menu is best left alone.

Parameter	Range	Default Values
		Min Cnt Max
Bright	0-63	7 42 63
Contrast	0-63	0 45 63
Color	0-63	3 25 63
Tint	0-63	0 35 63
Sharpness	0-63	10 35 63
AGC	0-63	45

NOTE: The only means to exit this sub menu is to turn the TV OFF.

5. VOLUME TEST
VOLUME TEST – Sets the TV's volume to maximum for testing. Default is "MIN".

6. Device Check
Device Check – When activated the micro will individual test for communication to all devices connected on the I^2C bus.

TEST DEVICE <<Press Left/Right>>

UOC	Connected
EEPROM	Connected
Tuner	Connected
ETC 00001	Disconnected
ETC 00002	Disconnected
ETC 00003	Disconnected
ETC 00004	Disconnected
ETC 00005	Disconnected

7. EEPROM Reset

EEPROM Reset – Resets the entire contents of the eeprom to “0”. DO NOT ADJUST. Adjustment to this sub-menu item will render the TV inoperative and ruin your day!

DO NOT SELECT sub menu Item 7, EEPROM RESET. Any changes made in this item could render the television inoperative.

8. UOC Control

UOC Control – Provides individual adjustment to the values held in the Micro’s status registers. DO NOT ADJUST. Adjustment to this sub-menu item will render the TV inoperative and also ruin your day!

DO NOT SELECT sub menu Item 8, UOC CONTROL. Any changes made in this item could render the television inoperative.

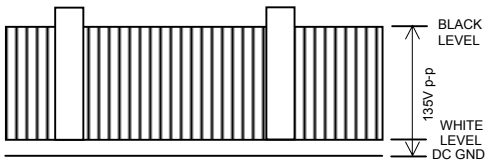
9. CCD TEST

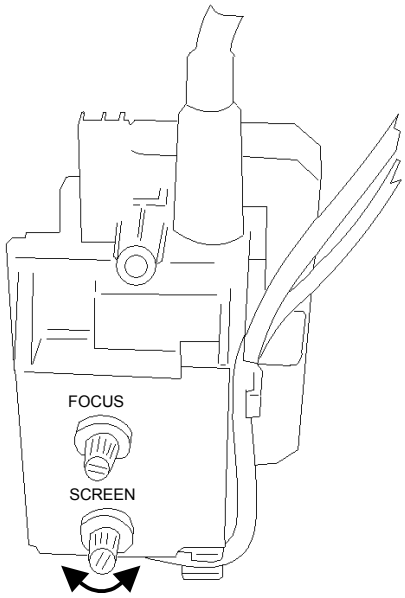
CCD TEST – Provides a factory set channel bank and “AIR” tuning for closed caption testing purposes. Activating “CCD TEST” will erase all service levels and set “FREE” to “AIR” tuning and channels 2 – 13 only.

Adjustments

Screen Voltage

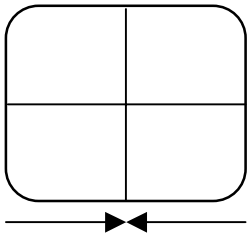
1. Input a standard color bar pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Connect an oscilloscope probe to the screen voltage connection on the CRT board (on C904).
4. Adjust the “SCREEN” voltage control on the flyback for a 135V p-p signal as shown below.





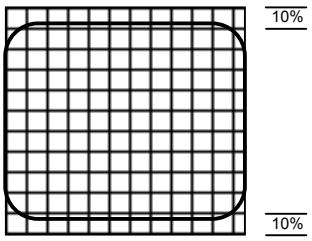
Horizontal Position

1. Input a cross-bar test pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Enter the hidden Factory Menu and select “3. Picture”. Select “HRS”.
4. Use the Vol+/- keys to center the pattern.



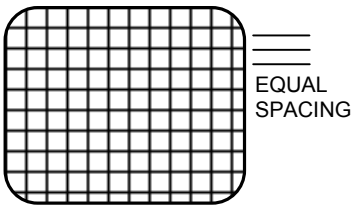
Height

1. Input a cross-hatch test pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Enter the hidden Factory Menu and select “3. Picture”. Select “HEIGHT”.
4. Use the Vol+/- keys to adjust the picture height. The adjustment should be set such that approximately 10% of the picture is being over-scanned (not shown).



Vertical Linearity (Picture Stretch)

1. Input a cross-hatch test pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Enter the hidden Factory Menu and select “3. Picture”. Select “S-C”.
4. Use the Vol+/- keys to adjust the picture’s vertical linearity. The adjustment should be set such that the spacing between horizontal lines appear all equal.



White Balance

1. Input a pure white pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Verify the Screen voltage is correctly adjusted. See “Screen Voltage Adjustment”.
4. Using a “White Balance Meter”, place the probe at the center of the picture screen.
5. Adjust “Contrast” and “Brightness” until the “Y” value of the meter roughly reads 35FL.
6. Enter the hidden Factory Menu and select “2. W.BAL”.
7. Select “R-DRV” and “G-DRV” and adjust them for the following meter values.

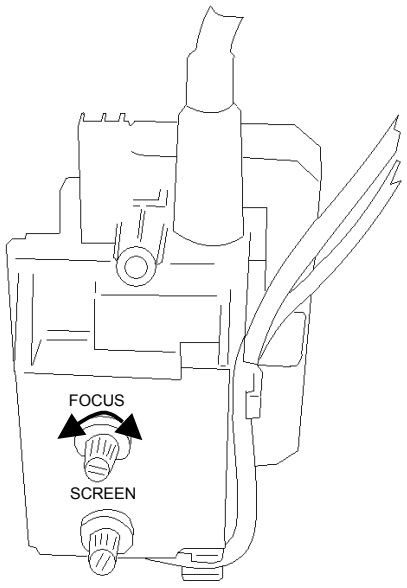
High Light	
X	**Y**
0.261	0.268

8. Adjust “Contrast” and “Brightness” until the dark area (low light) of the picture is 5FL.
9. Select “G-CUT” and “B-CUT” and adjust them for the following meter values.

Low Light	
X	**Y**
0.261	0.268

Focus

1. Input a “Cross Dot” test pattern.
2. Turn the TV ON and allow the TV to warm for 30 minutes.
3. Rotate the “FOCUS” control on the flyback transformer until the horizontal and vertical lines become thin. Adjust for the thinnest line possible.
4. Remove the test pattern and tune a conventional TV channel. Verify correct focus.



Picture Purity & Convergence Adjustments

PREPARATIONS

1. Allow the TV to warm-up at least 15 minutes.
2. Position the face of the CRT to either a east or west direction. This will minimize any effect from the earth's magnetism.
3. Demagnetize the picture tube using a degaussing coil before adjustments.
4. Connect a pattern generator as a signal source.

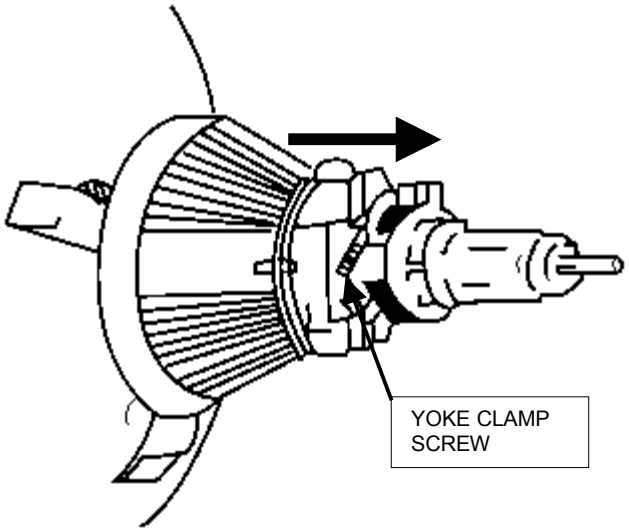
Color Purity Adjustment

1. Select the purity pattern on the generator.

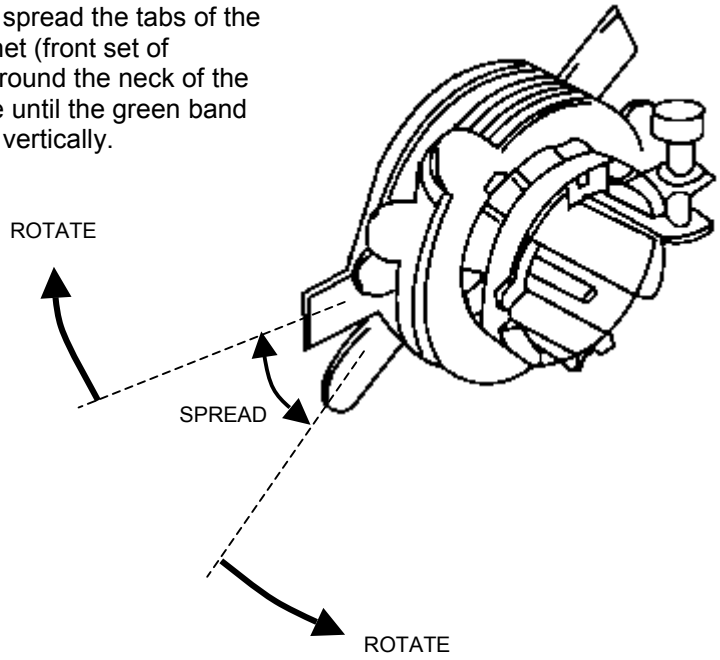
2. Use a IR remote control and turn up the contrast and brightness settings to maximum.

3. Enter the hidden factor service menu and record both the RED and BLUE BIAS settings. Now adjust RED and BLUE BIAS to zero. This will provide a GREEN raster.

4. Loosen the yoke clamp screw and slide the yoke backward (toward the neck side) slowly, and stop it at the position when a green band appears on the picture screen.

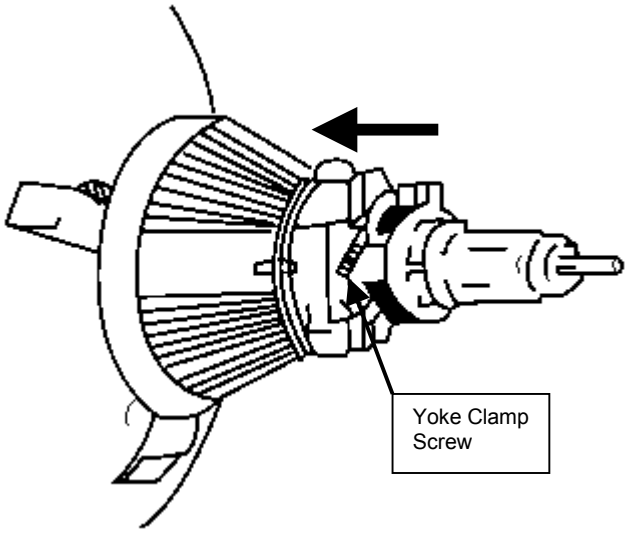


5. Rotate and spread the tabs of the purity magnet (front set of magnets) around the neck of the picture tube until the green band is centered vertically.



Color Purity Adjustment – continued

6. Move the yoke slowly forward until a uniform green screen is obtained. Usually this is the same as the original resting position against the rubber wedges. Tighten the yoke clamp screw.



7. Check the purity of the RED and BLUE BIAS by adjusting the settings back to their original value recorded in Step 3. White Balance Adjustment may be required.

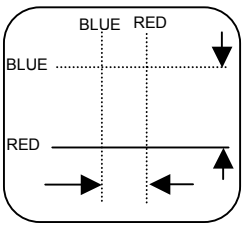
8. Proceed with the center convergence adjustments.

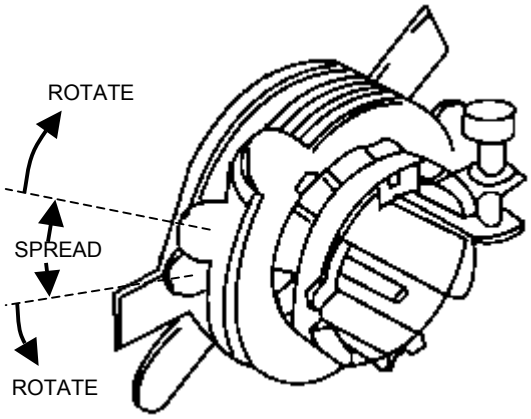
Center Convergence

1. Connect a signal pattern generator and select a crosshatch pattern.

2. Using a remote control, adjust the Contrast and Brightness settings for a well defined pattern.

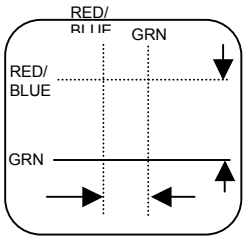
3. Adjust the two tabs of the 4-Pole magnets to combine red and blue lines of the crosshatch pattern on the center of the screen. Spread the taps apart to adjust vertical line alignment. Rotate the two tabs at the same time and at a fixed angle to adjust horizontal alignment.

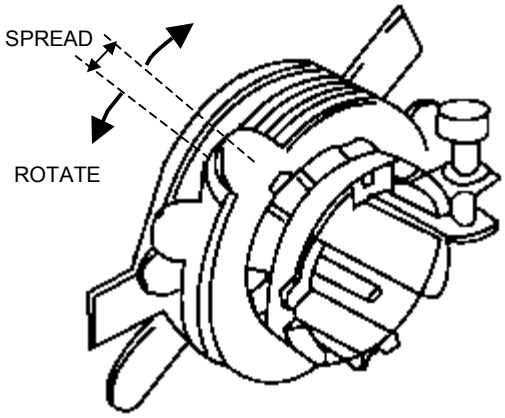




Center Convergence – continued

4. Adjust the two tabs of the 6-Pole magnet to superimpose the red and blue lines with green. Adjust the angle between the two tabs for vertical line alignment. Rotate both magnet tabs at a fixed angle affects the horizontal line alignment.



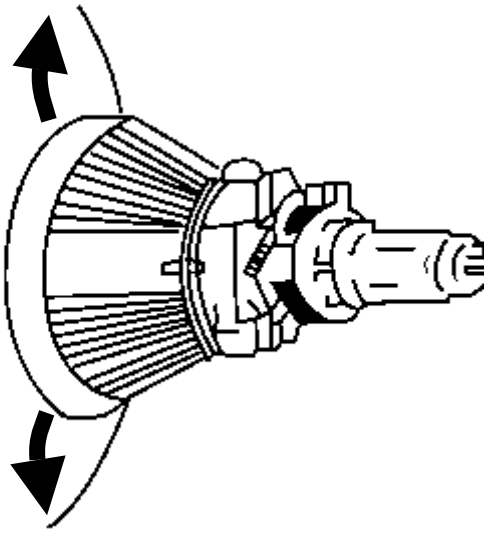


5. The 4 and 6 pole magnets will interact. It may be necessary to repeat steps 3 and 4 until convergence is optimized.

Edge Convergence

1. Loosen the yoke clamp screw and remove the three rubber positioning wedges. Connect a signal pattern generator and select a crosshatch pattern.

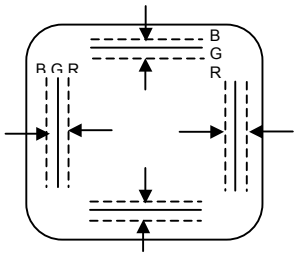
2. This adjustment will affect convergence at the picture's outside edges. Tilt the front of the deflection yoke up or down in a vertical direction. Adjust the tilt to provide overlay of the red, blue and green lines.

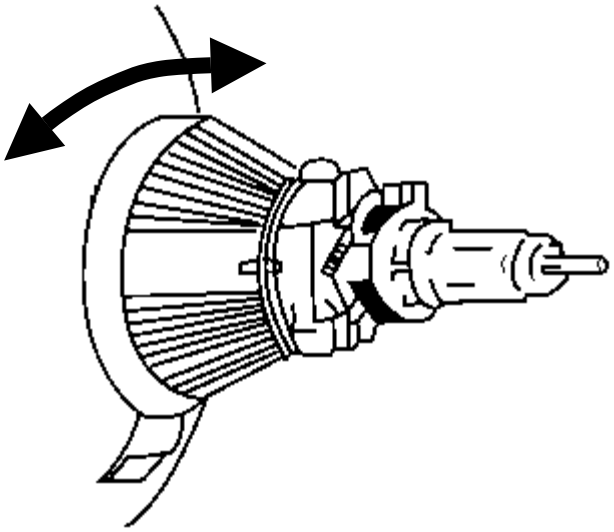


Edge Convergence – continued

3. Push a rubber wedge into the space between the yoke and picture tube at the bottom location.

4. Tilt the yoke from side to side (left to right) to obtain better edge convergence.

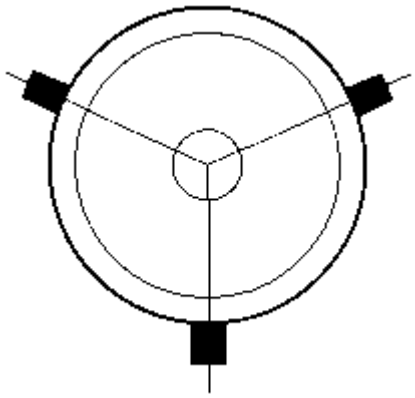




5. Hold the yoke in position and put two other wedges as shown at the 10 and 2 o'clock positions.

   After placing all three wedges, recheck overall convergence. Tighten the screw firmly to hold the yoke in position.

   Tape each wedge into position once convergence is finalized.



Power Supply Alignment

The PDI-P9TV television utilizes a switch mode power supply to generate the following voltages.

SOURCE	TV OFF	TV ON
B+	12.5 VDC	10.5 VDC
Audio Vcc	17.0 VDC	17.0 VDC
IC82	0.0 VDC	8.0 VDC
IC83	5.0 VDC	5.0 VDC
IC85	3.3 VDC	3.3 VDC

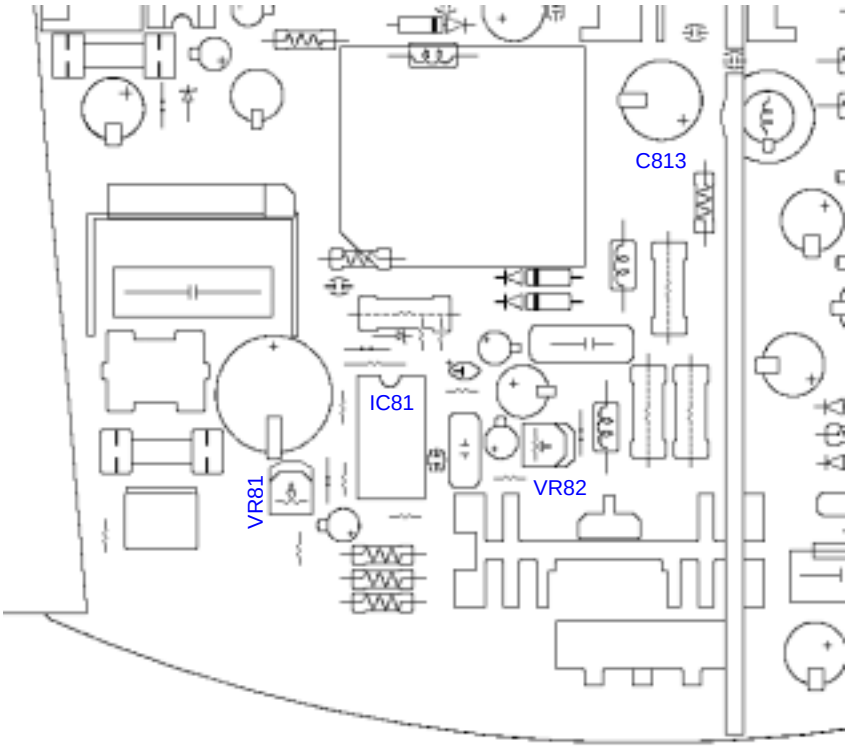
B+ Alignment

A frequency counter and voltmeter are required to align the power supply.

1. Connect an appropriate power supply to the TV and supply a standard color bar signal. Turn the TV ON. Allow the TV to warm for 15 minutes before making any adjustments.

2. Connect a frequency counter to IC81-pin 14 and measure the switch frequency. Adjust VR82 for a 30.6 Khz switch frequency. Adjustment to this frequency will greatly reduce any switch noise visible in the picture at low CATV RF input signal levels.

3. Connect a voltmeter to the TP2 and adjust VR81 to +10.5 VDC. Note: the TV must be turned ON, warmed up, and tuned to a stable color-bar signal to reliably set the B+ voltage.

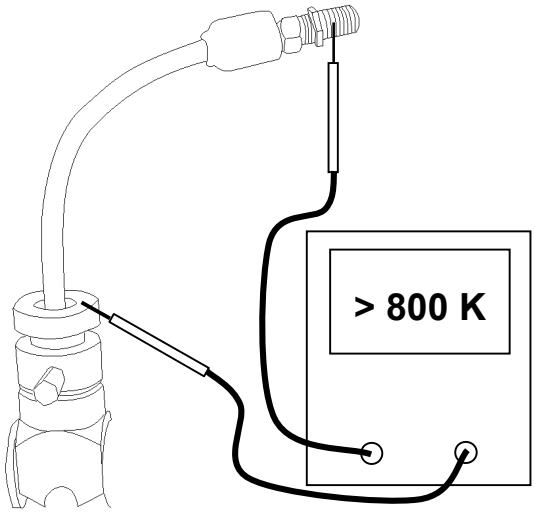


Safety Checks

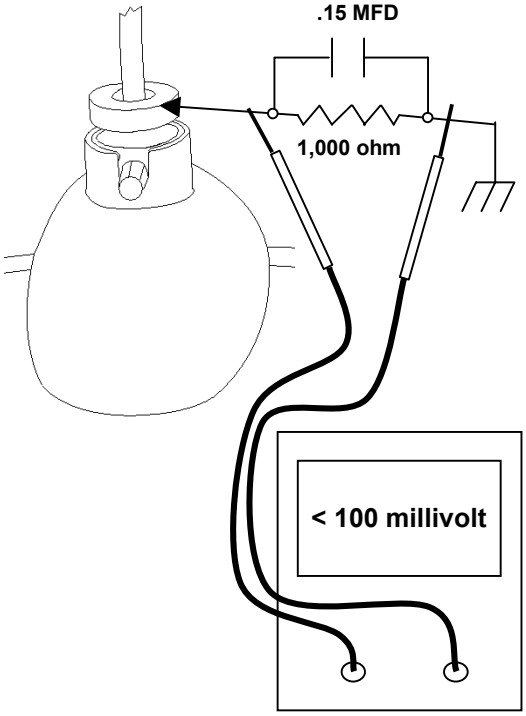
Before returning the P9TV to service, the following safety checks should be performed.

1. **PARTS PLACEMENT**
   Confirm that the screws, parts, and wiring which were removed to allow servicing are put back in the original positions.

2. **SWIVEL RESISTANCE TEST**
   a. Expose the mounting swivel.
   b. Measure the DC resistance between the input coax shield and swivel as shown. The resistance value should read greater than 800 K. A lesser reading indicates a possible insulation breakdown or short between the internal metal U-Bracket and chassis ground which could increase leakage currents touchable by the patient.
   c. It is recommended that the reading of the swivel resistance be recorded as part of the service record.



3. **AC LEAKAGE CURRENT TEST**
   Following re-assembly of the P9TV always perform an AC Leakage Current Test. Use either an approved hospital leakage meter or the R-C network shown.
   a. Power the TV using an approved external 28 VAC power supply. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST.
   b. Connect one side of the R-C network to a good earth ground such as a water pipe, conduit, etc. Touch the other side of the R-C network to the top of the metal swivel.
   c. Measure the AC voltage drop across the R-C network. The measured voltage must not exceed 0.10 volts RMS (100 millivolts RMS). This corresponds to 100 microamperes of AC current. Any value exceeding this limit constitutes a potential shock hazard and must be correct immediately.
   d. Record the reading as part of the service record.



X-Ray Radiation Checks

Excessive high voltage can produce potentially hazardous X-Ray Radiation from this television's picture tube. The high voltage must be maintained below 22.5 KV under all conditions. The normal high voltage value is typically 15.0 KV at maximum picture brightness (maximum beam current).

Two methods are employed to verify correct operation of the high voltage circuit and shut-down circuit of this television.

HIGH VOLTAGE CHECK

WARNING: Lethal high voltage present during this measurement.

1. Supply a full color-bar input signal and power to the TV. With the television turned ON, verify the correct setting of the B+ is 10.5 VDC. See the manual section *"Power Supply Alignment"* for details.

2. Using a remote control, turn the Contrast and Brightness Controls to minimum. This will reduce the picture tube's beam current (load) and cause the anode high voltage to reach its peak value.

3. Measure the anode high voltage. The voltage must be below 22.5 KV under any condition. It is recommended that the reading of the high voltage be recorded as part of the service record.

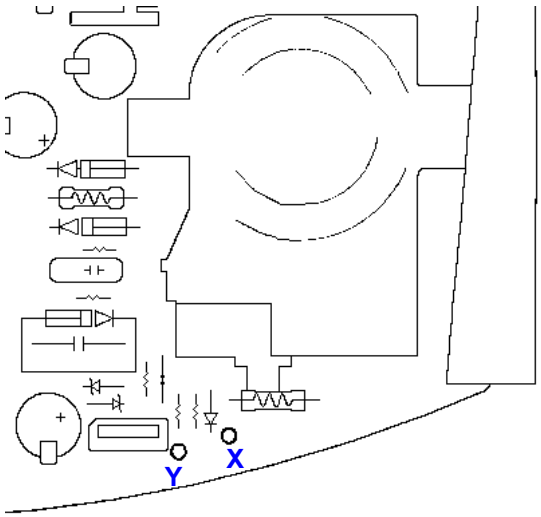
4. Using a remote control, adjust the brightness to both extremes and verify the high voltage does not exceed the 22.5 KV limit under any conditions.

HIGH VOLTAGE SHUT-DOWN CIRCUIT

1. With the television turned ON, verify the correct setting of the B+ is 10.5 VDC. See the manual section *"Power Supply Alignment"* for details.

2. Using a small jumper wire, momentarily short the X and Y test point solder pads on the chassis located in the area below the flyback adjustment controls. The TV should shut down immediately indicating correct shutdown circuit operation.

3. The television should remain OFF until the power is interrupted. Restore power and resume normal TV operation.



Troubleshooting

SYMPTOM – NO POWER

ITEM	CHECK	DETAILS
1.	Check for voltage on P801. Voltage should be within 18 to 35 VAC or 18 to 33 VDC.	a. Check the external power source. b. Check the input swivel coax cable for an open center conductor. c. Check RF/PWR splitter. Replace if necessary.
2.	Check for voltage on C802. Voltage should be within the range 18 to 42 VDC.	a. Check and replace F802. b. Check diode bridge D801.
3.	Check the voltage on C807. Voltage should be approximately 13 to 15 VDC.	a. Check diode D802. b. Check switching transistor Q802. c. Check diode D807.
4.	Check the low voltage output regulators IC83 and IC85.	
5.	Check transistor Q811. Check output rectifier diodes (cathode – banded side) D816 and D861.	

COMPONENT	TV OFF	TV ON
IC83	4.9 VDC	4.9 VDC
IC85	3.3 VDC	3.3 VDC

COMPONENT	TV OFF	TV ON
Q811	0 VDC	2.8 VDC
D816	12.7 VDC	10.8 VDC
D861	17 VDC	17 VDC

SYMPTOM – NO RASTER, FRONT LED IS ON

ITEM	CHECK	DETAILS
1.	+5V power supply.	Check IC83 – pin 3 for +5 VDC.
2.	System clock.	Check IC51 – pin 64 for 12 mhz clocking pulse.
3.	“POWER” signal.	Check IC51 – pin 78 for “LOW” when front power LED is ON.
4.	Horizontal Pulse.	Check IC51 – pin 30 for Horizontal pulse. Pulse should be 2.5V p-p.
5.	Horizontal pulse present on base of Q404	a. Check for voltage on C403 (12.7 VDC OFF, 6.0V ON). b. Check for opened R403. c. Check for opened R030. d. Check for shorted Q402.
6.	Horizontal pulse present on collector of Q404.	Replace Q404 if pulse is missing.
7.	CRT supply voltage missing.	a. Check IC91 pin 6 supply voltage. b. Check for opened L901.

Troubleshooting

8.	CRT Driver Amp waveforms missing.	a. Check IC91 pins 1, 2, 3, for input waveforms. b. Check IC91 pins 7, 8, 9 for output waveforms.

SYMPTOM – NO PICTURE, SOUND IS OK

ITEM	CHECK	DETAILS
1.	CRT Driver Amp signals missing.	a. Check IC91 pins 1, 2, 3, for input waveforms. b. Check IC91 pins 7, 8, 9 for output waveforms.
2.	IC51 RGB drive waveforms missing.	Check IC51 pins 56, 57, 58 for output RGB signals.
3.	Missing IF signal.	a. Check IF filter Z101 pin 1 for input 45.75 Mhz IF signal. b. Check IF Filter Z101 pin 4 and pin 5 for output 45.75 Mhz IF signal.
4.	Tuner IF signal missing.	Check the tuner TU01 IF pin for output 45.75 Mhz signal.

SYMPTOM - NO SOUND, PICTURE IS OK

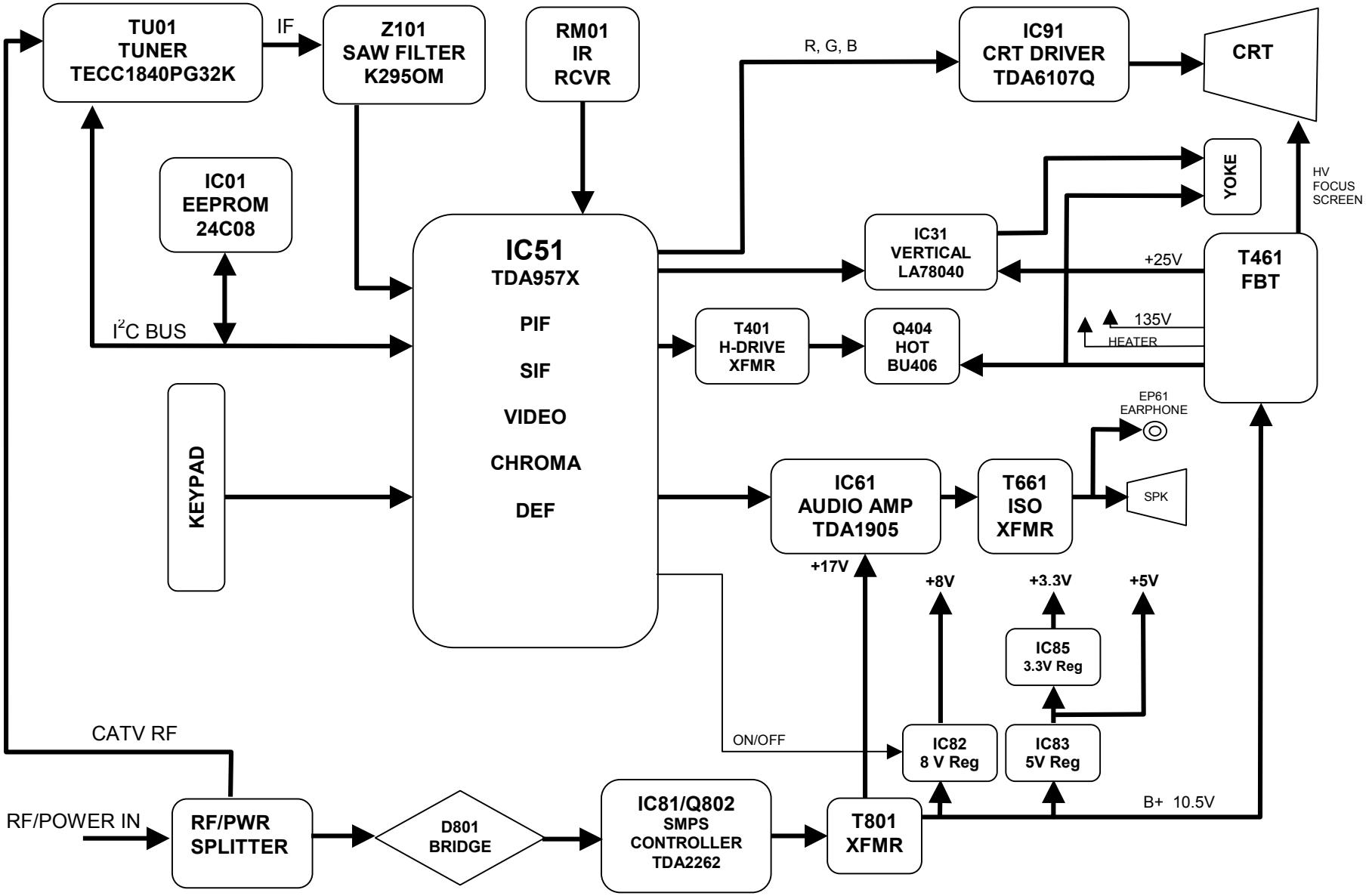
ITEM	CHECK	DETAILS
1.	TV Mute control operation.	Check R680 (Micro side) for proper control voltages. MUTE ON: 2.62 / MUTE OFF: 0.0
2.	Earphone “EARDET” signal.	a. Remove earphone from earphone jack. b. Check headphone jack EP51 Pin 9 for +3.3 VDC. Replace EP51 if Pin 9 reads 0.0 VDC without an earphone inserted into jack.
2.	Check audio input of IC61.	a. Set the TV’s volume to maximum. TV Mute is OFF. b. Check IC81 pin 8 for 200 millivolt p-p audio signal. Replace Q680 if audio signal is missing.
3.	Check audio output of IC61.	a. Set the TV’s volume to maximum. TV Mute OFF. b. Check IC81 pin 9 for 10 volts p-p audio signal.
4.	Check IC51 for sound output.	a. Set the TV’s volume to maxium. TV Mute OFF. b. Check C049 for 4.0 V p-p audio signal.
5.	Tuner IF signal missing.	Check Tuner TU01 IF pin for signal.

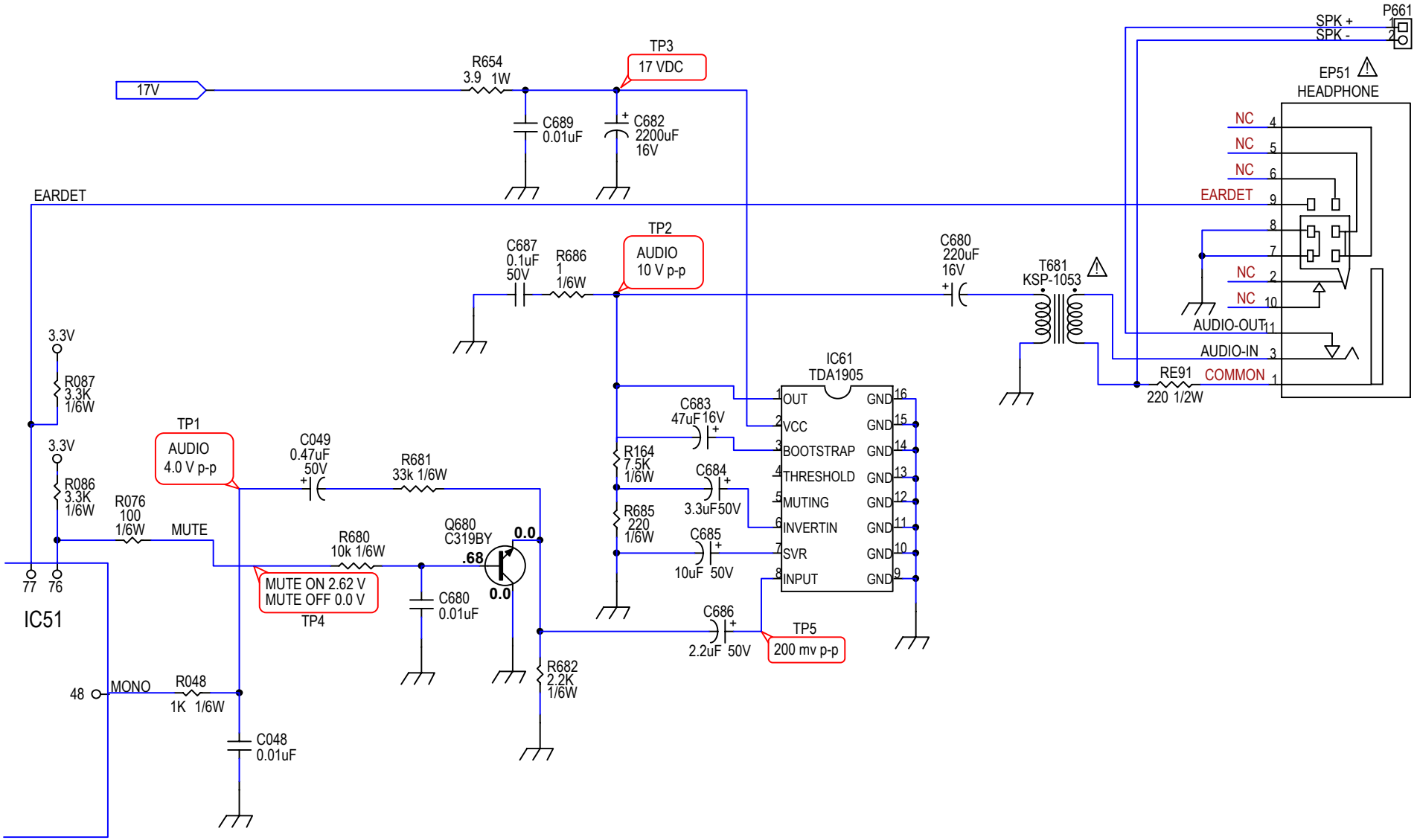
Troubleshooting

SYMPTOM – VERTICAL LINE

ITEM	CHECK	DETAIL
1.	Supply voltage to Vertical amp.	a. Check IC31 pin 2 for 25VDC. b. If missing supply voltage, check R381 and D381.
2.	Drive signal to Vertical Amp.	a. Check IC31 pin 1 and 7 for drive pulse. b. If, missing check Q391 and Q392.
3.	Check vertical drive signal at IC51.	Check IC51 pin 16 and 17 for vertical drive pulse.
4.	Check Horizontal pulse on IC51	a. Check IC51 pin 51 for H pulse. b. Check Q402 and Q404 for H pulse.

Block Diagram





TEST POINT NOTES

1. TV audio thermometer set to 100% level (Maximum).

⚠ Indicates a critical safety component. Replace only with part number specified.

AUDIO	
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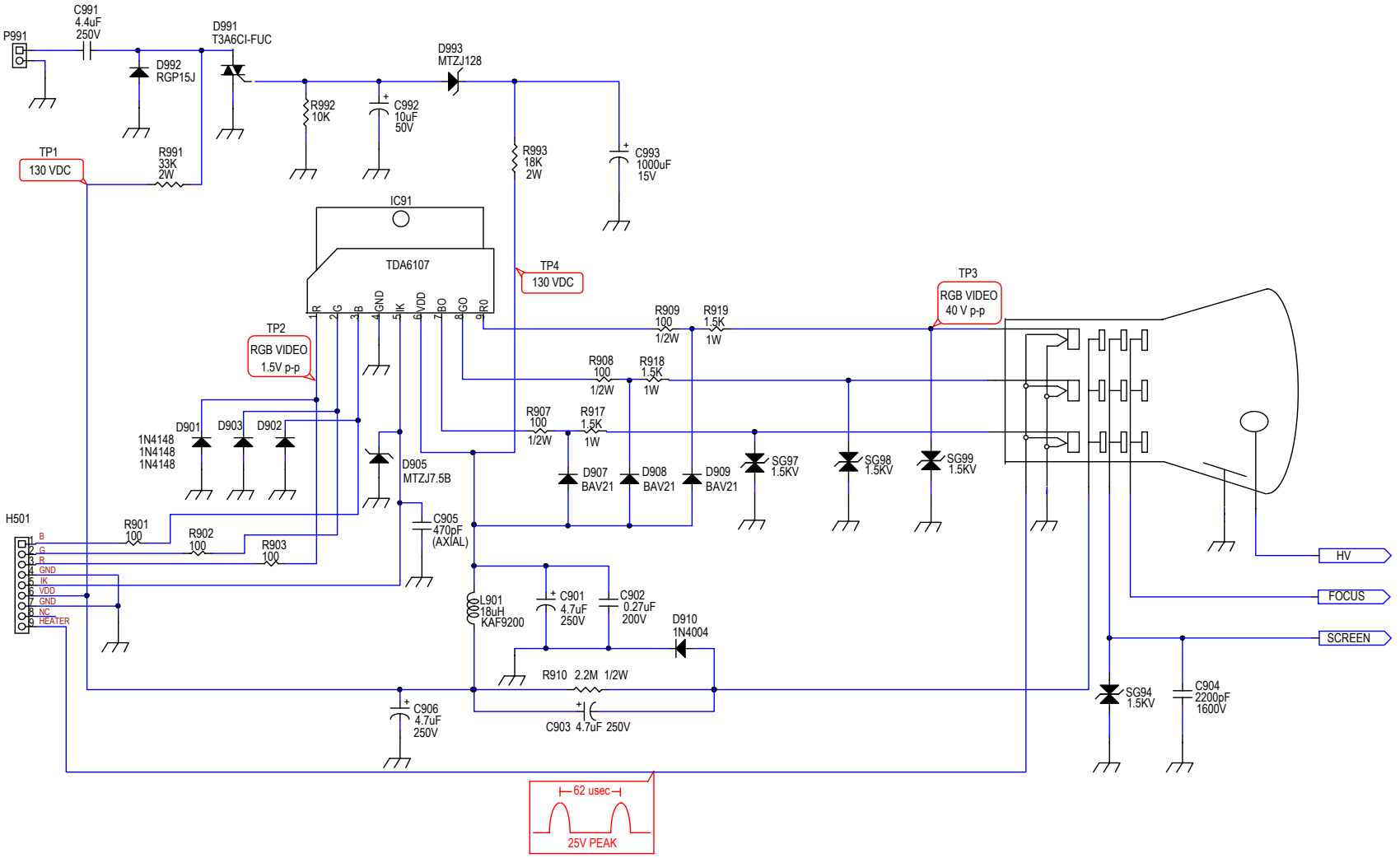
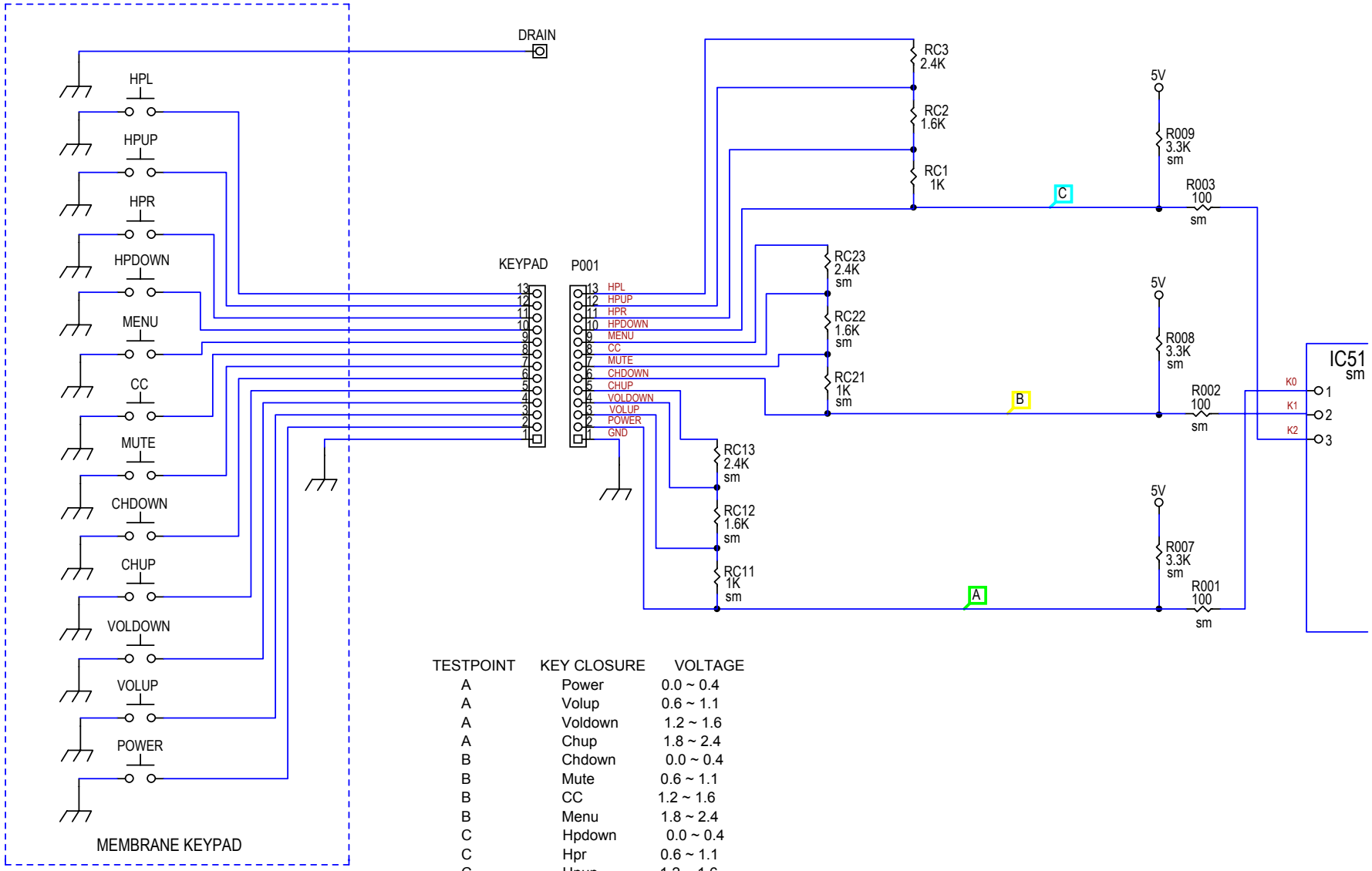
Date: 18 MARCH 2003	Page: 1 of 1



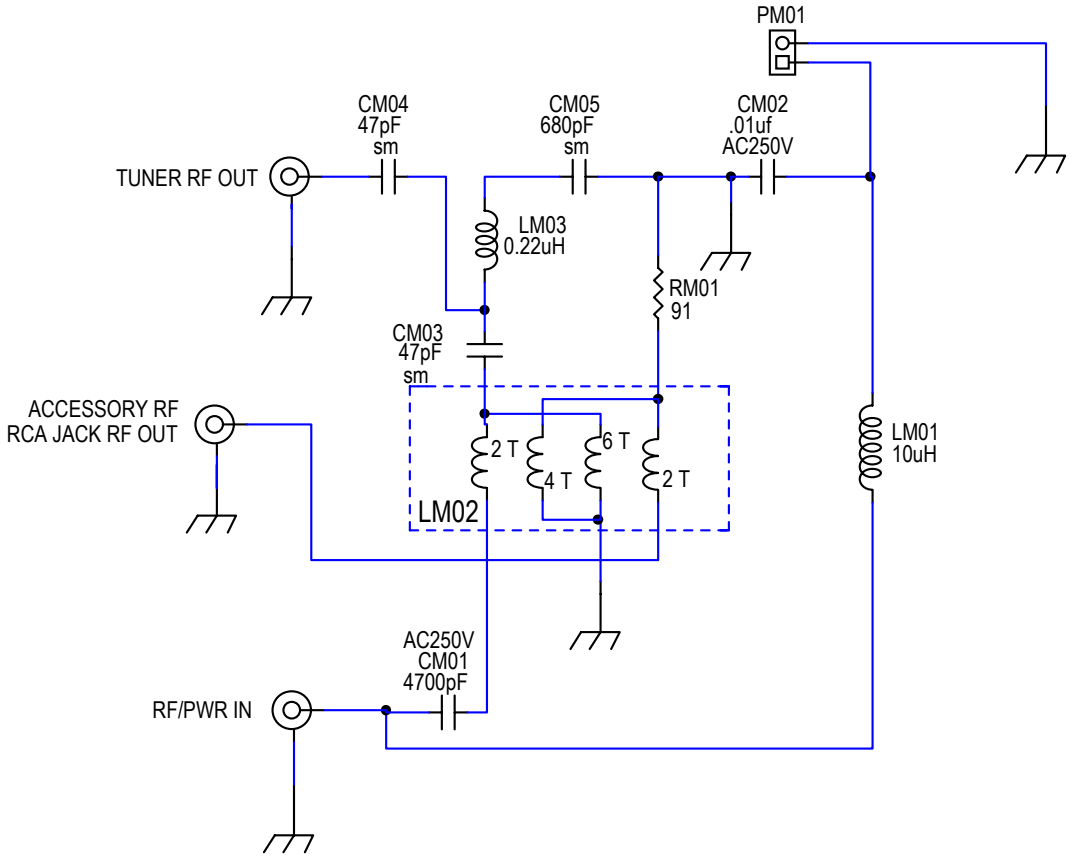
⚠ Indicates a critical safety component. Replace only with part number specified.

CRT & DEGAUSSER	
Rev A	ID PDI-P9TV
Date: 12 MARCH 2003	Page: 1 of 1



TESTPOINT	KEY CLOSURE	VOLTAGE
A	Power	0.0 ~ 0.4
A	Volup	0.6 ~ 1.1
A	Voldown	1.2 ~ 1.6
A	Chup	1.8 ~ 2.4
B	Chdown	0.0 ~ 0.4
B	Mute	0.6 ~ 1.1
B	CC	1.2 ~ 1.6
B	Menu	1.8 ~ 2.4
C	Hpdown	0.0 ~ 0.4
C	Hpr	0.6 ~ 1.1
C	Hpup	1.2 ~ 1.6
C	Hpl	1.8 ~ 2.4

KEYPAD	
Rev A	ID PDI-P9TV
Date: 12 MARCH 2003	Page: 1 of 1



RF/PWR SPLITTER	
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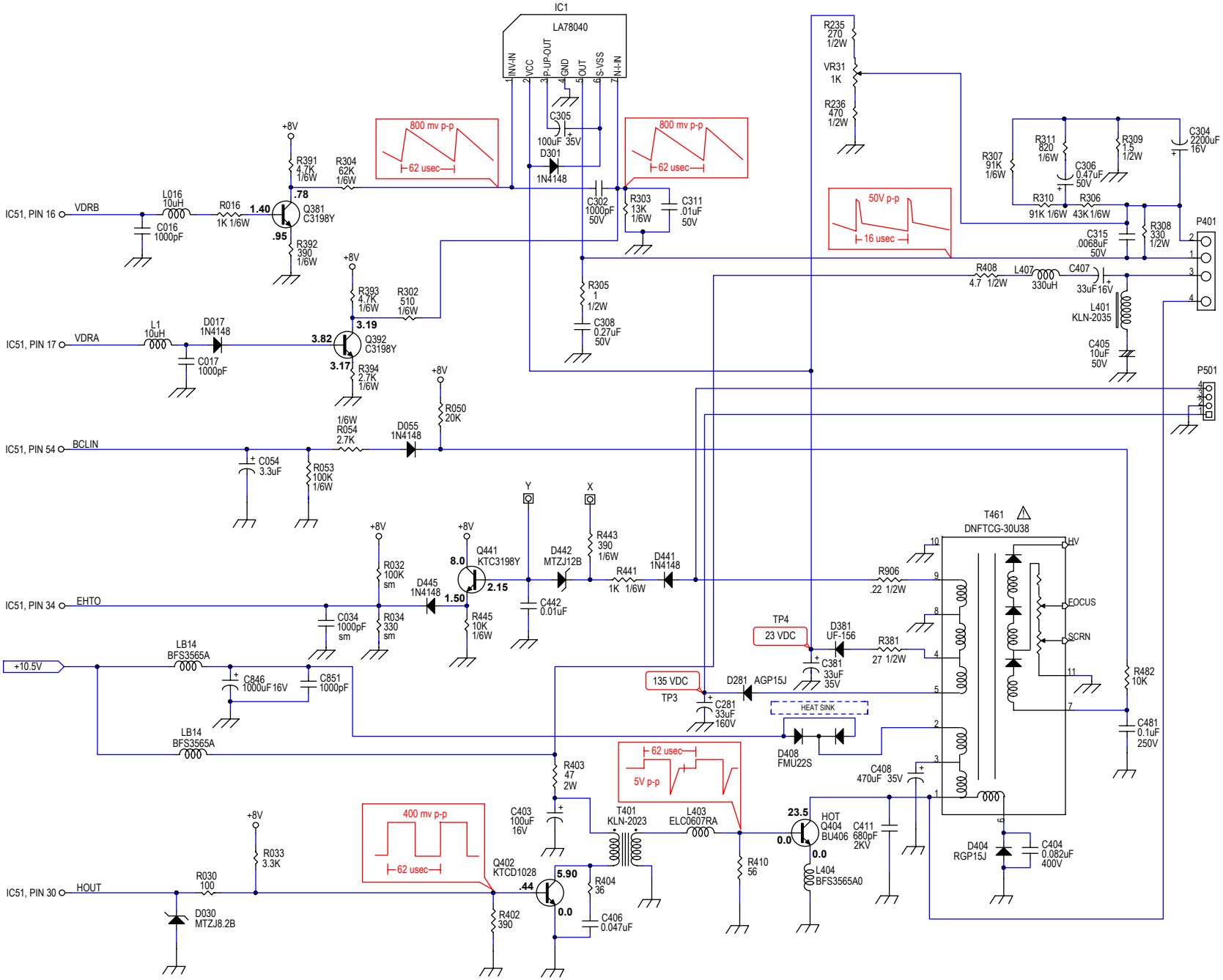

⚠ Indicates a critical safety component. Replace only with part number specified.

SWEEP	
Rev A	ID PDI-P9TV
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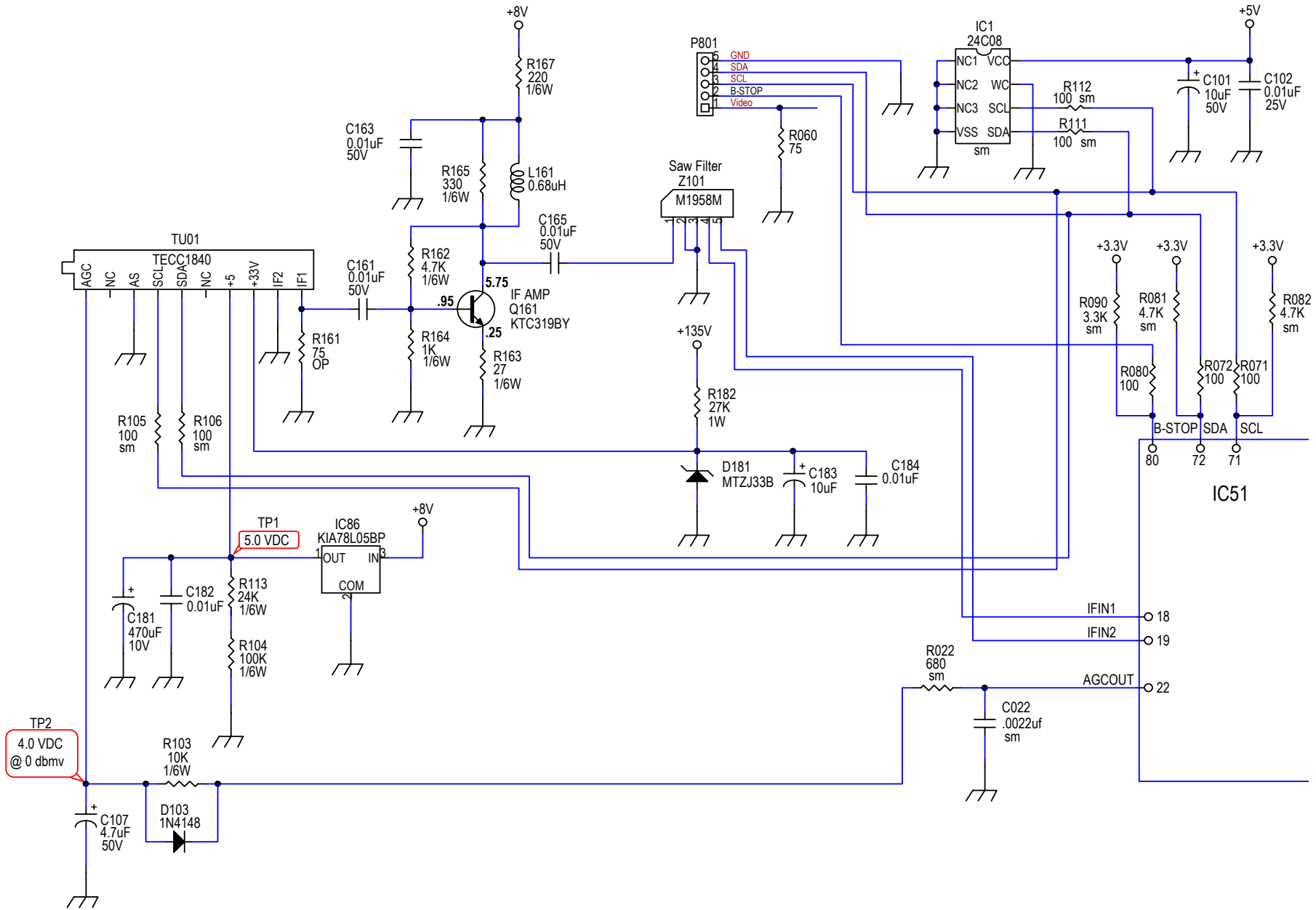

Tuner & Memory	
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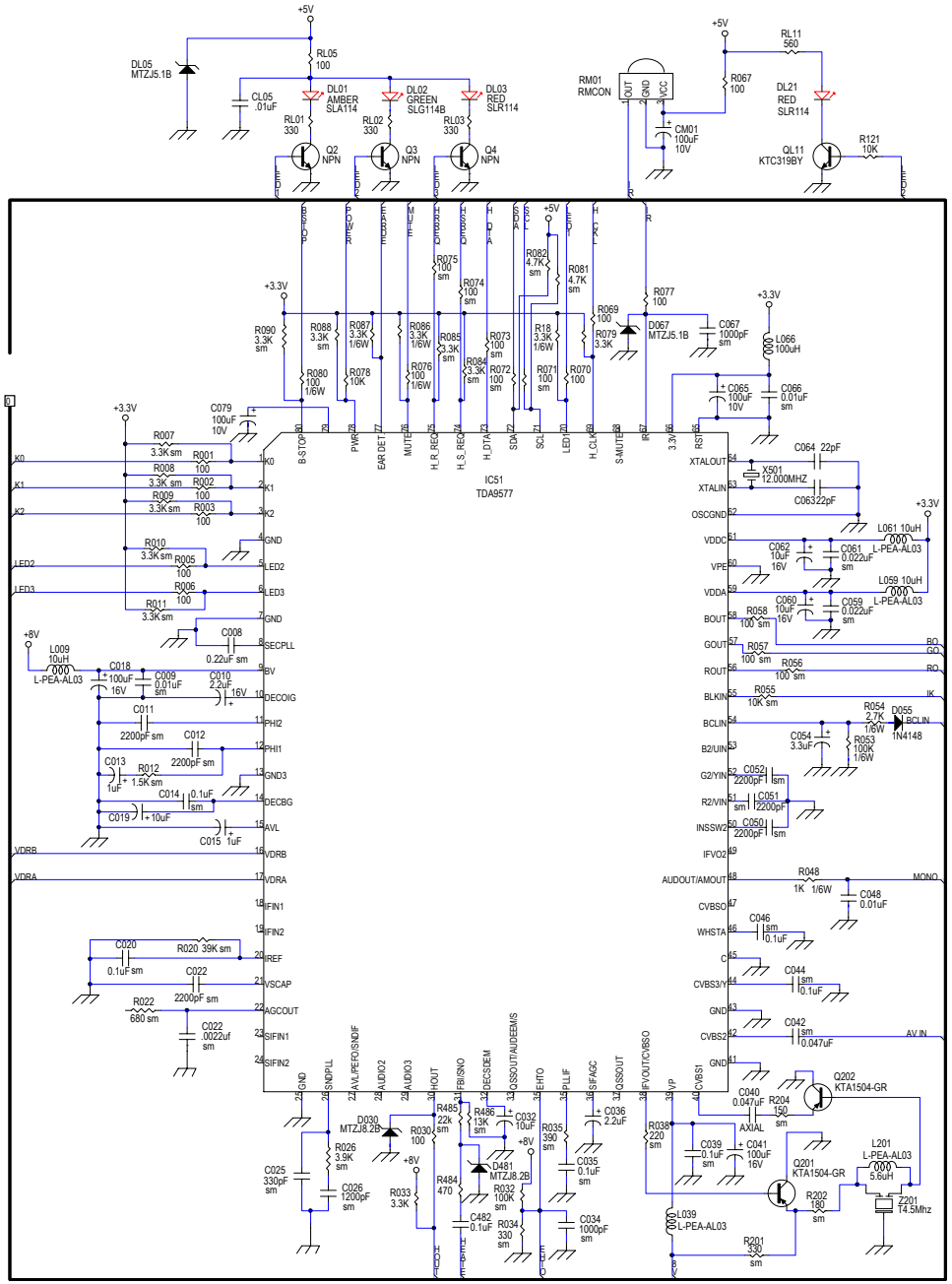

TEST CONDITIONS
TV ON
0 dbmv RF Input
Full-Field Color Bar Signal
Mute Off
Service Level = Free

PIN	VDC	PIN	VDC
1	5.00	41	0.00
2	5.00	42	3.32
3	5.00	43	0.00
4	0.00	44	0.32
5	0.00	45	0.00
6	0.02	46	3.65
7	0.00	47	2.95
8	2.29	48	3.38
9	7.83	49	2.96
10	5.00	50	3.97
11	2.66	51	2.53
12	3.78	52	2.54
13	0.00	53	2.54
14	0.00	54	1.76
15	0.00	55	5.50
16	0.00	56	3.12
17	4.31	57	3.05
18	0.02	58	3.15
19	1.85	59	3.23
20	3.84	60	0.10
21	3.69	61	3.27
22	2.74	62	0.00
23	0.19	63	1.58
24	0.19	64	1.68
25	0.00	65	0.00
26	2.22	66	3.11
27	2.49	67	4.58
28	3.72	68	0.07
29	3.72	69	0.06
30	0.33	70	0.02
31	0.53	71	4.60
32	2.21	72	4.66
33	2.21	73	0.11
34	0.94	74	0.01
35	2.41	75	0.00
36	0.35	76	2.62
37	3.20	77	2.46
38	3.20	78	0.05
39	7.82	79	0.00
40	3.88	80	3.25

MICRO-JUNGLE IC	
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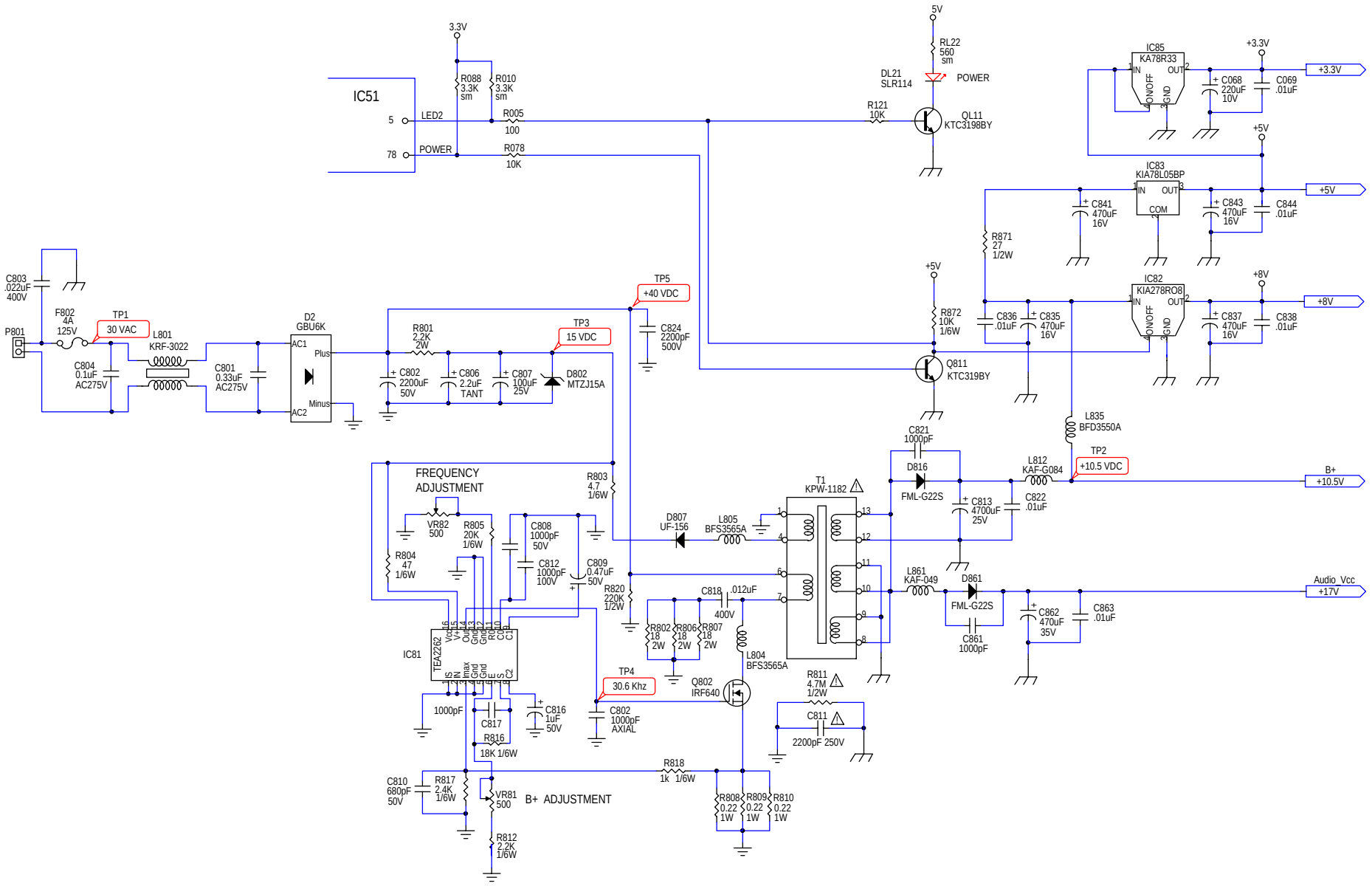
Date: 25 MARCH 2003	Page: 1 of 1



⚠ Indicates a critical safety component. Replace only with part number specified.

REVISIONS
18FEB04 - TP2, TB5 Location Revised

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B	PDI-P9TV

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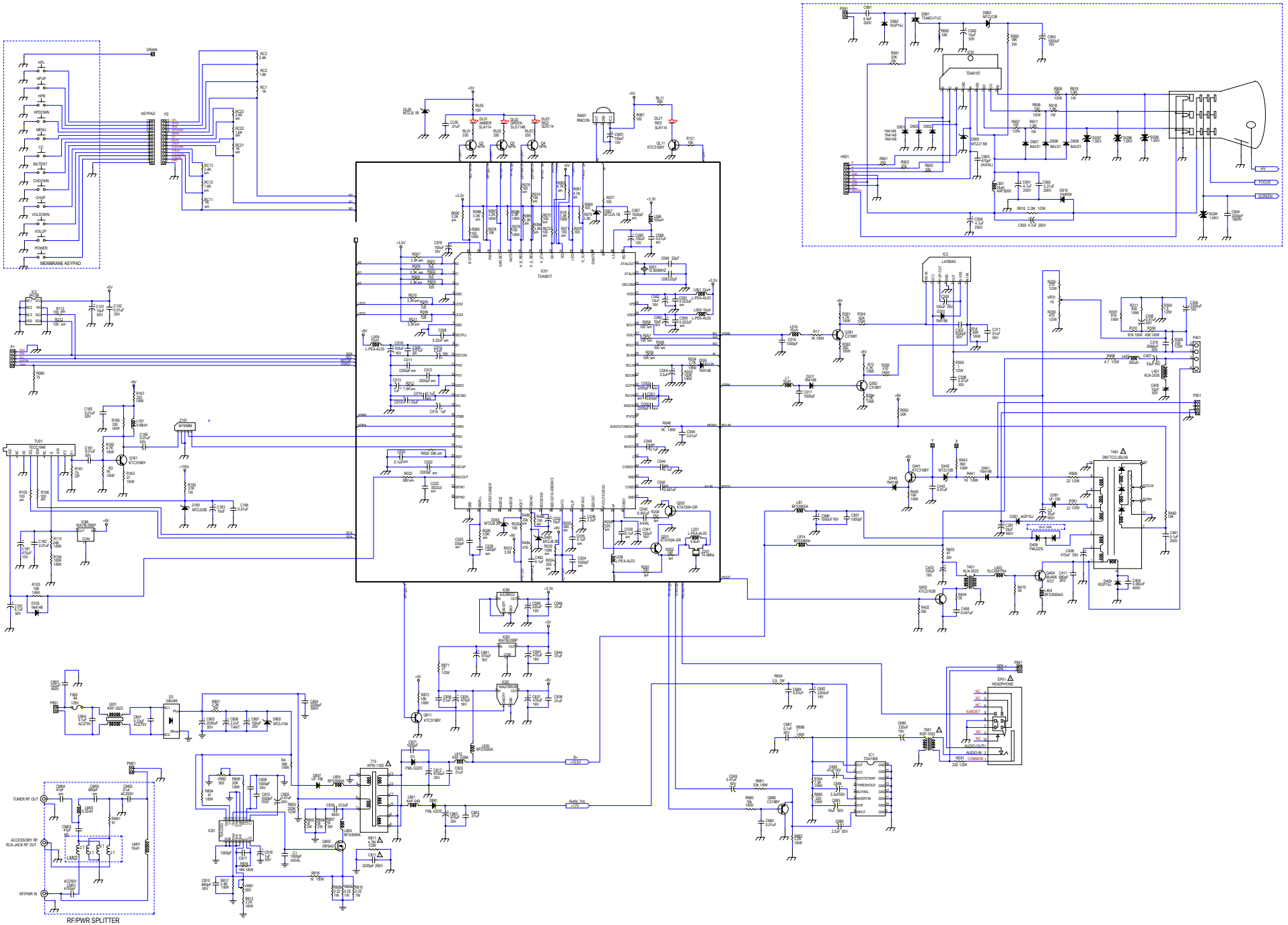

△ Indicates a critical safety component. Replace only with part number specified.

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REV A	PDI-P9TV
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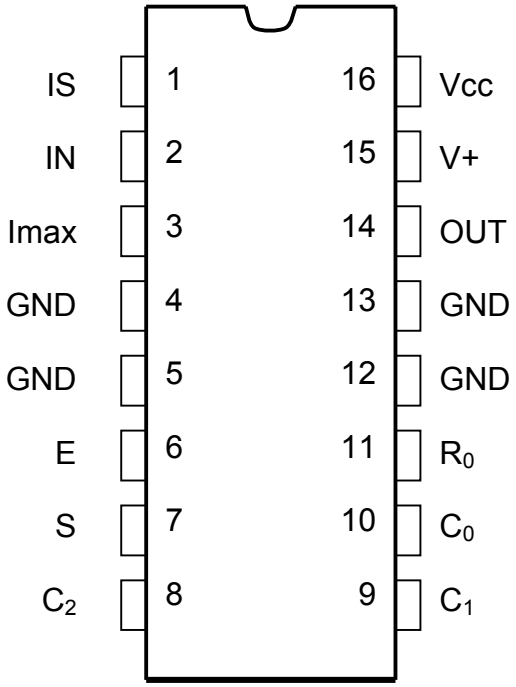
Component Pin-Outs

IC81, TEA2262, Switch Mode Regulator



IC91, TDA6107Q, CRT Video Output Amplifier

PIN 1 Inverting Input 1

PIN 2 Inverting Input 2

PIN 3 Inverting Input 3

PIN 4 Gnd, Fin

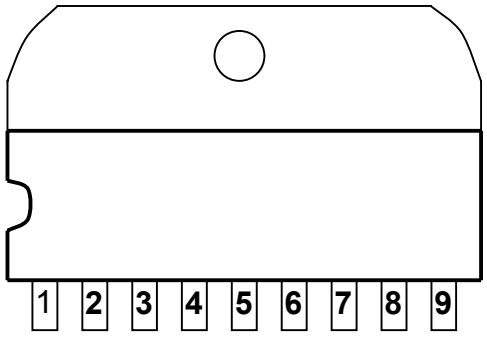
PIN 5 BCS – Output

PIN 6 Supply Voltage

PIN 7 Cathode Output 3

PIN 8 Cathode Output 2

PIN 9 Cathode Output 1



IC31, LA78040, Vertical Deflection Output

PIN 1 INVERTING INPUT

PIN 2 Vcc

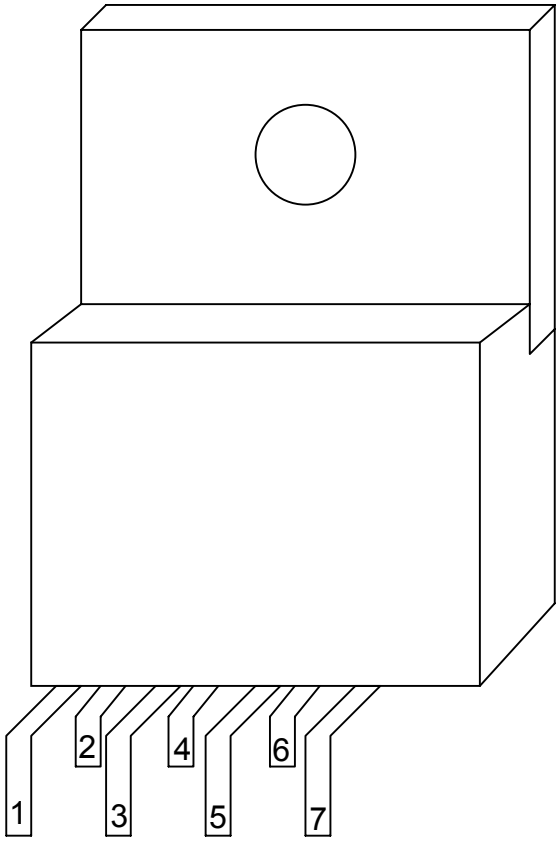
PIN 3 Pump Up Output

Pin 4 GND

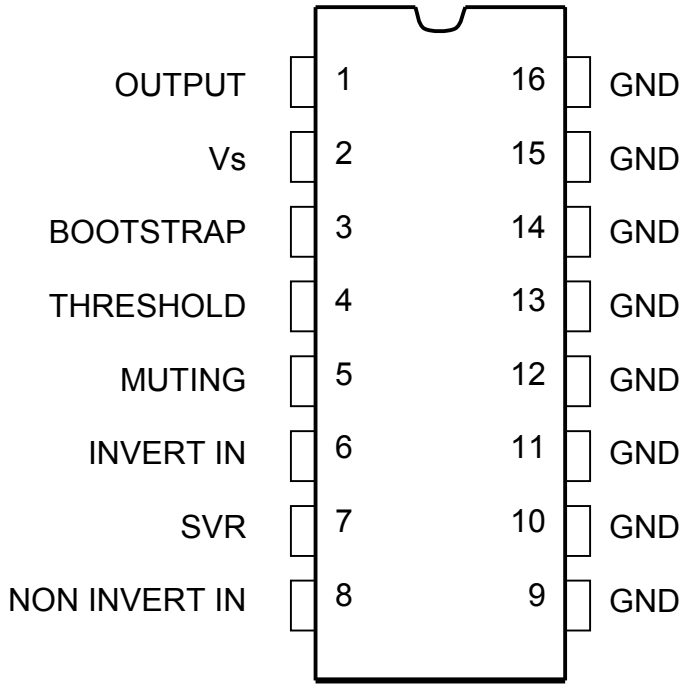
Pin 5 Vertical Output

Pin 6 Vcc for Output Amp

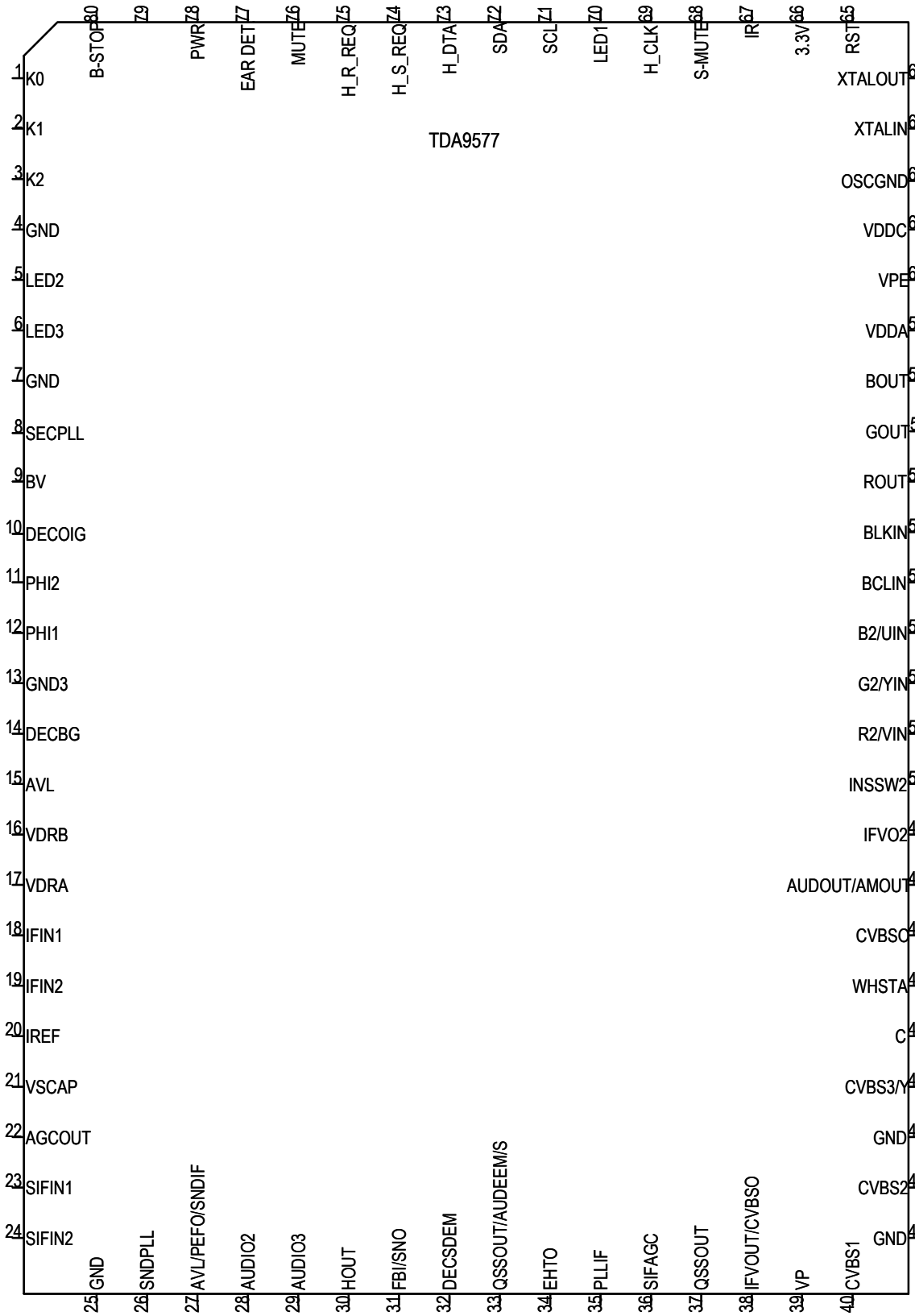
Pin 7 Non Inv Input



IC61, TDA1905, Audio Output Amp



IC51, TDA9577, PIF, SIF, VIDEO, CROMA, DEF

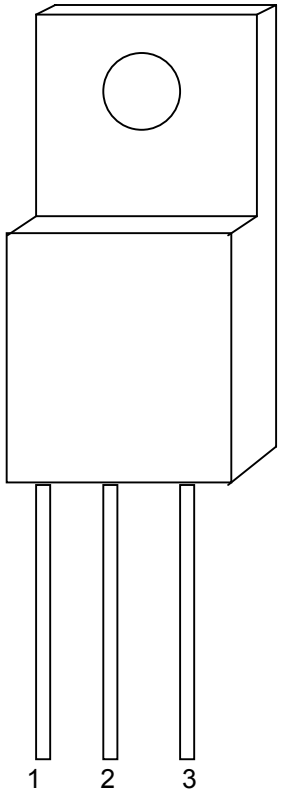


Q404, BU406, HOT (HORIZONTAL OUTPUT TRANSISTOR)

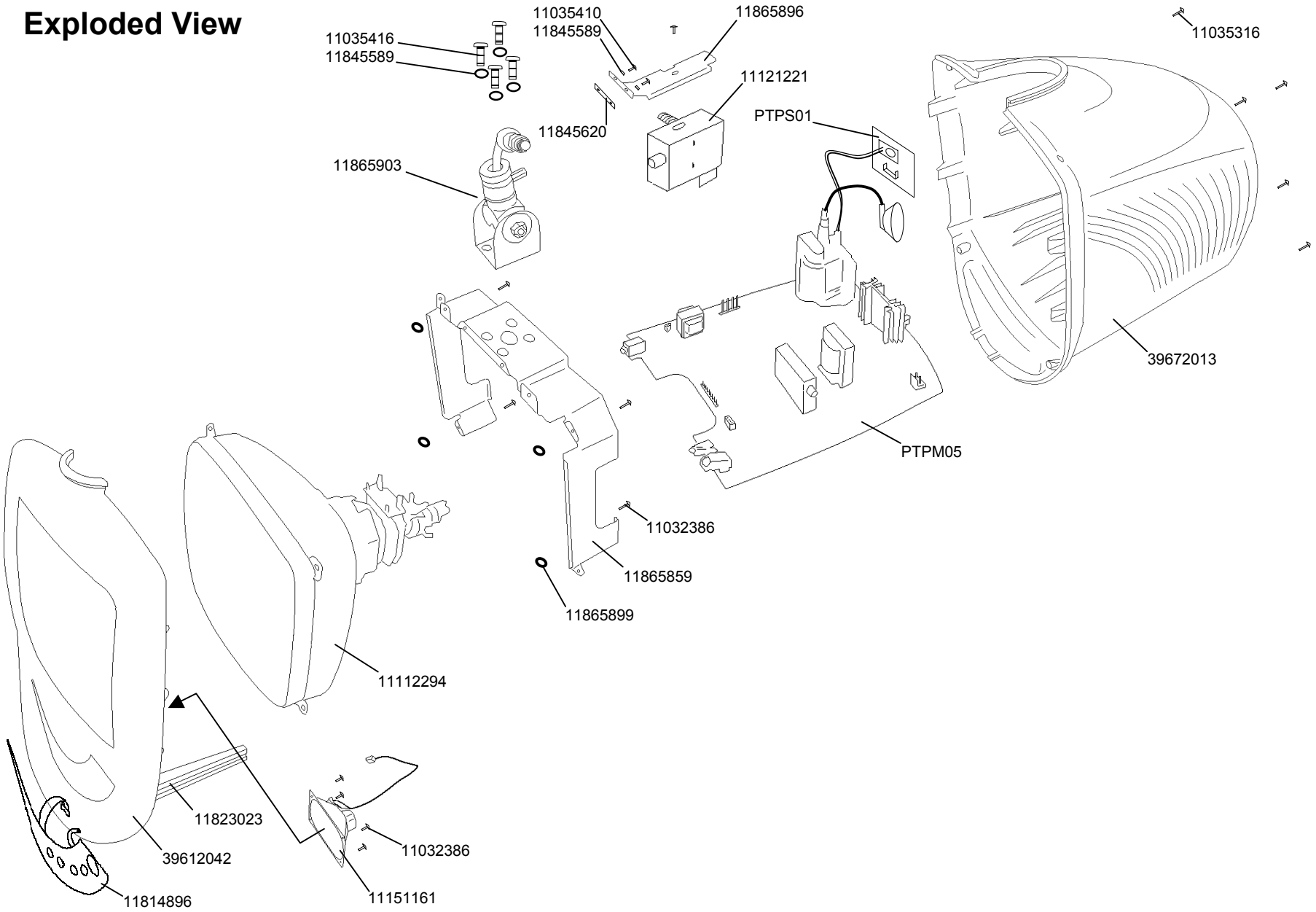
PIN 1 Base

PIN 2 Collector

PIN 3 Emitter



Exploded View



PDI-P9TV REV.A

Ref.	Part #	Description
MAIN CHASSIS PTPM05		
C008	12752224T	CHIP CERAMIC CAP, X7R 50V 0.22MF K
C009	12752103T	CHIP CERAMIC CAP, X7R 50V 0.01MF K
C011	12752222T	CHIP CERAMIC CAP, X7R 50V 2200PF K
C012	12752222T	CHIP CERAMIC CAP, X7R 50V 2200PF K
C020	12752104T	CHIP CERAMIC CAP, X7R 50V 0.1MF K
C022	12752222T	CHIP CERAMIC CAP, X7R 50V 2200PF K
C025	12751331T	CHIP CERAMIC CAP, COG 50V 330PF J
C026	12752122T	CHIP CERAMIC CAP, X7R 50V 1200PF K
C034	12752102T	CHIP CERAMIC CAP, X7R 50V 1000PF K
C035	12752104T	CHIP CERAMIC CAP, X7R 50V 0.1MF K
C039	12752104T	CHIP CERAMIC CAP, X7R 50V 0.1MF K
C040	12752473T	CHIP CERAMIC CAP, X7R 50V 0.047MF K
C042	12752473T	CHIP CERAMIC CAP, X7R 50V 0.047MF K
C044	12752104T	CHIP CERAMIC CAP, X7R 50V 0.1MF K
C046	12752104T	CHIP CERAMIC CAP, X7R 50V 0.1MF K
C050	12752223T	CHIP CERAMIC CAP, X7R 50V 0.022MF K
C051	12752223T	CHIP CERAMIC CAP, X7R 50V 0.022MF K
C052	12752223T	CHIP CERAMIC CAP, X7R 50V 0.022MF K
C059	12752223T	CHIP CERAMIC CAP, X7R 50V 0.022MF K
C061	12752223T	CHIP CERAMIC CAP, X7R 50V 0.022MF K
C063	12751220T	CHIP CERAMIC CAP, COG 50V 22PF J
C064	12751220T	CHIP CERAMIC CAP, COG 50V 22PF J
C067	12752102T	CHIP CERAMIC CAP, X7R 50V 1000PF K
IC01	11118499T	IC,EEPROM-8K AT24C08AN-10SI-2.7SMD
IC51	11118490T	IC. UOC TDA9577H/N1/AI (OTP) NT/ON
Q201	11114464T	CHIP TR, KTA1504S-GR-RTK (ASG) KEC
Q202	11114464T	CHIP TR, KTA1504S-GR-RTK (ASG) KEC
R001	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R002	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R003	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R005	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R006	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R007	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R008	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R009	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R010	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R011	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R012	12873153T	CHIP RES, 1/16W 15K OHM J(1608)
R020	12873393T	CHIP RES, 1/16W 39K OHM J (1608)
R022	12873681T	CHIP RES, 1/16W 680 OHM J(1608)
R026	12873392T	CHIP RES, 1/16W 3.9K OHM J(1608)
R032	12873104T	CHIP RES, 1/16W 100K OHM J(1608)
R034	12873331T	CHIP RES, 1/16W 330 OHM J(1608)
R035	12873391T	CHIP RES, 1/16W 390 OHM J (1608)
R038	12873221T	CHIP RES, 1/16W 220 OHM J (1608)

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Ref.	Part #	Description
R055	12873103T	CHIP RES, 1/16W 10K OHM J(1608)
R056	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R057	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R058	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R070	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R071	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R072	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R076	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R080	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R081	12873472T	CHIP RES, 1/16W 4.7K OHM J(1608)
R082	12873472T	CHIP RES, 1/16W 4.7K OHM J(1608)
R086	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R087	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R089	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R090	12873332T	CHIP RES, 1/16W 3.3K OHM J(1608)
R105	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R106	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R111	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R112	12873101T	CHIP RES, 1/16W 100 OHM J(1608)
R201	12873331T	CHIP RES, 1/16W 330 OHM J(1608)
R202	12873181T	CHIP RES, 1/16W 180 OHM J (1608)
R203	12873151T	CHIP RES, 1/16W 150 OHM J (1608)
R204	12873151T	CHIP RES, 1/16W 150 OHM J (1608)
RC11	12873102T	CHIP RES, 1/16W 1K OHM J(1608)
RC12	12873162T	CHIP RES, 1/16W 1.6K OHM J (1608)
RC13	12873242T	CHIP RES, 1/16W 2.4K OHM J(1608)
RC21	12873102T	CHIP RES, 1/16W 1K OHM J(1608)
RC22	12873162T	CHIP RES, 1/16W 1.6K OHM J (1608)
RC23	12873242T	CHIP RES, 1/16W 2.4K OHM J(1608)
RC31	12873102T	CHIP RES, 1/16W 1K OHM J(1608)
RC32	12873162T	CHIP RES, 1/16W 1.6K OHM J (1608)
RC33	12873242T	CHIP RES, 1/16W 2.4K OHM J(1608)
RE92	12873000T	CHIP RES, 1/16W 0 OHM J(1608)
RE93	12873000T	CHIP RES, 1/16W 0 OHM J(1608)
C014	12477104T	CERAMIC CAP, F 50V 0.1MF Z AXIAL
C016	12474102T	CERAMIC CAP, B 50V 1000PF K AXIAL
C017	12474102T	CERAMIC CAP, B 50V 1000PF K AXIAL
C048	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C066	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C069	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C102	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C161	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C163	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C165	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C182	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C184	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C442	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL

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Ref.	Part #	Description
C482	12477104T	CERAMIC CAP, F 50V 0.1MF Z AXIAL
C689	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C810	12474681T	CERAMIC CAP, B 50V 680PF K AXIAL
C817	12474102T	CERAMIC CAP, B 50V 1000PF K AXIAL
C820	12474102T	CERAMIC CAP, B 50V 1000PF K AXIAL
C836	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C838	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C844	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
C871	12497103T	CERAMIC CAP, F 25V 0.01MF Z AXIAL
D017	11115024T	SILICON DIODE, 1N4148
D030	11115638T	ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W
D054	11115024T	SILICON DIODE, 1N4148
D080	11115623T	ZD, MTZJ5.1B (VZ4.94-5.20) 0.5W
D103	11115024T	SILICON DIODE, 1N4148
D181	11115686T	ZD, MTZJ33B (VZ30.32-31.88) 0.5W
D281	11115444T	DIODE, RGP15J
D301	11115003T	SILICON DIODE, 1N4004
D381	11115458T	DIODE, FAST RECOVERY UF-156
D404	11115444T	DIODE, RGP15J
D441	11115024T	SILICON DIODE, 1N4148
D442	11115651T	ZD, MTZJ12B (VZ11.44-12.03) 0.5W
D445	11115024T	SILICON DIODE, 1N4148
D481	11115638T	ZD, MTZJ8.2B (VZ7.78-8.19) 0.5W
D802	11115656T	ZD, MTZJ15A (VZ13.44-14.13) 0.5W
D807	11115458T	DIODE, FAST RECOVERY UF-156
D808	11115458T	DIODE, FAST RECOVERY UF-156
D861	11115458T	DIODE, FAST RECOVERY UF-156
L009	11237100T	COIL, AXIAL LAL02TB 10UH K
L016	11237100T	COIL, AXIAL LAL02TB 10UH K
L017	11237100T	COIL, AXIAL LAL02TB 10UH K
L039	11237100T	COIL, AXIAL LAL02TB 10UH K
L059	11237100T	COIL, AXIAL LAL02TB 10UH K
L061	11237100T	COIL, AXIAL LAL02TB 10UH K
L066	11237101T	COIL, AXIAL LAL02TB 100UH J
L161	11237688T	COIL, AXIAL LAL02TB 0.68UH K
L201	11237569T	COIL, AXIAL LAL02TB 5.6UH K
L404	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L407	11248331T	COIL, AXIAL LAL03TB 330UH K
L804	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L805	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L813	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L814	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L835	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
L861	11103041T	B-CORE, BF40 BTL3.5*7B (BFS 3565AO)
R016	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R030	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R031	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J

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Ref.	Part #	Description
R033	12368302T	CARBON RESISTOR, SB 1/6W 3K OHM J
R048	12368102T	CARBON RESISTOR, SB 1/6W 1K OHM J
R050	12368203T	CARBON RESISTOR, SB 1/6W 20K OHM J
R053	12368104T	CARBON RESISTOR, SB 1/6W 100K OHM J
R054	12368272T	CARBON RESISTOR, SB 1/6W 2.7K OHM J
R060	12368750T	CARBON RESISTOR, SB 1/6W 75 OHM J
R067	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R078	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R088	12368332T	CARBON RESISTOR, SB 1/6W 3.3K OHM J
R103	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R104	12368104T	CARBON RESISTOR, SB 1/6W 100K OHM J
R113	12368243T	CARBON RESISTOR, SB 1/6W 24K OHM J
R121	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R162	12368472T	CARBON RESISTOR, SB 1/6W 4.7K OHM J
R163	12368270T	CARBON RESISTOR, SB 1/6W 27 OHM J
R164	12368102T	CARBON RESISTOR, SB 1/6W 1K OHM J
R165	12368331T	CARBON RESISTOR, SB 1/6W 330 OHM J
R167	12368221T	CARBON RESISTOR, SB 1/6W 220 OHM J
R302	12368511T	CARBON RESISTOR, SB 1/6W 510 OHM J
R303	12368133T	CARBON RESISTOR, SB 1/6W 13K OHM J
R304	12368623T	CARBON RESISTOR, SB 1/6W 62K OHM J
R305	12321109T	OXIDE RESISTOR, B 1/2W 1 OHM J
R306	12368433T	CARBON RESISTOR, SB 1/6W 43K OHM J
R307	12368913T	CARBON RESISTOR, SB 1/6W 91K OHM J
R308	12321331T	OXIDE RESISTOR, B 1/2W 330 OHM J
R309	12321159T	OXIDE RESISTOR, B 1/2W 1.5 OHM J
R310	12368913T	CARBON RESISTOR, SB 1/6W 91K OHM J
R311	12368821T	CARBON RESISTOR, SB 1/6W 820 OHM J
R325	12321471T	OXIDE RESISTOR, B 1/2W 470 OHM J
R326	12321241T	OXIDE RESISTOR, B 1/2W 240 OHM J
R381	12321279T	OXIDE RESISTOR, B 1/2W 2.7 OHM J
R391	12368472T	CARBON RESISTOR, SB 1/6W 4.7K OHM J
R392	12368391T	CARBON RESISTOR, SB 1/6W 390 OHM J
R393	12368472T	CARBON RESISTOR, SB 1/6W 4.7K OHM J
R394	12368272T	CARBON RESISTOR, SB 1/6W 2.7K OHM J
R402	12368391T	CARBON RESISTOR, SB 1/6W 390 OHM J
R404	12368360T	CARBON RESISTOR, SB 1/6W 36 OHM J
R408	12321479T	OXIDE RESISTOR, B 1/2W 4.7 OHM J
R410	12368560T	CARBON RESISTOR, SB 1/6W 56 OHM J
R441	12368102T	CARBON RESISTOR, SB 1/6W 1K OHM J
R442	12368912T	CARBON RESISTOR, SB 1/6W 9.1K OHM J
R443	12368391T	CARBON RESISTOR, SB 1/6W 390 OHM J
R445	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R482	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R484	12368471T	CARBON RESISTOR, SB 1/6W 470 OHM J
R485	12368223T	CARBON RESISTOR, SB 1/6W 22K OHM J
R680	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J

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Ref.	Part #	Description
R681	12368333T	CARBON RESISTOR, SB 1/6W 33K OHM J
R682	12368222T	CARBON RESISTOR, SB 1/6W 2.2K OHM J
R684	12368752T	CARBON RESISTOR, SB 1/6W 7.5K OHM J
R685	12368221T	CARBON RESISTOR, SB 1/6W 220 OHM J
R686	12368109T	CARBON RESISTOR, SB 1/6W 1 OHM J
R803	12368479T	CARBON RESISTOR, SB 1/6W 4.7 OHM J
R804	12368470T	CARBON RESISTOR, SB 1/6W 47 OHM J
R805	12368223T	CARBON RESISTOR, SB 1/6W 22K OHM J
R808	12977228T	RES, NKN1WSJT-52 0R22 OHM (PRN)
R809	12977228T	RES, NKN1WSJT-52 0R22 OHM (PRN)
R810	12977228T	RES, NKN1WSJT-52 0R22 OHM (PRN)
R811	12005475T	METAL FILM RES(VDE),1/2W 4.7M OHM
R812	12368222T	CARBON RESISTOR, SB 1/6W 2.2K OHM J
R813	12368220T	CARBON RESISTOR, SB 1/6W 22 OHM J
R814	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R816	12368183T	CARBON RESISTOR, SB 1/6W 18K OHM J
R817	12368242T	CARBON RESISTOR, SB 1/6W 2.4K OHM J
R818	12368102T	CARBON RESISTOR, SB 1/6W 1K OHM J
R820	12919224T	CARBON RESISTOR, SB 1/2W 220K OHM J
R871	12321270T	OXIDE RESISTOR, B 1/2W 27 OHM J
R872	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
R906	12321228T	OXIDE RESISTOR, B 1/2W 0.22 OHM J
RE91	12321221T	OXIDE RESISTOR, B 1/2W 220 OHM J
RL01	12368331T	CARBON RESISTOR, SB 1/6W 330 OHM J
RL02	12368331T	CARBON RESISTOR, SB 1/6W 330 OHM J
RL03	12368331T	CARBON RESISTOR, SB 1/6W 330 OHM J
RL11	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
C010	12797229T	CHEMICON, 50V 2.2MF 85C 5*11
C013	12797109T	CHEMICON, 50V 1MF 85C 5*11
C015	12797109T	CHEMICON, 50V 1MF 85C 5*11
C018	12794101T	CHEMICON, 16V 100MF 85C 6.3*11
C019	12797100T	CHEMICON, 50V 10MF 85C 5*11
C032	12797100T	CHEMICON, 50V 10MF 85C 5*11
C036	12797229T	CHEMICON, 50V 2.2MF 85C 5*11
C041	12794101T	CHEMICON, 16V 100MF 85C 6.3*11
C049	12797478T	CHEMICON, 50V 0.47MF 85C 5*11
C053	12797478T	CHEMICON, 50V 0.47MF 85C 5*11
C054	12797479T	CHEMICON, 50V 4.7MF 85C 5*11
C060	12797100T	CHEMICON, 50V 10MF 85C 5*11
C062	12797100T	CHEMICON, 50V 10MF 85C 5*11
C065	12793101T	CHEMICON, 10V 100MF 85C 5*11
C068	12793221T	CHEMICON, 10V 220MF 85C 6.3*11
C079	12793101T	CHEMICON, 10V 100MF 85C 5*11
C101	12797100T	CHEMICON, 50V 10MF 85C 5*11
C107	12797479T	CHEMICON, 50V 4.7MF 85C 5*11
C181	12793471T	CHEMICON, 10V 470MF 85C 8*12
C183	12797470T	CHEMICON, 50V 47MF 85C 6.3*11

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Ref.	Part #	Description
C302	12692102T	PLASTIC CAPACITOR, M 50V 1000PF J
C305	12796101T	CHEMICON, 35V 100MF 85C 8*12
C306	12797478T	CHEMICON, 50V 0.47MF 85C 5*11
C311	12692103T	PLASTIC CAPACITOR, M 50V 0.01MF J
C315	12692223T	PLASTIC CAPACITOR, M 50V 0.022MF J
C403	12794101T	CHEMICON, 16V 100MF 85C 6.3*11
C406	12692473T	PLASTIC CAPACITOR, M 50V 0.047MF J
C407	12796330T	CHEMICON, 35V 33 MF 85C 5*11
C680	12797228T	CHEMICON, 50V 0.22MF 85C 5*11
C683	12794470T	CHEMICON, 16V 47MF 85C 5*11
C684	12797339T	CHEMICON, 50V 3.3MF 85C 5*11
C685	12797100T	CHEMICON, 50V 10MF 85C 5*11
C686	12797229T	CHEMICON, 50V 2.2MF 85C 5*11
C687	12692104T	PLASTIC CAPACITOR, M 50V 0.1MF J
C688	12794221T	CHEMICON, 16V 220MF 85C 8*12
C806	12576229T	TA SOLID CAPACITOR, 25V 2.2MF K
C807	12795101T	CHEMICON, 25V 100MF 85C 6.3*11
C808	12692102T	PLASTIC CAPACITOR, M 50V 1000PF J
C809	12797478T	CHEMICON, 50V 0.47MF 85C 5*11
C815	12797479T	CHEMICON, 50V 4.7MF 85C 5*11
C816	12797109T	CHEMICON, 50V 1MF 85C 5*11
C821	12214102T	CERAMIC CAPACITOR, B 500V 1000PF K
C822	12232103T	CERAMIC CAPACITOR, F 50V 0.01MF Z
C824	12214222T	CERAMIC CAPACITOR, B 500V 2200PF K
C835	12683471T	CHEMICON, 16V 470MF SHL,SD (8*11.5)
C837	12683471T	CHEMICON, 16V 470MF SHL,SD (8*11.5)
C847	12683471T	CHEMICON, 16V 470MF SHL,SD (8*11.5)
C851	12214102T	CERAMIC CAPACITOR, B 500V 1000PF K
C861	12214102T	CERAMIC CAPACITOR, B 500V 1000PF K
C863	12232103T	CERAMIC CAPACITOR, F 50V 0.01MF Z
CM01	12793101T	CHEMICON, 10V 100MF 85C 5*11
F802A	11165037T	HOLDER, FUSE 5.2 (TAPPING)
IC86	11119387T	IC, REGU. 150[㎃] KIA78L05BP
L403	11261021T	COIL, ELC0607RA-1R0K (KRF9229)
Q161	11114066T	TR, KTC388A-TM (KTC3197)
Q391	11114056T	TR, KTC1815-Y (KTC3198-Y)
Q392	11114056T	TR, KTC1815-Y (KTC3198-Y)
Q402	11114648T	TR, KTD1028-A
Q441	11114056T	TR, KTC1815-Y (KTC3198-Y)
Q680	11114056T	TR, KTC1815-Y (KTC3198-Y)
Q811	11114056T	TR, KTC1815-Y (KTC3198-Y)
QL01	11114323T	TR, BRT KRC1201 (KRC101M)
QL02	11114323T	TR, BRT KRC1201 (KRC101M)
QL03	11114323T	TR, BRT KRC1201 (KRC101M)
QL11	11114056T	TR, KTC1815-Y (KTC3198-Y)
Z201	11107013T	C/TRAP,TPSRA4M50C00-A0(MURATA)
C021	12095062T	P/ CAP, 250V 0.1MF J TNU

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Ref.	Part #	Description
C281	12799330T	CHEMICON, 160V 33MF 85C 10*20
C304	12794222T	CHEMICON, 16V 2200MF 85C 13*25
C308	12692274T	PLASTIC CAPACITOR, M 50V 0.27MF J
C381	12796331T	CHEMICON, 35V 330MF 85C 10*16
C408	12796471T	CHEMICON, 35V 470MF 85C 10*20
C411	12211681T	CERAMIC CAPACITOR, B 2KV 680PF K
C481	12095062T	P/ CAP, 250V 0.1MF J TNU
C682	12087017T	CHEMICON, 25V 2200UF SMG(12.5*25)
C841	12794102T	CHEMICON, 16V 1000MF 85C 10*20
C843	12793102T	CHEMICON, 10V 1000MF 85C 10*16
C846	12794102T	CHEMICON, 16V 1000MF 85C 10*20
C862	12795471T	CHEMICON, 25V 470MF 85C 10*16
VR31	12061630T	CARBON-VR, 0.2W B 1K OHM FB
VR81	12061629T	CARBON-VR, 0.2W B 500 OHM FB
VR82	12061633T	CARBON-VR, 0.2W B 5K OHM FB
C404	12834823B	P/ CAP, T 400V 0.082MF K PFU
C405	12085049S	CHEMICON,KSA 105C 50V 4.7UF 16*35.5
C801	12095214C	PLASTIC CAP, RE-334C AC275V0.33MF K
C802	12666222S	CHEMI CON,105C 50V 2200MF KME
C803	12095207B	CERA-CAPA, DA2GYE222MK617 NK
C804	12095170B	PLASTIC CAP, PCX2335 AC275V 0.1MF M
C811	12095207B	CERA-CAPA, DA2GYE222MK617 NK
C812	12095147B	MICA CAP, DM15F 100V 1000PF J
C813	12702222T	CHEMICON,25V 2200MF KMG,RD 12.5*25
C818	12829123B	PLASTIC CAPACITOR, T 400V 0.012MF J
D408Z	150420040	DIODE, ASS'Y FMU22S 10FK
D408	11115495	DIODE, SWITCHING FMU22S
D408A	11865514	HEAT SINK, I-TYPE CT14CE (30MM)
D408B	11032382	SCREW, TTB 3*10 SZN
D801	11115737	DIODE, GBU6K BRIDGE
D816Z	150420038	DIODE, ASS'Y D10LC20U 10AJ
D816	11115554	DIODE, D10LC20U-4004 (TWIN FRD)
D816A	11865591	HEAT SINK, 10AF
D816B	11032382	SCREW, TTB 3*10 SZN
DL01	11113003	LED, SLR124 REDΦ3 DIFF. ST-LESS
DL02	11113029	LED, SLG124B GREENΦ3 DIFF. ST-LESS
DL03	11113206	LED, SLO-124(AMBER)
DL03A	11823024	LED BRKT(3), 10HP
DL21	11113003	LED, SLR124 REDΦ3 DIFF. ST-LESS
DL21A	11826974	LED HOLDER(3Φ)
EP61	11163209	JACK, ST-323-01
F802	11144205	FUSE, 250V T4A 218004 K/S/V/R/B/T/C
IC31Z	150500494	HEAT SINK, ASS'Y LA78040 10HP
IC31	11118463	IC, VERTICAL LA78040
IC31A	11865857	HEAT SINK, 14B1J (45MM)
IC31B	11032382	SCREW, TTB 3*10 SZN
IC61	11119659	IC, TDA1905 (PD16) AUDIO(5W) STM

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Ref.	Part #	Description
IC81	11119660	IC, SMPS CONTROL TEA2262
IC82Z	150500499	HEAT SINK, ASS'Y KIA278R08 10HP
IC82	11118484	IC REGU KIA278R08PI-U 2A/8V KEC
IC82A	11865514	HEAT SINK, I-TYPE CT14CE (30MM)
IC82B	11032382	SCREW, TTB 3*10 SZN
IC83	11119282	IC, REGU. 1[A] KIA7805PI(7805API)
IC85	11118370A	IC, KIA78R33API 1A/3.3V PIN4 KEC
L401	11222001	COIL, LIN KLN2035 4.8UH (DR 8*11)
L801	11211043	COIL, LINEFILTER KRF-3022
L812	11251065	COIL, CHOKE KRF-G049(100UH)
L812	C1251065	COIL, CHOKE CKRF-G049(100UH)
P001	11164928	PLUG, WAFER YFW254-13
P401	11164391	PLUG, YFW500-04
P501A	11164124	PLUG, 5P 5267-05AX
P501B	11164123	PLUG, 4P 5267-04AX
P661	11164121	PLUG, 2P 5267-02AX
P801	11164034	PLUG, 2P LARGE 5289-2A 7.5MM
PB01	11164124	PLUG, 5P 5267-05AX
Q404Z	150500307	HEAT SINK, ASS'Y BU406 06AE
Q404	11114223	TR, HORIZONTAL BU406 (TO-220) FSC
Q404A	11865594	HEAT SINK(X-TYPE) 06AE
Q404B	11032382	SCREW, TTB 3*10 SZN
Q802Z	150500504	HEAT SINK, ASS'Y IRFS640B 10HP
Q802	11114646	TR, FET IRFS640B
Q802A	11865601	HEAT SINK, 4PIN 14VH
Q802B	11032382	SCREW, TTB 3*10 SZN
Q802D	11103054A	BEAD CORE, L6 RH 3.5*5*1.3
Q802E	11962001	BOND, SCREW LOCK
R182	12322273S	OXIDE RESISTOR, B 1W 27K OHM J
R403	12323470S	OXIDE RESISTOR, B 2W 47 OHM J
R664	12322339S	OXIDE RESISTOR, B 1W 3.3 OHM J
R801	12323222S	OXIDE RESISTOR, B 2W 2.2K OHM J
R802	12323180S	OXIDE RESISTOR, B 2W 18 OHM J
R806	12323180S	OXIDE RESISTOR, B 2W 18 OHM J
R807	12323180S	OXIDE RESISTOR, B 2W 18 OHM J
T401	11224037	TRANS, H.D.T KLN-2023
T461	11226248	FBT MCK-10A01Z
T661	11216011	TRANS, SPEAKER KSP-1053
T801	11213404	TRANS,SMPS KPW-1182 10HP300
TU01	11121231	TUNER,TECC1840PG32K NT 5V IIC RCA
X501	11153025A	CRYSTAL, 12.000000MHZ 16PF-FD HC 13
Z101	11107146	SAW FILTER, M1958M NTSC(45.75MHZ)
ZB01	11132042	RX MODULE, RM-1
CRT, PTPS01		

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Ref.	Part #	Description
C905	12474471T	CERAMIC CAP, B 50V 470PF K AXIAL
D901	11115024T	SILICON DIODE, 1N4148
D902	11115024T	SILICON DIODE, 1N4148
D903	11115024T	SILICON DIODE, 1N4148
D905	11115635T	ZD, MTZJ7.5B (VZ7.07-7.45) 0.5W
D907	11115710T	DIODE, BAV21 (AMMO-52MM) PHILIPS
D908	11115710T	DIODE, BAV21 (AMMO-52MM) PHILIPS
D909	11115710T	DIODE, BAV21 (AMMO-52MM) PHILIPS
D910	11115003T	SILICON DIODE, 1N4004
D992	11115444T	DIODE, RGP15J
D993	11115651T	ZD, MTZJ12B (VZ11.44-12.03) 0.5W
R901	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R902	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R903	12368101T	CARBON RESISTOR, SB 1/6W 100 OHM J
R907	12321101T	OXIDE RESISTOR, B 1/2W 100 OHM J
R908	12321101T	OXIDE RESISTOR, B 1/2W 100 OHM J
R909	12321101T	OXIDE RESISTOR, B 1/2W 100 OHM J
R910	12919225T	CARBON RESISTOR, SB 1/2W 2.2M OHM J
R917	12321152T	OXIDE RESISTOR, B 1/2W 1.5K OHM J
R918	12321152T	OXIDE RESISTOR, B 1/2W 1.5K OHM J
R919	12321152T	OXIDE RESISTOR, B 1/2W 1.5K OHM J
R992	12368103T	CARBON RESISTOR, SB 1/6W 10K OHM J
C992	12797100T	CHEMICON, 50V 10MF 85C 5*11
L902	11261020T	COIL, ELC0607RA-180K(KRF9200)
SG94	11140027T	SPARK GAP, 1.5KV SSG-152-A1
SG97	11140027T	SPARK GAP, 1.5KV SSG-152-A1
SG98	11140027T	SPARK GAP, 1.5KV SSG-152-A1
SG99	11140027T	SPARK GAP, 1.5KV SSG-152-A1
C901	12700479T	CHEMICON, 250V 4.7MF SMS,SG (10*13
C902	12095062T	P/ CAP, 250V 0.1MF J TNU
C903	12700479T	CHEMICON, 250V 4.7MF SMS,SG (10*13
C904	12094210T	CERA-CAPA, DM3DYB222K725 (2KV2200)
C906	12700479T	CHEMICON, 250V 4.7MF SMS,SG (10*13
C993	12794102T	CHEMICON, 16V 1000MF 85C 10*20
C991	12095133B	P/ CAP, 250V 4.4MF TNU
D991	11114637	TRIAC, T3A6CI-FUC
H501	300924035C	HARNESS, 9P 350MM (5264-5395)
IC91Z	150500493	HEAT SINK, ASS'Y TDA6107JR 10GN
IC91	11118138B	IC, VIDEO AMP TDA6107JF/N3 PHILIPS
IC91A	11865543	HEAT SINK,(PLATE) (30MM)
IC91B	11032381	SCREW, TTB 3*8 SZN
P991	11164595	PLUG, 2P YPW500-2
R991	12323333S	OXIDE RESISTOR, B 2W 33K OHM J
R993	12323183S	OXIDE RESISTOR, B 2W 18K OHM J
V901A	C1116392	SOCKET CRT, GZS8-6-FD(14) 28MM

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Ref.	Part #	Description
CABINET		
FRONT, ASSEMBLY		
K001	152002656	CABINET, P9TV
K101D	11814896	KEY MEMBRANE, MTI-10-1357 P9TV
K102	11865903	SWIVEL SUB ASS'Y P9TV
K102A	11865897	SWIVEL SUB
K102B	11865895	HANGER BRKT SUB
K102C	11865902	HEX BOLT 1/4"-20*2"
K102D	11865899	1/8"CLEAR LEXAN WASHER
K102E	11865900	1/8" STEEL WASHER
K102F	11865901	1/4"-20 LOCK NUT
K102G	11858470	RUBBER, PROTECT
K102H	11865896	SPILT BRKT
K102I	11121221	MODULE, 10FM300 DC/RF MPX SPLITTER
K102J	11845620	PVC SHEET
K102K	11032386	SCREW, TTBW 3*6 SZN
K102L	11035410	SCREW, BTB 4*10 SZN
K102M	11845589	SCREW GROMMET (EG-2-01)
M002	11177152	COAXAL CABLE, (P-F 210MM)
M801	300275623A	HARNESS, 2P 230MM(5239-5239)
K103	11823023	GUIDE RAIL, P9TV
K103A	11037312	SCREW, BTBW 3*12 SZN
K104	11957459A	LABEL, WARNING SERVICE CT14CE3LU
K109	152300244	SPEAKER SYSTEM, SPK1203 P9TV
M661	300225220	HARNESS, 2P 200MM (5264-)
W661	11151161	SPEAKER, SPK1203 70*40MM 8 OHM
W661	C1151161A	SPEAKER, CSPK1203 70*40MM 8 OHM
K109A	11037312	SCREW, BTBW 3*12 SZN
K110	11037312	SCREW, BTBW 3*12 SZN
L901	11200050A	COIL, DEGAUS, KSB-2172A 10" YEONHO
V901	11112294	CPT, SAMSUNG A23KQU22X01
V901B	3700171001	CRT EARTH ASS'Y, 9BG
V901C	11035416	SCREW, BTB 4*16 SZN
BACK COVER ASSEMBLY		
K411	39672013	BACK COVER BODY, ASS'Y(V0) P9TV
K412	11035316	SCREW, BTB 3*16 SZN
K413	11957972	LABEL, GUIDE (120*26) 10FK3SC
K414	11902578	LABEL, B/C NAME 10FM3SC
K415	11902579	LABEL, WARNING P9TV
K416	11902580	LABEL, SET NUMBER P9TV
K417	11858471	RUBBER, SEAL 10HP

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