

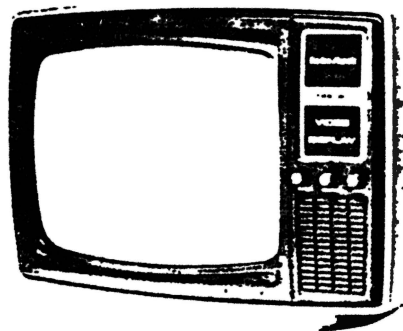
26-9202/7020

**Radio Shack®**

# **Service Manual**

## **TRS-80 VIDEO DISPLAY**

**Catalog Number: 26-9202/7020**



**CUSTOM MANUFACTURED FOR TANDY CORPORATION**

### **IMPORTANT NOTICE FOR SERVICE PERSONNEL BEFORE SERVICING**

**READ THE FOLLOWING NOTES BEFORE ATTEMPTING  
TO TEST OR SERVICE THIS RECEIVER.**

**SINCE THIS IS A TRANSISTORIZED SET, CARE MUST  
BE TAKEN TO PREVENT THE TRANSISTORS FROM  
OVERLOADING WHICH WILL CAUSE PREMATURE  
FAILURE**

#### **CAUTION:**

**Transistors heat sinks are not at ground potential**

1. Normal voltage at emitter, Q801 is  $11.5V \pm 0.2V$  DC  
When the AC voltage is supplied to the set.  
Variable resistor R808 is used for adjusting the  
 $11.5V \pm 0.2V$  DC.

If the AC voltage is too high or too low, this DC  
voltage will be out of tolerance.

2. When servicing, watch AC power line voltage so that  
it does not exceed more than 10% of designated  
AC voltage
3. When making adjustment of deflection circuit in-  
cluding horizontal frequency, AC power line voltage  
must be kept at rated voltage.
4. To protect the transistors in the set, never apply a  
meter to or ground the second anode lead of the pic-  
ture tube To discharge the anode, disconnect the  
lead and discharge CRT anode
5. While the receiver is operating, do not attempt to con-  
nect or disconnect any wires.
6. Make sure the power cord is disconnected before  
replacing any parts in the video display
7. When the power is on, do not attempt to ground any  
portion of the circuit. Because grounding may cause  
damage to the transistors in the set

### **BACK COVER REMOVAL**

1. Remove 4 screws from the back cover.
2. Carefully remove the rear cover straight for back.

### **DEFLECTION YOKE AND CENTERING RINGS**

- 1 Turn the set on
- 2 Loosen the Deflection Yoke Clamp and carefully move  
the yoke on the neck of the picture tube as far forward  
as possible Rotate the yoke until the top and bottom  
edges of the raster are straightened Tighten the  
clamp
- 3 Center the raster and eliminate shaded corners, by  
rotating the centering rings until the best centering is  
obtained

### **VERTICAL HEIGHT**

- 1 Set the Height control R314 to mid-position
- 2 Adjust the Vertical Linearity control R315 to obtain  
the best linearity
- 3 Adjust the Height control to obtain proper picture  
height

### **HORIZONTAL FREQUENCY**

If there is an indication of unstable horizontal sync, adjust  
the Horizontal hold coil (L401) so that the setting is in the  
center of the pull-in range of the coil

The diagram illustrates the internal layout of a television set, showing the following components and their connections:

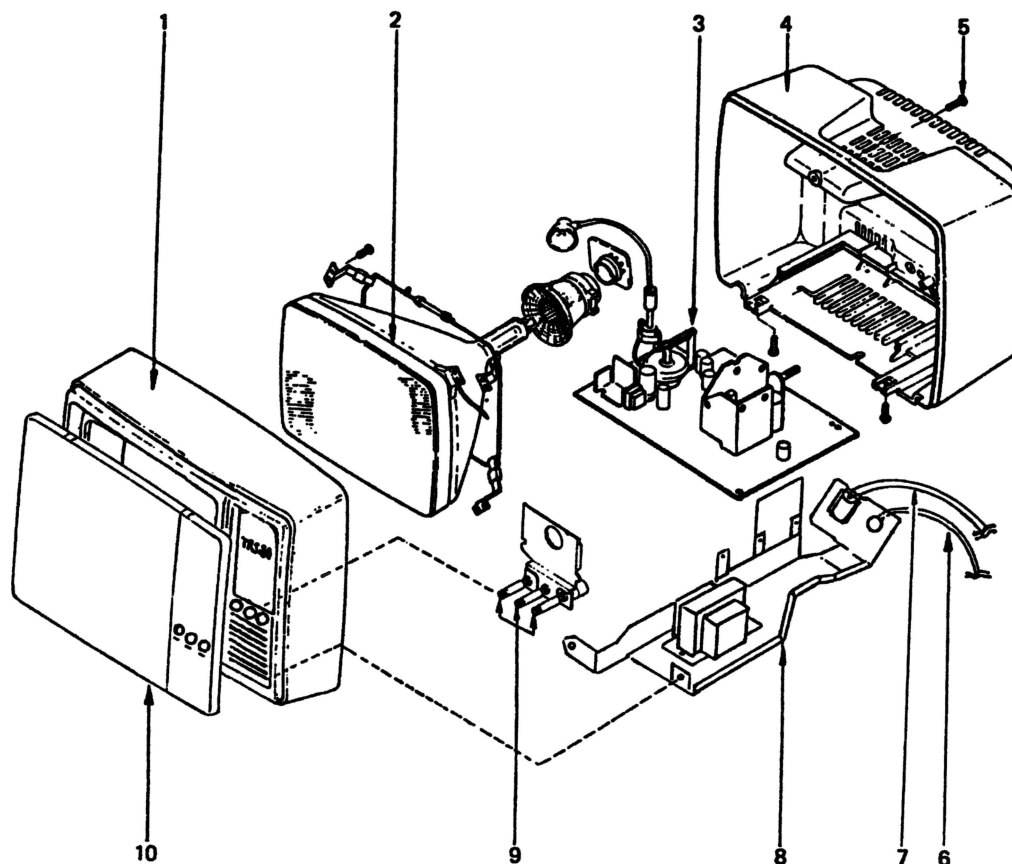
- Controls and Input:**
  - S801 POWER SWITCH:** Located at the top left, connected to the power input.
  - R202 CONTRAST:** A potentiometer for adjusting contrast.
  - R910 BRIGHTNESS:** A potentiometer for adjusting brightness.
  - VIDEO INPUT CORD:** Connected to the video input terminals at the bottom left.
  - AC SUPPLY CORD:** Connected to the AC input terminals at the bottom left.
- Power and Protection:**
  - T801 POWER TRANS:** The power transformer, located in the center-left.
  - F801 FUSE:** A fuse connected to the power line from the transformer.
- Vertical Section:**
  - Q304 VERT. OUTPUT:** The output stage of the vertical deflection circuit.
  - Q303 VERT. AMP:** The vertical amplifier.
  - Q302 VERT. OSC:** The vertical oscillator.
  - Q305 VERT. OUTPUT:** Another output stage for the vertical deflection circuit.
  - R315 VERT. LIN:** A resistor in the vertical linearity circuit.
  - R314 VERT. HEIGHT:** A resistor in the vertical height control circuit.
  - R309 VERT. HOLD:** A resistor in the vertical hold circuit.
  - L401 HORIZ. MULT. D:** A horizontal multiplier inductor.
- Horizontal Section:**
  - Q403 HORIZ. OUTPUT:** The output stage of the horizontal deflection circuit.
  - Q402 HORIZ. AMP:** The horizontal amplifier.
  - Q401 HORIZ. OSC:** The horizontal oscillator.
  - Q801 POWER REG:** A power regulation transistor.
  - Q802 POWER REG:** Another power regulation transistor.
  - Q201 VIDEO HEAD AMP:** The video head amplifier.
  - Q301 SYNC. SEP:** A sync separator circuit.
- Other Components:**
  - V901 310H0831 PICTURE TUBE:** The main display tube at the top right.
  - D403 DAMPER:** A damper diode for the horizontal deflection circuit.
  - D404:** A diode in the sync separator circuit.
  - D806:** A diode in the horizontal amplifier circuit.
  - D801, D802, D803:** Diodes in the power and vertical sections.
  - C204, C205, C405, C406, C408, C409:** Various capacitors throughout the circuit.
  - L202:** An inductor in the power section.
  - R805, C806, C808:** Resistors and capacitors in the horizontal section.

The diagram illustrates the internal wiring of a television set, showing the power supply, video input, and deflection yoke assembly. Key components and their connections are as follows:

- Power Supply Section:**
  - S801 POWER SWITCH:** Connected to the main power line.
  - R702 CONTRAST:** A variable resistor connected to the power line.
  - R910 BRIGHTNESS:** A variable resistor connected to the power line.
  - T801 POWER TRANS:** The power transformer, connected to the power line and the AC supply cord.
  - F801 FUSE:** A fuse connected to the power line.
  - AC SUPPLY CORD:** Connected to the power transformer and the AC supply cord.
- Video Input Section:**
  - VIDEO INPUT CORD:** Connected to the video input terminals.
  - R313 VERT LN:** A variable resistor connected to the video input.
  - R314 HORIZ:** A variable resistor connected to the video input.
  - L401 HORIZ HOLD:** A horizontal hold coil connected to the video input.
- Deflection Yoke Assembly:**
  - L403 DEFLECTION YOKE:** The deflection yoke, connected to the video input.
  - YOKE CLAMP:** A clamp used to secure the yoke.
  - CENTERING RINGS:** Used to center the yoke.
  - T403 FLYBACK TRANS:** The flyback transformer, connected to the yoke.
  - .0405 HV REST:** A high voltage rest point connected to the flyback transformer.

- 3 -

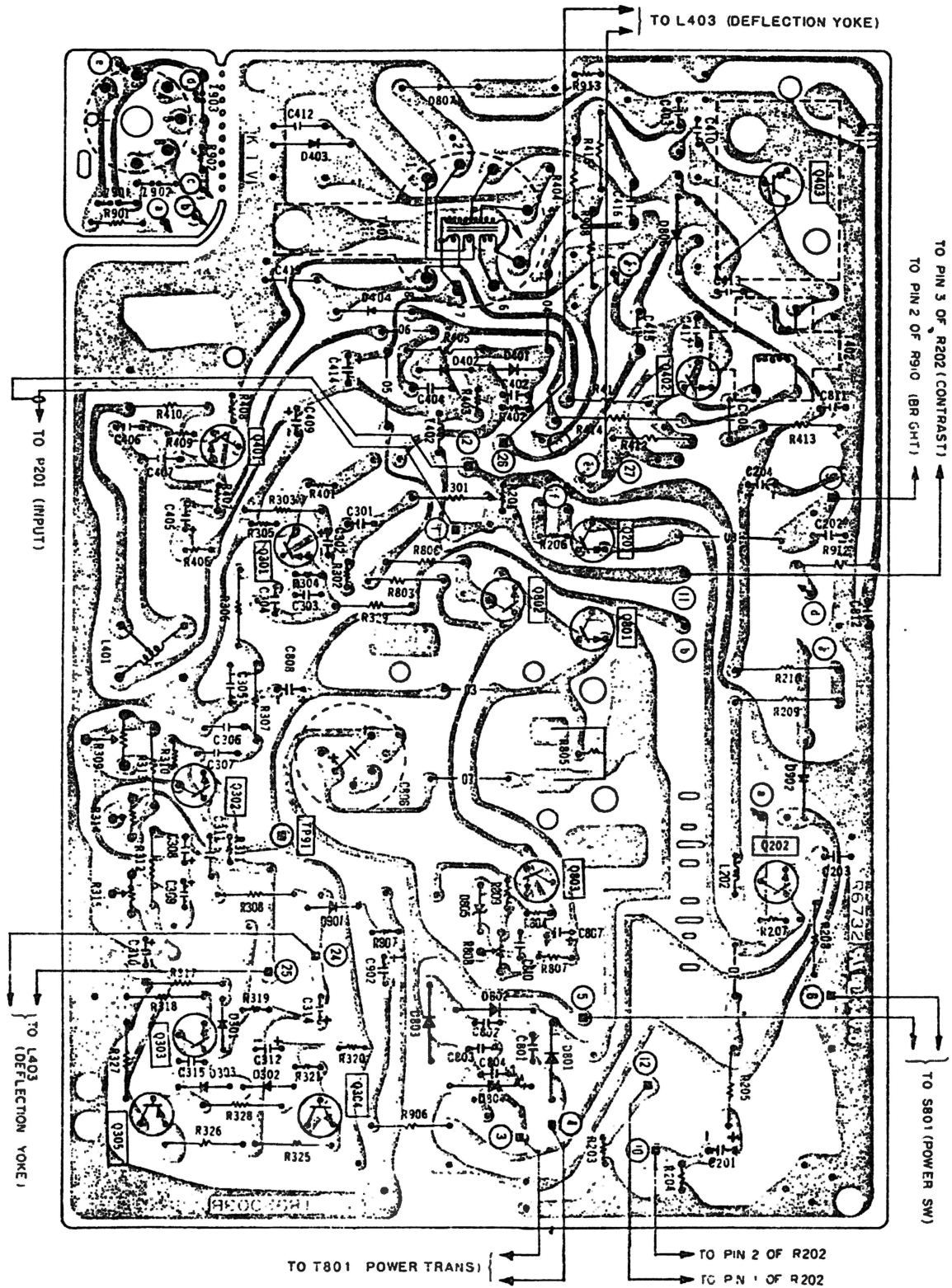
## CABINET CONSTRUCTION AND PARTS LIST



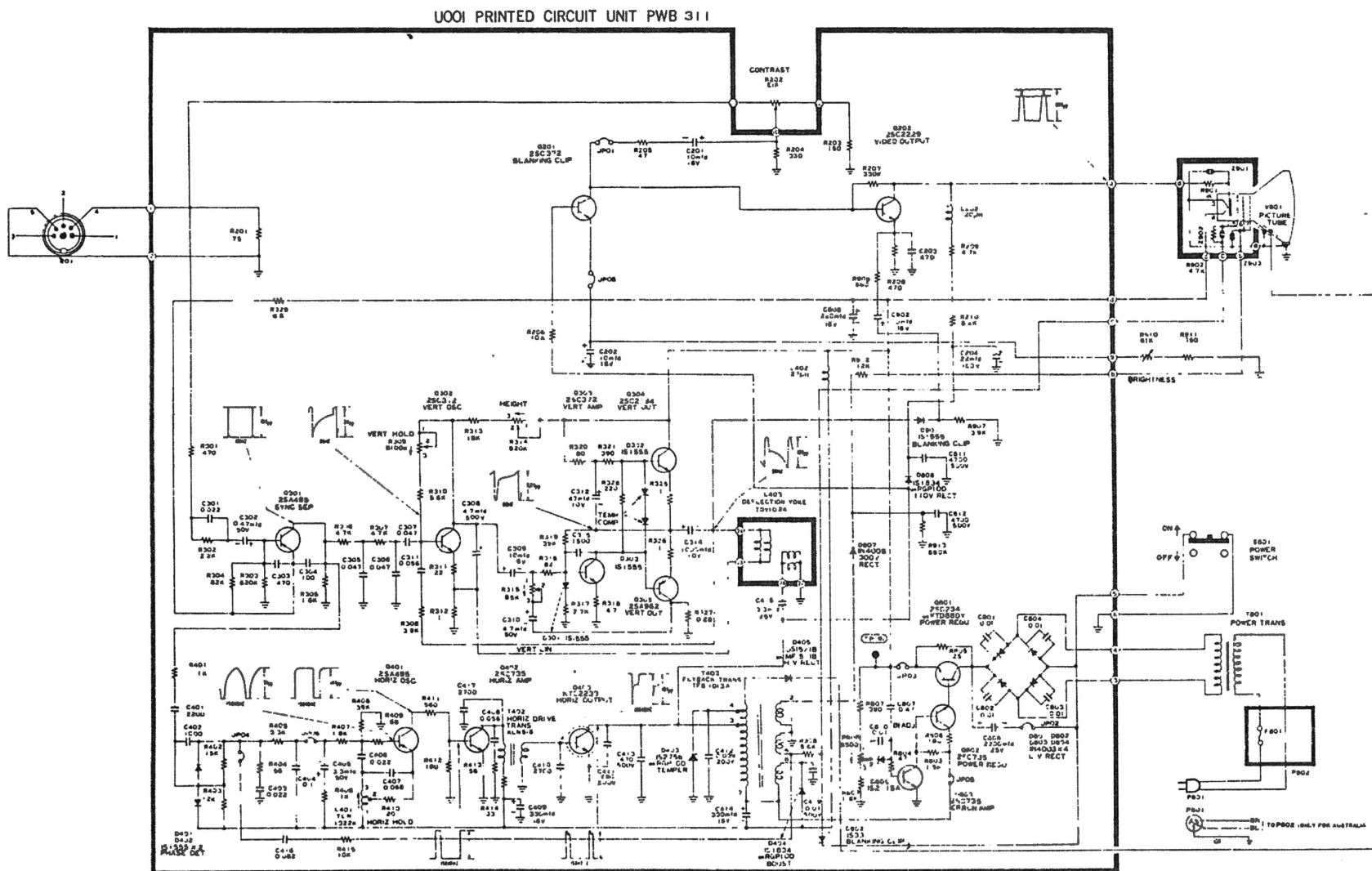
Key No.	PARTS No.	Description	Key No.	PARTS No.	Description
1.	11813046	Cabinet Front	7.	11176009	Ac power Cord (For Japan)
2.	11112012	Picture Tube, Type 310HDB31 (GREEN)		11176017	AC Power Cord (For Europe & England)
	11112001	Picture Tube, Type 310DMB4 (B/w)		23176217	AC Power Cord (For Australia)
3.	11141042	Printed Circuit Board with Components, PWB311	8.	11865023	Bracket, power Transformer & Fuse Holder Mounting (For Europe & England)
4.	11822153	Rear Cover (For Europe)		11865027	Bracket, power Transformer & Fuse Holder Mounting (For Australia)
	11822155	Rear Cover (For England)			
	11822156	Rear Cover (For Australia)	9.	11816006	Knob, Pull-on Volume & contrast & Bright, (3used)
	11822148	Rear cover (For Japan)		11842046	Bracket, Controls Mounting
5.	11035416	Tapping Screw, 4 x 16mm, (4used)	10.	11817005	Smoked Filter (GREEN)
6.	11178001	Video Signal Cable			
	11164002	DIN Plug			



# CIRCUIT BOARD WIRING DIAGRAM (Bottom View)



# SCHEMATIC DIAGRAM

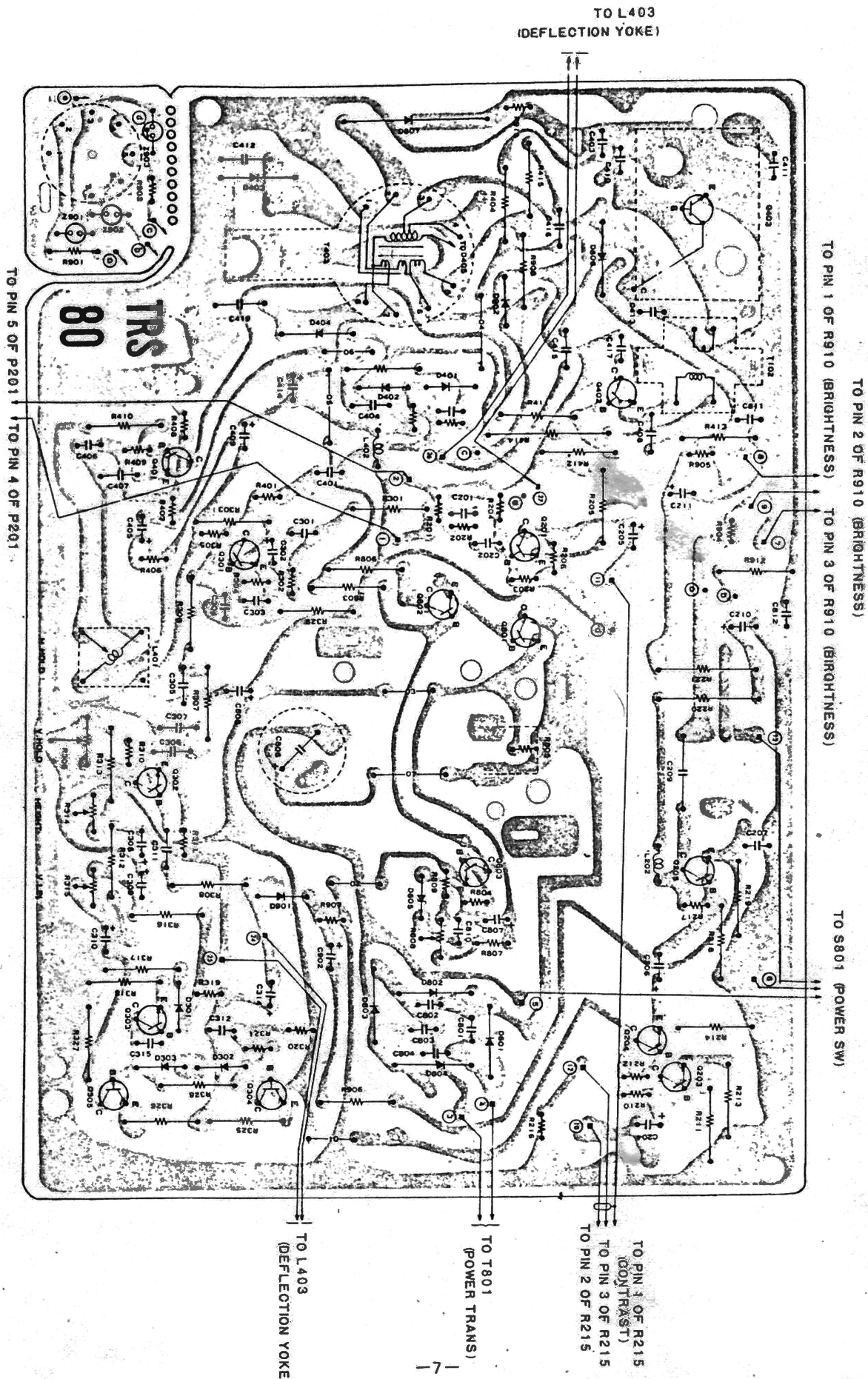


## NOTES:

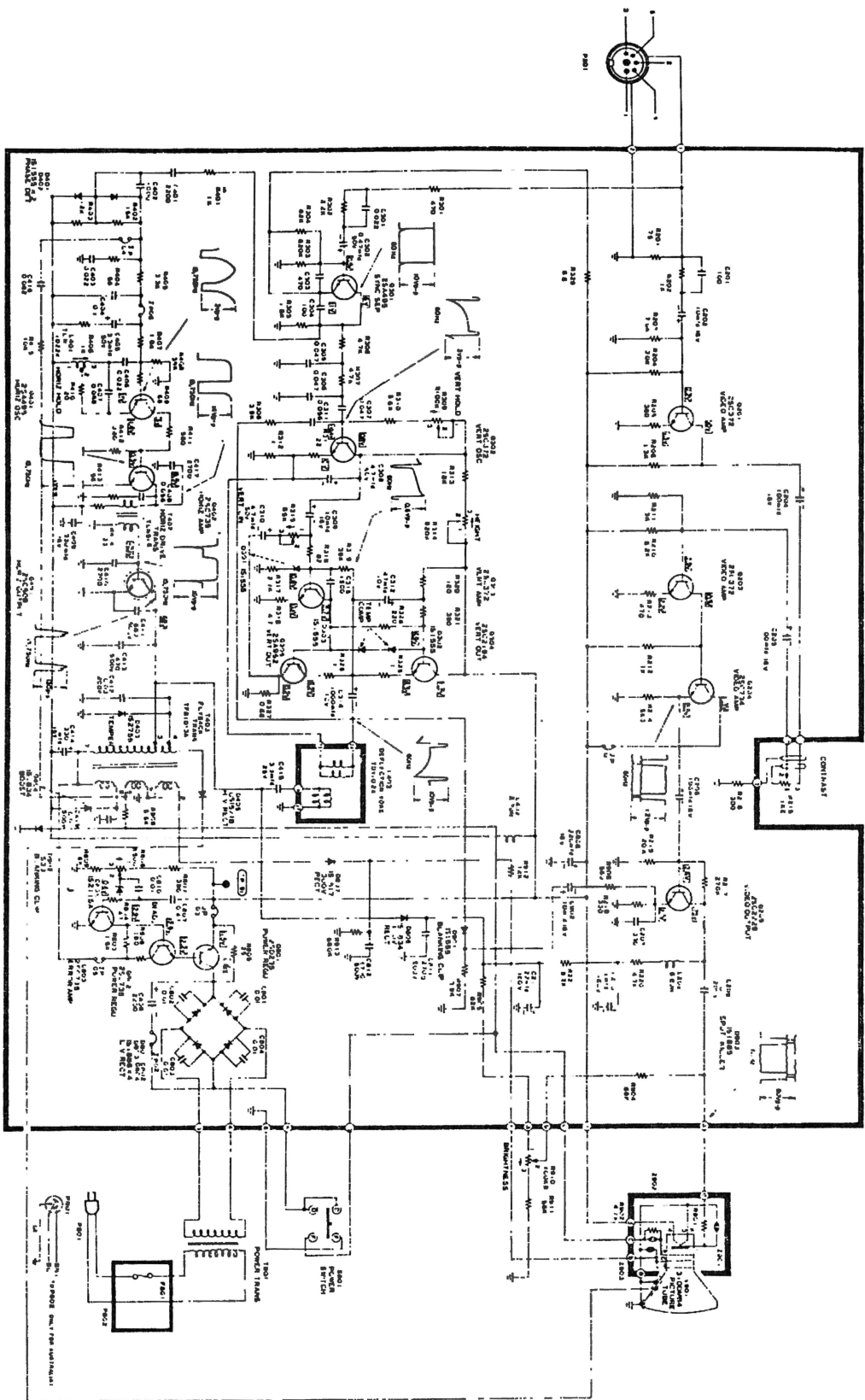
1. Resistance is shown in ohms, K = 1,000, M = 1,000,000.
2. Unless otherwise noted, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pf
3. Direction of the arrow accompanied with variable resistor in this schematic diagram indicates clockwise rotation.

4. Voltage readings are taken with "VTVM" from point indicated to chassis ground, under the tuner selector on unused channel, contrast at maximum, other controls at normal, line voltage. (Voltage readings may vary  $\pm 20\%$ .)
5. All waveforms are measured with strong signal input, contrast set to give normal picture.

# CIRCUIT BOARD WIRING DIAGRAM : FOR 26-9201A/7007



**SCHEMATIC DIAGRAM: FOR 26-9201A/7007**



**NOTES:**

1. Resistance is shown in ohms.  $K = 1,000$ ,  $M = 1,000,000$ .
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3. Direction of the arrow accompanied with variable resistor in this schematic diagram indicates clockwise rotation.
4. Voltage readings are taken with "VTVM" from point indicated to chassis ground, under the tuner selector on unused channel. Contrast at maximum, other controls at normal line voltage (Voltage readings may vary  $\pm 20\%$ ).
5. All waveforms are measured with strong signal input, contrast set to give normal picture.

## CHASSIS REPLACEMENT PARTS LIST

ABBREVIATIONS: Capacitors ..... CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic  
Resistors ..... CF: Carbon Film, CC: Carbon Composition, OMF: Oxide Metal Film, VR: Variable Resistor  
(All CD and PF capacitors are  $\pm 5\%$ , 50V and all resistors  $\pm 5\%$ , 1/8W unless otherwise noted.)

Schematic Location	Part No	Description	Schematic Location	Part No	Description
<b>CIRCUIT BOARD</b>					
<b>CAPACITORS</b>					
C201, C202 } C309, C902 }	24633100	EL, 10 $\mu$ F, 16V	R302	24927222	CF, 2200 ohm
C203	24212471	CD, 470pF $\pm 0\%$	R303	24917824	CF, 820k ohm
C204	24642220	EL, 22 $\mu$ F, 160V	R304	24927823	CF, 82k ohm
C301, C403	24602223	PF, 0.022 $\mu$ F, $\pm 10\%$	R305, R407	24927182	CF, 1800 ohm
C302	24636478	EL, 0.47 $\mu$ F, 50V	R306, R307	24217472	CF, 4700 ohm
C303	24212471	CD, 470pF, $\pm 10\%$	R308	24917392	CF, 3900ohm
C304	24212101	CD, 100pF, $\pm 10\%$	R309	24061868	VR, 100k ohm, 1/5W, Vert. Hold
C305, C306 } C307 }	24602473	PF, 0.047 $\mu$ F, $\pm 10\%$	R310	24927562	CF, 5600 ohm
C308, C310	12617995	EL, 4.7 $\mu$ F, 50V	R311	24927220	CF, 22 ohm
C311	24602563	PF, 0.056 $\mu$ F, $\pm 10\%$	R312, R325 }	24982109	Metal Film, 1 ohm, 1/2W
C312	24632470	EL, 47 $\mu$ F, 10V	R326 }	24917183	CF, 18k ohm
C314	24532102	EL, 1000 $\mu$ F, 10V	R313	24061880	VR, 20k ohm, 1/10W, Height
C315	24212152	CD, 1500pF, $\pm 10\%$	R314	24061052	VR, 5k ohm, 1/10W, Vert. Lin.
C401	24602227	PF, 2200pF, $\pm 10\%$	R315	24917820	CF, 32ohm
C402	24602102	PF, 1000pF $\pm 10\%$	R316	24917272	CF, 2700 ohm
C404	24602104	PF, 0.1 $\mu$ F, $\pm 10\%$	R317	24917479	CF, 4.7 ohm
C405	24636339	EL, 3.3 $\mu$ F, 50V	R318	24927393	CF, 39k ohm
C406	24095449	PF, 0.022 $\mu$ F,	R320	24927181	CF, 180 ohm
C407	12867693	PF, 0.068 $\mu$ F,	R321	24927391	CF, 390 ohm
C408	24692563	PF, 0.056 $\mu$ F,	R327	24982698	Metal Film, 0.68 ohm, 1/2W
C409, C414	24633331	EL, 330 $\mu$ F, 16V	R328	24918221	CF, 220 ohm
C410, C417	24212272	CD, 2700pF, $\pm 10\%$	R329	24556689	Fusible, 6.8 ohm, $\pm 10\%$ , 1/2W
C411	24214681	CD, 680pF, $\pm 10\%$ , 500V	R401, R406	24927102	CF, 1k ohm
C412	24828393	PF, 0.039 $\mu$ F, 200V	R402	24927153	CF, 15k ohm
C413	24214471	CD, 470pF, $\pm 10\%$ , 500V	R403	24927123	CF, 12k ohm
C415	24085024	EL, 3.3 $\mu$ F, 25V	R404	24917560	CF, 56 ohm
C416	24602823	PF, 0.082 $\mu$ F, $\pm 10\%$	R405	24917332	CF, 3300 ohm
C419	24229103	CD, 0.01 $\mu$ F, $\pm 10\%$ , $\pm 0\%$ , 500V	R409	24927690	CF, 68 ohm
C801, C802 } C803, C804 } C810 }	24232103	CD, 0.01 $\mu$ F, $\pm 30\%$ , $\pm 20\%$	R410	24962200	OMF, 20 ohm, 1/2W
C806	24634722	EL, 2200 $\mu$ F, 25V	R411	24917561	CF, 560 ohm
C807	24636478	EL, 0.47 $\mu$ F, 50V	R412	24917181	CF, 180 ohm
C808	24633221	EL, 220 $\mu$ F, 16V	R413	24962560	OMF, 56 ohm, 1/2W
C811, C812	12229472	CD, 4700pF, $\pm 10\%$ , $\pm 0\%$ , 500V	R414	24964330	OMF, 33 ohm, 2W
<b>RESISTORS</b>			R415	24962103	OMF, 10k ohm, 1/2W
R201	24927750	CF, 75 ohm	R803	24917152	CF, 1500 ohm
R203	24927151	CF, 180 ohm	R804	24927470	CF, 47 ohm
R204	24927331	CF, 330ohm	R805	24525250	Cement, 25 ohm, 7W
R205, R208 } R301 }	24917471	CF, 470 ohm	R806	24962181	OMF, 180 ohm, 1/2W
R206	24927103	CF, 10k ohm	R807	24927391	CF, 390 ohm
R207	24927334	CF, 330k ohm	R808	24061099	VR, 500 ohm, 1/10W, B + Adj
R210	24963822	OMF, 8.2k ohm, 1W	R809	24927162	CF, 1600 ohm
			R901	24941102	CC, 1k ohm, 1/4W
			R902	24927472	CF, 4700 ohm, 1/4W
			R906	24917561	CF, 560 ohm
			R907	24927392	CF, 3900 ohm
			R908	24962562	OMF, 5600 ohm, 1/2W
			R912	24917123	CF, 12k ohm
			R913	24927681	CF, 680k ohm

Schematic Location	Parts No	Description	Schematic Location	Parts No	Description
COILS AND TRANSFORMERS			MISCELLANEOUS PARTS		
T402	11224009	Trans., KLN516, Horiz. Drive	D405A	11192001	Insulated Cap (Top), (for D405)
T403	11226002	Trans., TFB1013A, Flyback	D405B	23192002	Insulated Cap (Bottom) (for D405)
L202	11284121	Coil, Peakng, TRF4121K	V901A	23116917	Socket CRT
L401	11225001	Coil, Adjust, TLN1022K, Horiz. Hold	V901B	11192003	Cap and Lead
L402	11271001	Coil, Choke, 27 $\mu$ H	Z901, Z902	11140004	Spark Gap, 1~2KV
SEMICONDUCTORS			Z903		
Q201, Q302	11114056	NPN Tr, KTC1815-Y	COMPONENTS NOT MOUNTED ON CIRCUIT BOARD		
Q303	23114276	NPN Tr, 2SC372-Y	RESISTORS		
Q202	23114888	NPN Tr, 2SC2229-O	R202	24058975	VR, 1K ohm, 1/10W, Contrast
Q301, Q401	11114049	PNP Tr, KTA1015-Y	R910	12058960	VR, 1K ohm, 1/5W, Brightness
Q304	23114302	PNP Tr, 2SA495-Y	R911	12058886	VR, 1K ohm, 1/5W, Brightness
	23114904	NPN Tr, 2SC2194		24917152	CF, 1.5k ohm
Q305	23114903	PNP Tr, 2SA962	COILS AND TRANSFORMERS		
	11114059	NPN Tr, KTC1959-Q	L403	23227981	Deflection Yoke, TDY1024
Q402	23114015	NPN Tr, 2SC735-O	T801	11213033	Trans, KPW1006, Power (For England & Australia)
	11114060	NPN Tr, KTC1959-Y		11213037	Trans, KPW1075, Power (For Europe)
	23114297	NPN Tr, 2SC735-Y		11213018	Trans, KPW006B, Power (For Japan)
Q403	11114027	NPN Tr, KTC2233	MISCELLANEOUS PARTS.		
	23114038	NPN Tr, 2SC508	F801	23144936	Fuse, 0.25A T
Q801	11114008	NPN Tr, KTD880-Y		23144957	Fuse, 0.5A T (For Japan)
	11114035	NPN Tr, 2SD234-Y	P201	11176004	Plug, Video Signal
Q802	11114060	NPN Tr, KTC1959-Y	P801	11176017	Ac power Cord (For Europe & England)
	23114297	NPN Tr, 2SC735-Y		23176217	Ac power Cord (For Australia)
Q803	23114015	NPN Tr, 2SC735-O		11114009	Ac power Cord (For Japan)
	11114059	NPN Tr, KTC1959-O	P802	11145005	Fuse Holder.
D301, D302	23115285	Diode, 1S1555		11165012	Fuse Holder (For Japan)
D303, D401			S801	12055002	ON-OFF Switch
D402, D901			B203	23845250	Bushing (For Europe & England & Japan)
D403	23115377	Diode, 1S2756		23831867	Bushing (For Australia)
	11115013	Diode, RGP10D	CIRCUIT BOARD ASSEMBLY		
D404, D806	23115337	Diode, 1S1834	U001	11141042	Circuit Board Assembly, PWB311
	11115013	Diode, RGP10D	PICTURE TUBE		
D405	11115157	Diode, MF15/1B	V901	11112012	Picture Tube, 310HDB31 (GREEN)
D801, D802	23115250	Diode, 1S1886		11112001	Picture Tube, 310DMB4 (B/W)
D803, D804	11114002	Diode, 1N4003	ACCESSORY		
D805	23115374	Diode, Zener, 1S2115A, V Z, 8.2V	Y101	11954231	Owner's Manual (For Europe)
D807	11115004	Diode, 1N4005		11954234	Owner's Manual (For England & Australia)
D902	23115129	Diode, 1S33		11954215	Owner's Manual (For Japan)

## TANDY CORPORATION

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280-316 VICTORIA ROAD RYDALMERE, N.S.W. 2116	PARC INDUSTRIEL DE NANINNE 5140 NANINNE	BILSTON ROAD, WEDNESBURY WEST MIDLANDS WS10 7JN