

Service

General Description
Adjustment Procedures
Block/Schematic Diagrams
Exploded Views/Parts List



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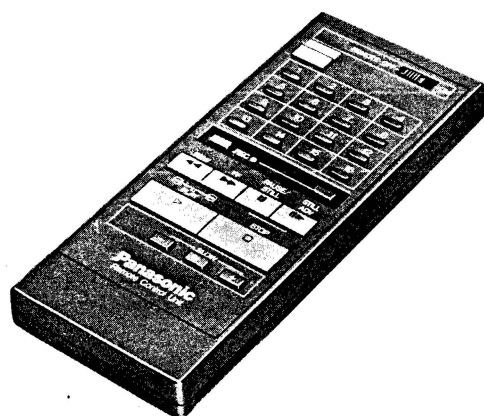
Video Tuner/Timer Adaptor

Panasonic **VHS**

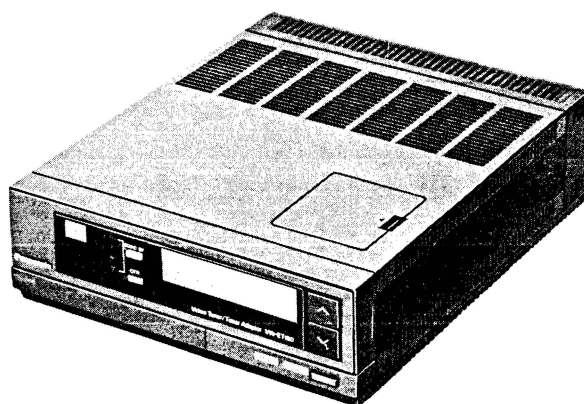
VW-ET180 E
B
EO

Wireless Remote Controller

VW-R18E



VW-R18



VW-ET180

Panasonic

Matsushita Electric Trading Co., Ltd.
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TUNER INTRODUCTION

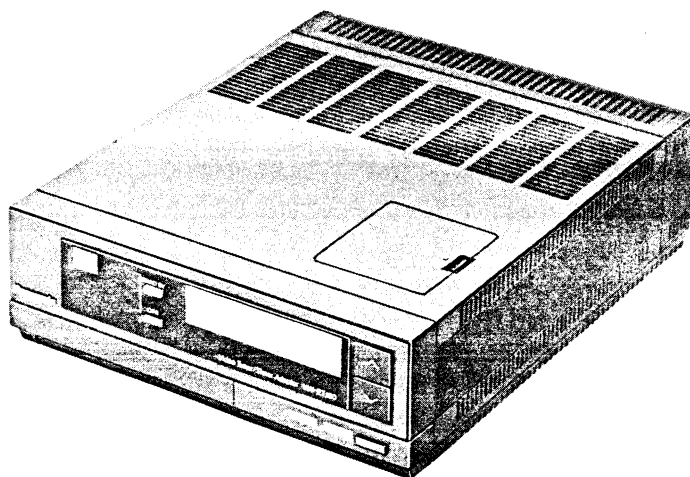
By implementing a large number of latest technological developments from a wide range of diverse fields, Panasonic succeeded in making a new portable NV-180 a standard in terms of light weight and together with the Tuner/Timer VW-ET180 for TV programme recording.

This service manual contains technical information which will allow service technicians to understand service the Panasonic Tuner/Timer VW-ET180 and Infra-Red Remote Control Unit VW-R18.

VW-ET180 has many special features as shown following section.

These features in addition to the basic Tuner/Timer make the unit an ideal one for your culture and entertainment.

Video Tuner/Timer Adaptor
VW-ET180



SPECIFICATIONS

Power Source:	220 V (VW-ET180E/EO) 240 V AC, 50/60 Hz (VW-ET180B)
Power Consumption:	Approx. 33 watts
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Timer:	14 day/8-programme timer with 1-hour battery back-up system
Input:	VW-ET180E VHF ch. 2-12. UHF ch. 21-69. VW-ET180B UHF ch. 21-69. VW-ET180EO VHF ch. E2-S3 (Low) M1-U9 (High) UHF ch. 21-69.
Output:	75 Ω unbalanced (DIN) Video: Multi Connector 1.0 Vp-p, 75 Ω terminated Audio: Multi Connector 130 mVp-p, 2.2 k Ω terminated
Weight:	3.0 kg
Dimensions:	215(W) $\times$ 69.5(H) $\times$ 27.3(D) mm

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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1. FEATURES

1. One-Touch Timer Recording (OTR)

Simply by pressing the OTR Button between 2 and 5 times, the connected VTR can be programmed for 30, 60, 90 or 120 minutes of recording with immediate start.

2. Stand-by OTR Recording

By pressing the Stand-by Button between 1 and 4 times, the connected VTR can be programmed to begin recording in 30, 60, 90 or 120 minutes. By subsequently pressing the OTR Button repeatedly, a recording duration of 30, 60, 90 or 120 minutes can be selected for this deferred OTR recording.

3. Recording One Programme While Watching Another

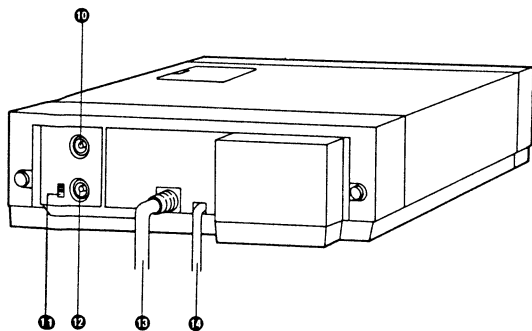
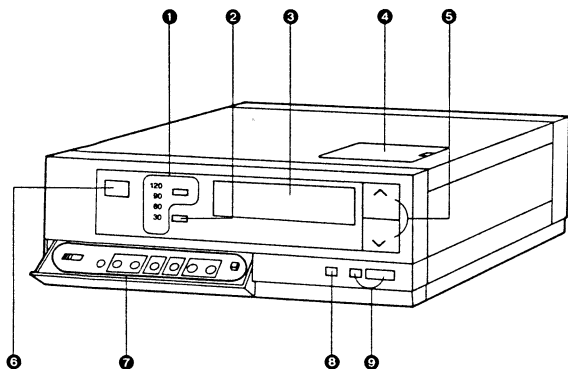
The built-in tuner allows you to record a programme that you don't want to miss while watching another programme.

4. 14-day/8 Programme Timer

The built-in timer allows automatic absentee recording of up to 8 TV programmes within 14 days. It is also possible to record a programme which is broadcast at the same time every day or every week.

- ❶ **Stand-by Button**
Press the STAND BY button repeatedly to select the time delay for OTR recording start.
- ❷ **OTR Button**
Automatic recording for 30, 60, 90 or 120 minutes is possible by pressing this button.
- ❸ **Time/Channel Display**
Indicates either the time/day or recording start/stop times for the timer recording, and indicates the selected channel.
- ❹ **Tuner Set-up Controls**
Tuning control for the any broadcast channel in your area.
- ❺ **Channel Up and Down Buttons**
Push the desired channel selector buttons to select the channel you wish to view or record.
- ❻ **Infra-red Remote Control Receiver**
Receiving the Infra-red Remote Control signal.
- ❼ **Timer Controls**
The timer controls are used to set the clock for the preset and to programme start and stop for timer recording.
- ❽ **Charging Indicator Lamp**
When the battery charging is completed, the charging lamp goes off.
- ❾ **Operating Switch/Indicator Lamp**
The Operating switch turns the unit ON and OFF. The indicator lamp illuminates while the unit is ON.
- ❿ **RF Output Socket**
For connection of TV antenna terminal with the DIN-DIN Coaxial Cable.
- ⓫ **RF Signal Level Switch**
Used to attenuate the reception of the VHF and/or UHF antenna signals.
If the reception is normal, set to "HIGH". If the signal strength is high and a stripped pattern appears at the top of the picture on TV, set to "LOW".
- ⓬ **RF Input Socket**
Connect the external aerial to the RF Input Socket.
- ⓭ **Adaptor Cable**
Use this Adaptor Cable for connection of the NV-180 Adaptor Socket.
- ⓮ **AC Mains Cord**

2. CONTROLS AND COMPONENTS



3. DISASSEMBLY METHOD

3-1. DISASSEMBLY FLOW CHART

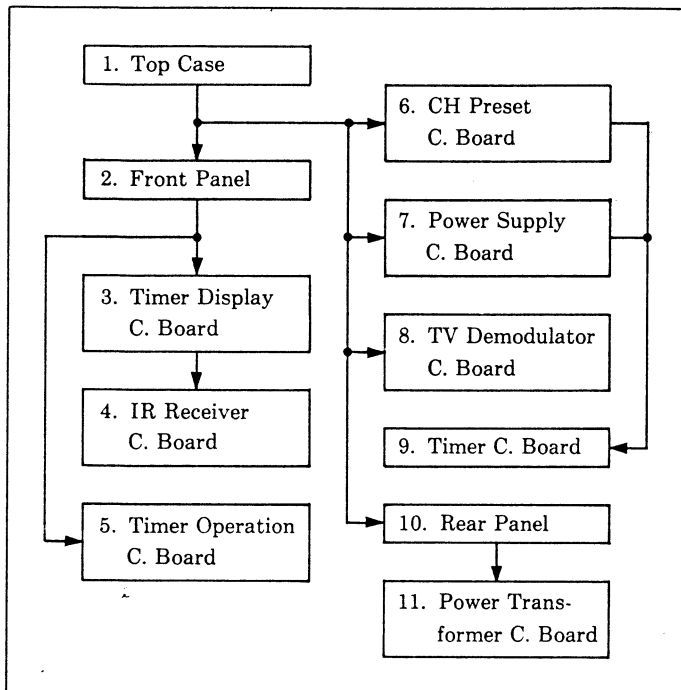


Fig. 1 Disassembly Flow Chart

3-2. DETAILED DISASSEMBLY METHOD

1. Removal of the Top Case

Unscrew the 2 screws (A) and lift the tail portion of the Top Case to remove it.

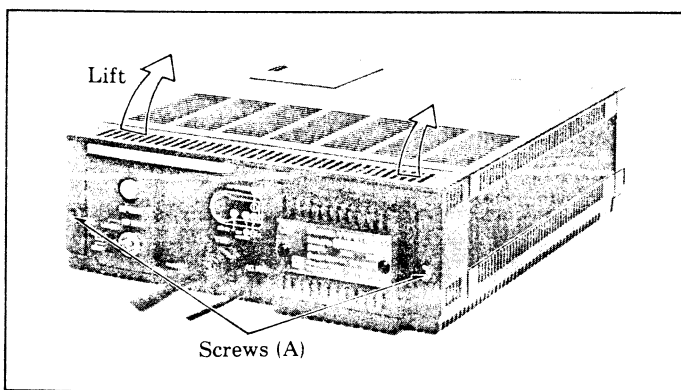


Fig. 2 Removal of the Top Case

Note:

When reinstalling, first insert the locking portions of the front edge of the Top Case to the Front Panel.

2. Removal of the Front Panel

1. Unlock the 2 locking tabs (B) and pivot the top portion of the Front Panel to remove it.

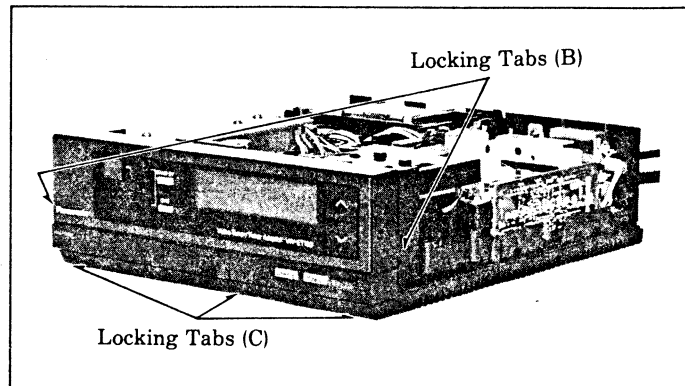


Fig. 3 Removal of the Front Panel

Note:

When installing, first set the locking tabs (C) to the projections of the bottom case.

3. Removal of the Timer Display C. Board

Unlock the 3 locking portions (D) and lift and pivot the top portion of the Timer Display C. Board and Remove it.

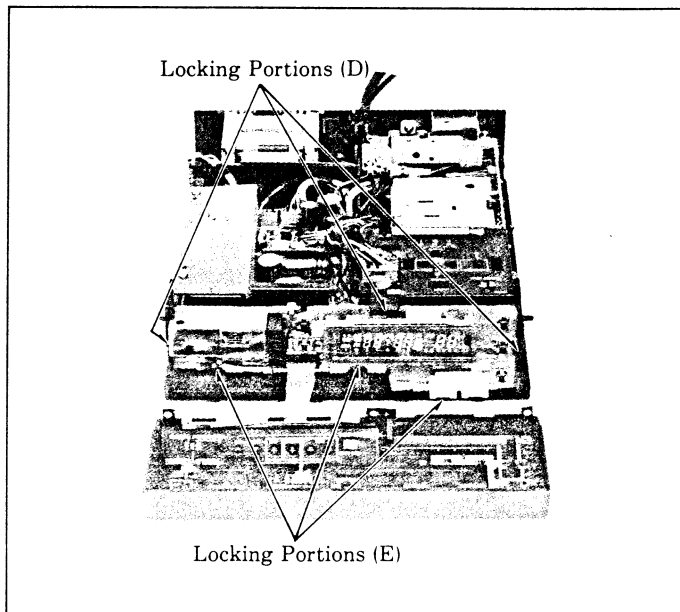


Fig. 4 Removal of the Timer Display C. Board

Note:

When reinstalling, first insert bottom of the Timer Display C. Board to the locking tabs (E).

4. Removal of the IR Receiver C. Board Shield Case

Remove the solder at 4 portions on the Timer Display C. Board and pull the shield case.

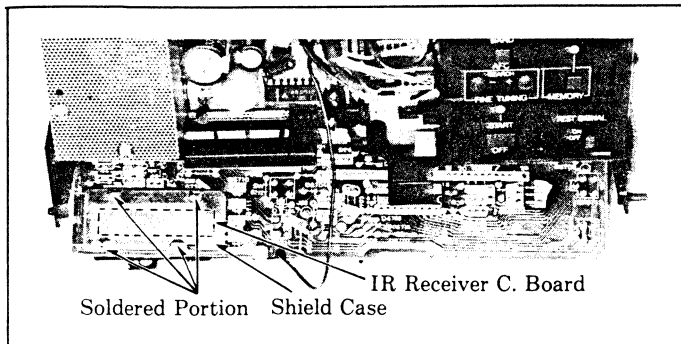


Fig. 5 Removal of the IR Receiver C. Board Shield Case

5. Removal of the Timer Operation C. Board

Unlock the 2 locking tabs (F) carefully, and widen the width between the Timer Operation C. Board and the Timer Operation Panel and pull out the Timer Operation C. Board.

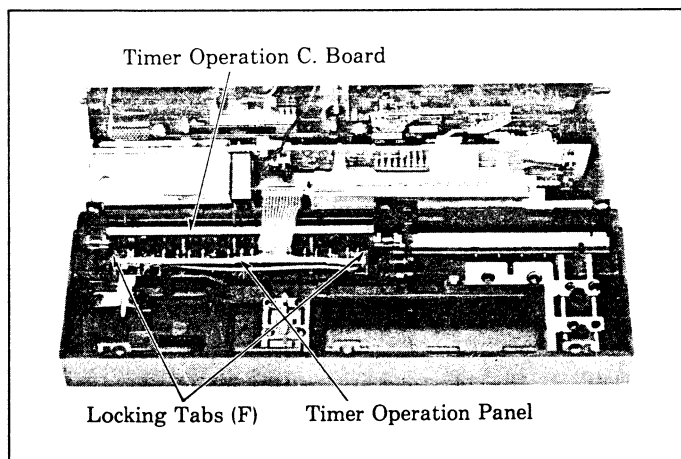


Fig. 6 Removal of the Timer Operation C. Board

6. Removal of the CH Preset C. Board

Unscrew 3 screws (G) and lift the CH Preset C. Board with CH preset bracket.

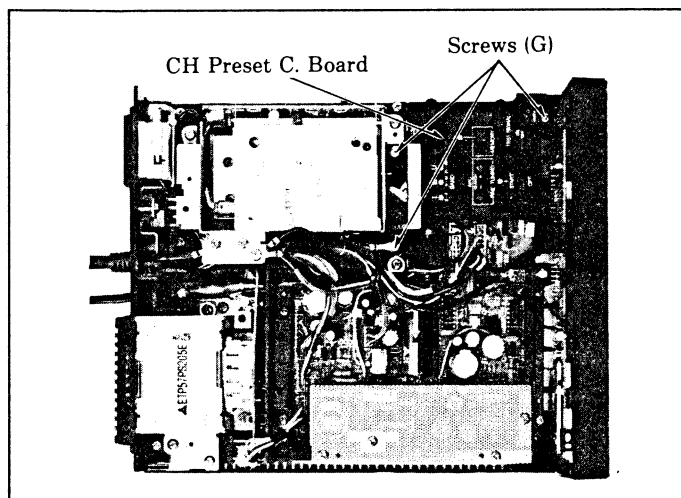


Fig. 7 Removal of the CH Preset C. Board-(1)

Next, unscrew the screw (H) and unlock the 5 locking tabs (I) to remove the CH preset C. Board from the preset VR case.

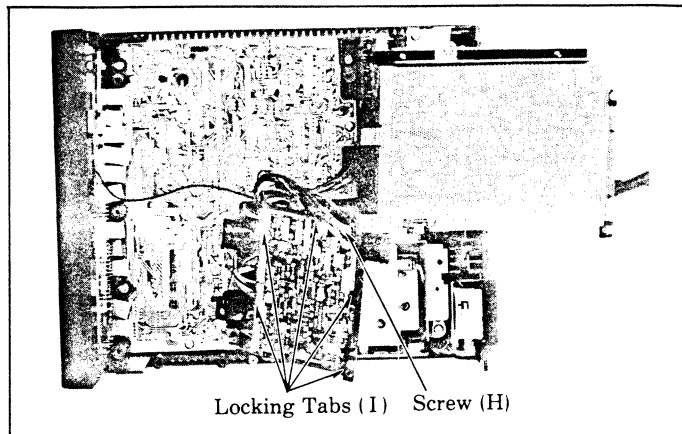


Fig. 8 Removal of the CH Preset C. Board-(2)

7. Removal of the Power Supply C. Board

Unscrew 4 screws (J) and lift the Power Supply C. Board.

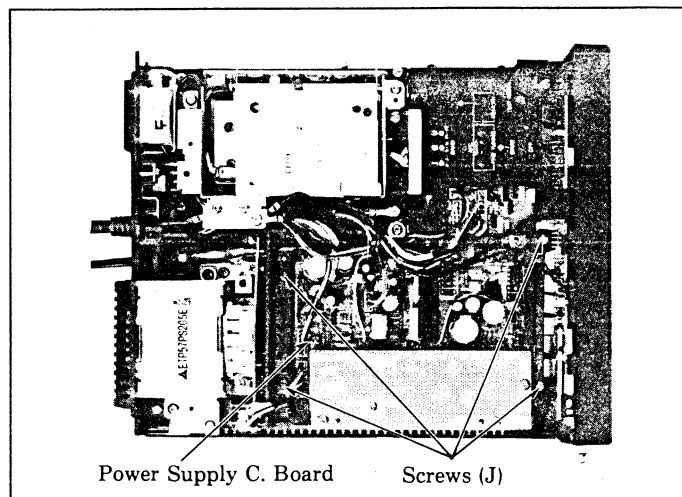


Fig. 9 Removal of the Power Supply C. Board

8. Removal of the Tuner C. Board and TV Demodulator C. Board

Unscrew the 3 screws (K) and lift the Tuner C. Board and TV Demodulator C. Board.

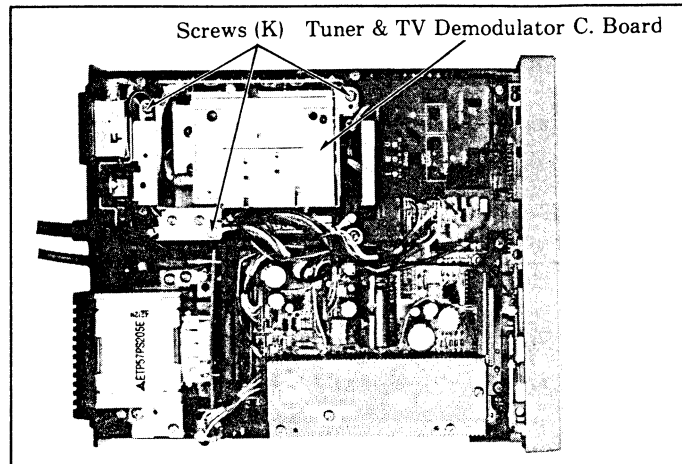


Fig. 10 Removal of the Tuner C. Board and TV Demodulator C. Board-(1)

Next, remove the solder at 4 portions on Tuner C. Board and TV Demodulator C. Board and turn on the both P.C. Boards.

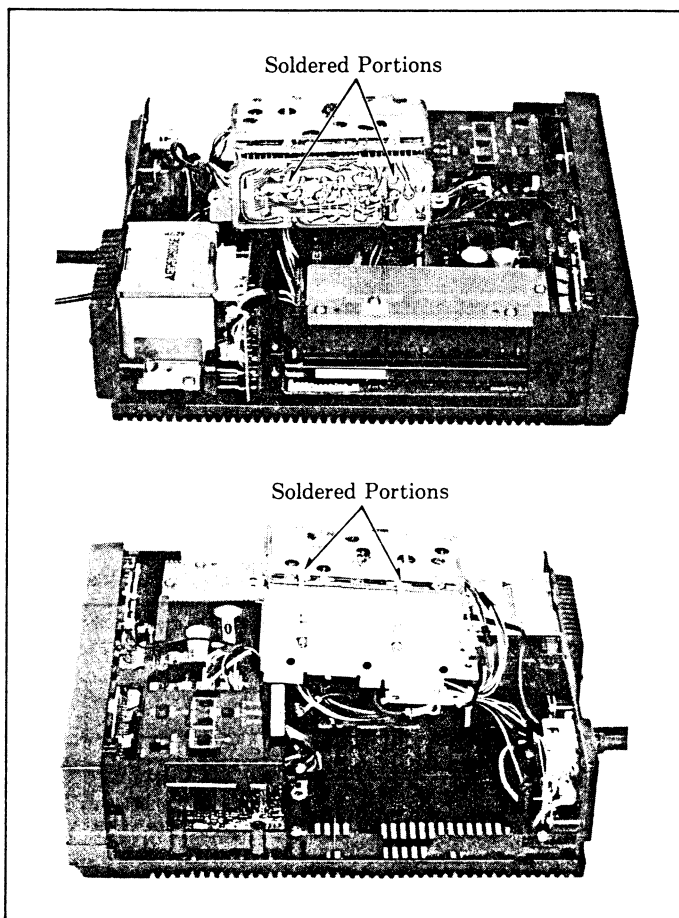


Fig. 11 Removal of the Tuner C. Board and the TV Demodulator C. Board-(2)

9. Removal of the Timer C. Board

Unscrew the 3 screws (L) and lift the Timer C. Board.

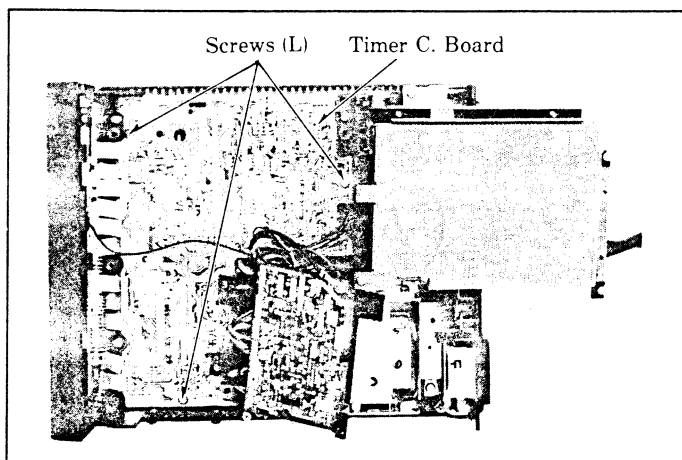


Fig. 12 Removal of the Timer C. Board

10. Removal of the Rear Panel

Unscrew 2 screws (M) and unlock the locking tab (N), then lift the Rear Panel.

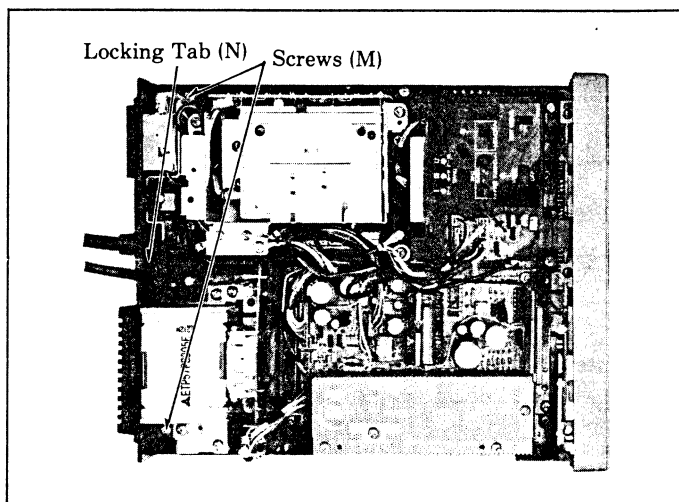


Fig. 13 Removal of the Rear Panel

11. Removal of the Power Transformer C. Board

Unscrew the 4 screws (O), and then lift the Power Transformer C. Board.

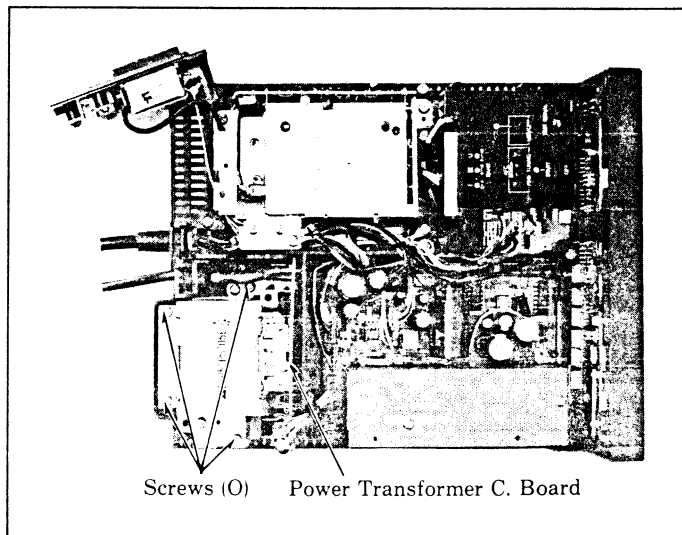


Fig. 14 Removal of the Power Transformer C. Board

4. REPLACEMENT OF AC CORD

Note:

When AC cord is replaced, please change both AC cord cover and Binding wire without fail for safety operation.

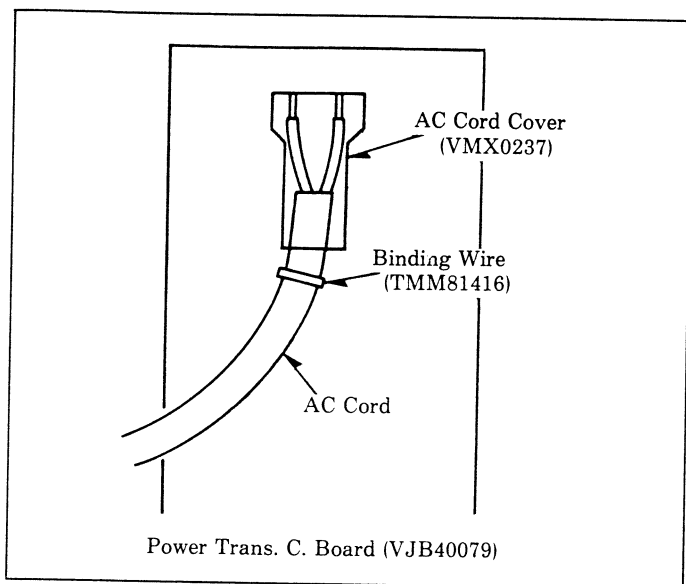


Fig. 15 Replacement of AC Cord

5.3. CHARGE VOLTAGE AND TRICKLE CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
P104-(2) (+) P104-(1) (-)	R172 R175		
TAPE	M. EQ.	SPEC.	
	DC A.M. DC V.M.	0.8 ± 0.05 A (R172) 25 ± 5 mA (R175)	

- Set the charge current adjustment VR (R172) at center position and set the charge voltage adjustment VR (R175) fully counterclockwise.
- Set the voltage of the DC POWER SUPPLY is as shown in Fig. 16.

TEMP. (°C)	OUTPUT VOLTAGE (V)
0	15.6
10	15.3
20	15.0
30	14.7
40	14.4

Fig. 16

- Connect the DC POWER SUPPLY to P104-(1) and P104-(2) as shown in Fig. 17.

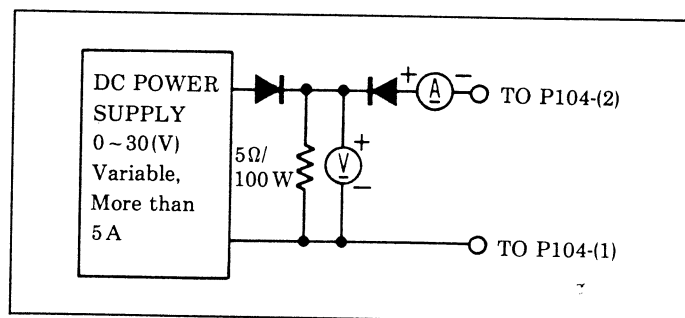


Fig. 17

- Set the power switch ON.
- Adjust R172 so that the charge current becomes 0.8 ± 0.05 A. Then adjust R175 so that the charge current becomes 25 ± 5 mA.

5. ELECTRICAL ADJUSTMENT PROCEDURES

POWER SUPPLY SECTION

5-1. TEST EQUIPMENTS

To make adjustment completely, following equipments are required.

- D.V.M. (Digital Volt Meter)
- Resistor (12.5Ω/20 W)
- Jumper Wire
- Plastic Tip Driver
- DC A.M. (DC Ammeter)
- DC V.M. (DC Voltmeter)
- Diode
- Resistor (5Ω/100 W)
- DC Power Unit (0 ~ 30 V, more than 5 A)

5-2. 12.5 V ADJUSTMENT

TP	ADJ.	MODE	INPUT
P104-2	R205		
TAPE	M. EQ.	SPEC.	
	D.V.M.	12.5 ± 0.1 V DC	

- Connect the resistor (12.5Ω/20 W) between P104-(2) and the GND.
- Set the power switch ON and connect a jumper wire between Q158-(C) and Q158-(E) for the Deck mode.

TV DEMODULATOR SECTION

Model No.: VW-ET180E/EO

5-4. TEST EQUIPMENTS

To make adjustments completely, following equipments are required.

- VIF Sweep Generator with the Trap Adjustor 38.9 MHz
- SIF Sweep Generator 5.5 MHz ± 150 kHz
- CW Oscillator 38.9 MHz ± 100 kHz
- Digital Volt Meter
- Oscilloscope
- Monitor Scope

5-5. SELECTIVE COIL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP707	T703 T704		VIF SWEEP
TAPE	M. EQ.	SPEC.	
	VIF SWEEP MONITOR SCOPE	A=0.1V _{p-p} B=38.9MHz	

1. Set the BAND SW of the Unit to the VHF high position (VH) and turn the tuning volume so that the voltage at BT terminal of the tuner becomes 15 V.
2. Connect the VIF Sweep to TP703 and connect the Monitor Scope to TP707 as shown in Fig. 18.

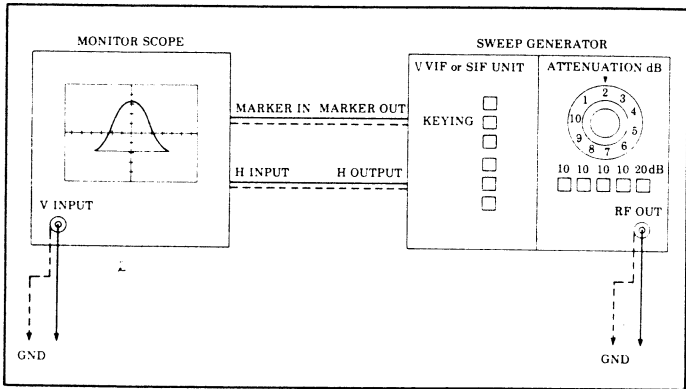


Fig. 18 Connection of Measuring Equipment

3. Connect the JIG to both points P703-(11) and TP709 as shown in Fig. 19 and adjust VR1 so that the noise of waveform on the monitor scope becomes minimum.

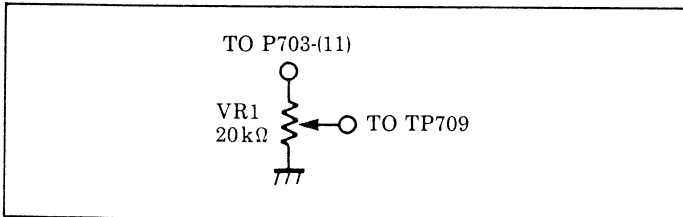


Fig. 19

4. Adjust the sweep output becomes 0.1V_{p-p}.
5. Adjust T703 so that the marker position at 38.9MHz becomes peak point.

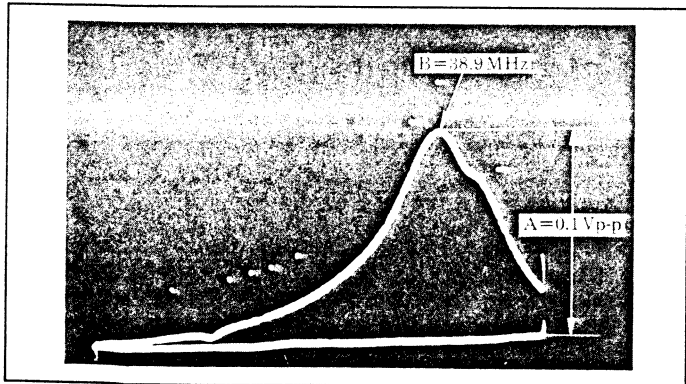


Fig. 20

6. Adjust T704 so that the marker portion at 38.9MHz becomes as shown below.

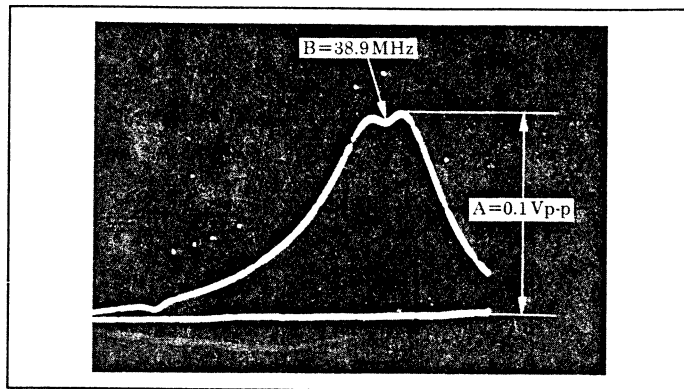


Fig. 21

5-6 VIF SWEEP ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP707	T701 T702		VIF SWEEP
TAPE	M. EQ.	SPEC.	
	VIF SWEEP MONITOR SCOPE		

1. Set the BAND SW to the VHF high position (VH) and turn the tuning volume so that the voltage at BT terminal of the tuner becomes 15 ± 0.5V.
2. Connect the VIF Sweep to Test Point of the Tuner and connect the Monitor Scope to TP707 as shown in Fig. 18.
3. Connect a jumper between the AGC terminal of the Tuner Unit and the GND.
4. Connect the 100Ω resistor between TP704 and TP705.
5. Connect the JIG to both points P703-(11) and TP709 as shown in Fig. 19 and adjust VR1 so that the VIF waveform becomes maximum, and adjust the VIF sweep output so that the VIF waveform becomes 1.0V_{p-p}.
6. Release 20dB attenuation from the attenuator of the VIF Sweep.
7. Readjust VR1 of the JIG so that the VIF waveform becomes 1.0V_{p-p}.
8. Adjust T702 so that the 33.4MHz trap becomes minimum.
9. Adjust T701-(E) so that the 40.4MHz trap becomes minimum.
10. Adjust T701-(C) so that the 31.9MHz trap becomes minimum.
11. Adjust the Tuner converter coil and T701-(A), (B), (D), (F) so that the VIF waveform becomes as follows.

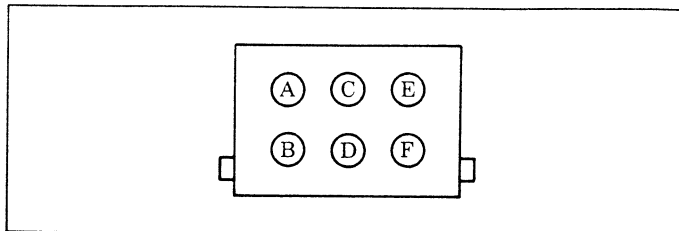


Fig. 22 HLB Transformer T701

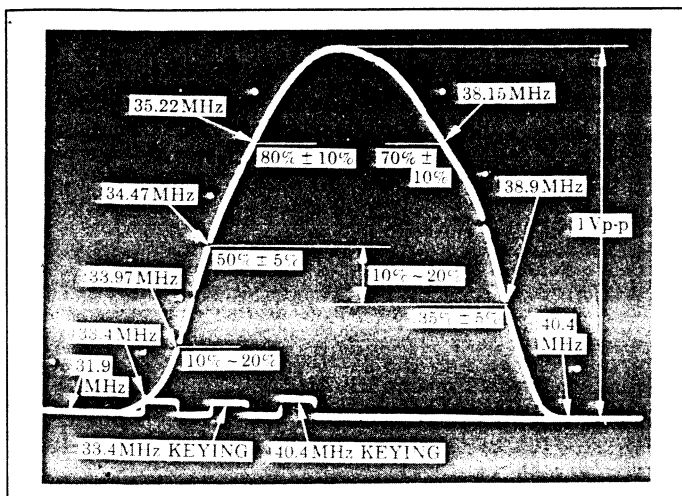


Fig. 23

- Adjust T752 so that the 5.5 MHz trap becomes minimum.
- Release 20dB attenuation from the attenuator of the SIF Sweep, and confirm the waveform between the 5.5 MHz - 150 kHz portion and 5.5 MHz + 150 kHz portion is straight as follows.

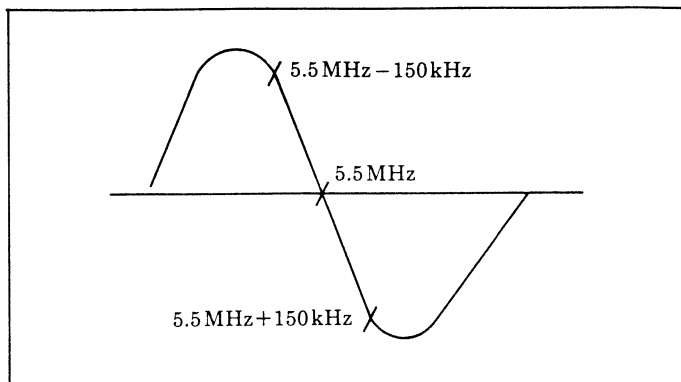


Fig. 25 SIF Waveform

5-7. SIF SWEEP ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP710	T751 T752		SIF SWEEP
TAPE	M. EQ.	SPEC.	
	SIF SWEEP D.V.M. MONITOR SCOPE		

- Set the BAND SW to the VHF high position (VH) and turn the tuning volume so that the voltage at BT terminal of the tuner becomes 15 V.
- Adjust the SIF Sweep output to 6 mVp-p (75Ω terminated).
- Connect the SIF Sweep output to TP706 and connect the Monitor Scope to TP710.
- Connect a jumper wire between TP709 and the GND.
- Turn T752 clockwise so that the 5.5 MHz portion of the waveform becomes maximum and adjust T751 so that the 5.5 MHz portion of the waveform becomes maximum.

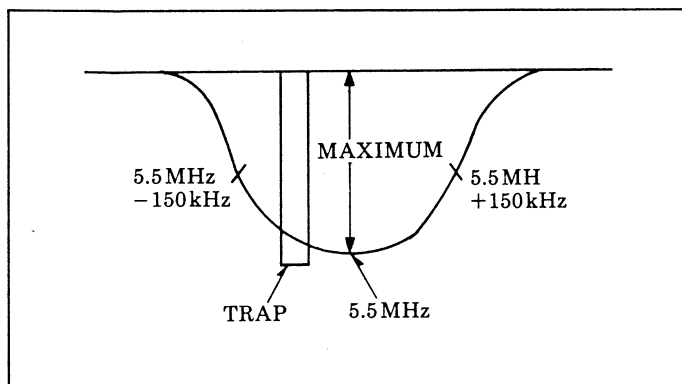


Fig. 24

5-8. AFT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TUNER TP TP702	T704		CW OSC
TAPE	M. EQ.	SPEC.	
	CW OSCIL- LATOR D.V.M.	A ± 0.3 V	

- Set the BAND SW to the VHF high position (VH) and turn the tuning volume so that the voltage at BT terminal of the tuner becomes 15 V ± 0.5 V.
- Set the CW oscillator so that the 38.9 MHz CW signal becomes 1 Vp-p.
- Supply this signal to the Tuner Test Point.
- Connect the Digital Voltmeter to the Tuner AFT terminal P702-(2).
- Confirm the reading of the D.V.M., "A" is between 6.4 V and 6.8 V, when the AFT switch is off.
- Set the AFT switch is "ON".
- Adjust T704 so that the level at the Tuner AFT terminal P702-(2) becomes "A ± 0.3 V".
- Change the frequency of the CW oscillator ± 100 kHz, centered at 38.9 MHz and confirm that the difference of the AFT voltage is more than ± 3 V.

5-9. BURST LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP711	R728		RF COLOUR BAR SIGNAL
TAPE	M. EQ.	SPEC.	
	OSCILLO- SCOPE	240 mVp-p	

1. Connect the 75Ω terminator between TP711 and the GND and connect the oscilloscope to TP711.
2. Tune in the VHF RF Colour Bar Signal.
3. Adjust R728 so that the burst level becomes $240\text{mV} \pm 10\text{mVp-p}$.

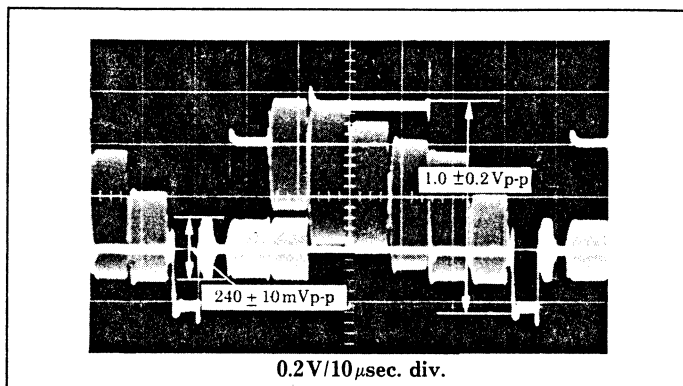


Fig. 26

TV DEMODULATOR SECTION

Model No.: VW-ET180B

5-10. TEST EQUIPMENTS

To make adjustments completely, following equipments are required.

1. VIF Sweep Generator with the Trap Adjustor 6.0MHz
2. SIF Sweep Generator 6.0MHz $\pm$ 150kHz
3. CW Oscillator 39.5MHz $\pm$ 100kHz
4. Digital Volt Meter
5. Oscilloscope
6. Monitor Scope

5-11. SELECTIVE COIL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP707	T703 T704		VIF SWEEP
TAPE	M. EQ.	SPEC.	
	VIF SWEEP/ MONITOR SCOPE	A=0.1 Vp-p B=39.5 MHz	

1. Set the channel to near 32CH.
2. Connect the VIF Sweep to TP703 and connect the Monitor Scope to TP707 as shown in Fig. 27.

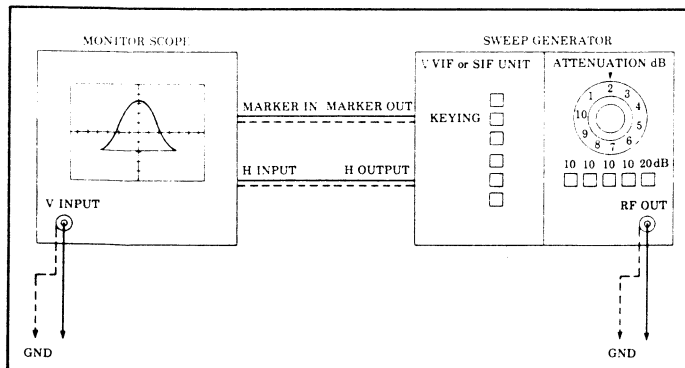


Fig. 27 Connection of Measuring Equipment

3. Connect the JIG to both points P703-(11) and TP709 as shown in Fig. 28 and adjust VR1 so that the noise of waveform on the monitor scope becomes minimum.

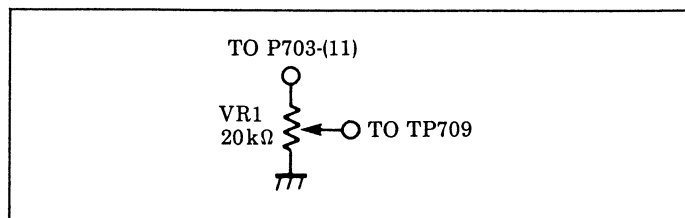


Fig. 28

4. Adjust the sweep output becomes 0.1 Vp-p.
5. Adjust T703 so that the marker position at 39.5MHz becomes peak point.

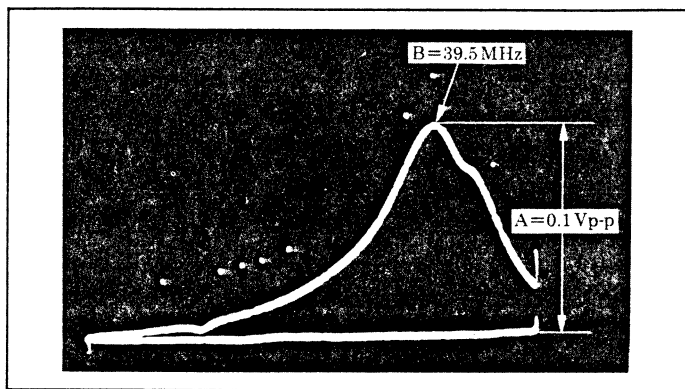


Fig. 29

6. Adjust T704 so that the marker portion at 39.5 MHz becomes as shown below.

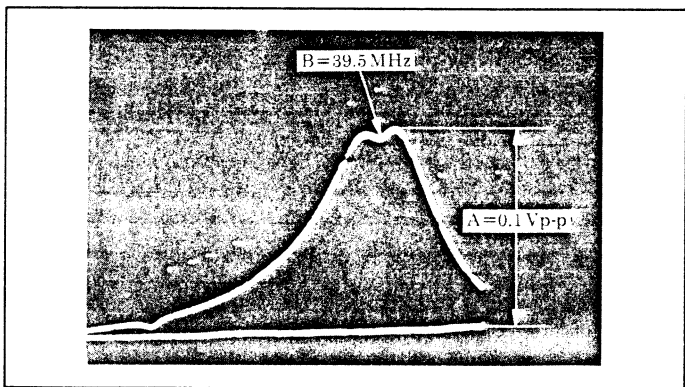


Fig. 30

5-12 VIF SWEEP ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP707	T701 T702		VIF SWEEP
TAPE	M. EQ.	SPEC.	
	VIF SWEEP/ MONITOR SCOPE		

1. Set the channel to near 32CH.
2. Connect the VIF Sweep to Test Point of the Tuner and connect the Monitor Scope to TP707 as shown in Fig. 27.
3. Connect a jumper between the AGC terminal of the Tuner Unit and the GND.
4. Connect the 100Ω resistor between TP704 and TP705.
5. Connect the JIG to both points P703-(11) and TP709 as shown in Fig. 27 and adjust VR1 so that the VIF waveform becomes maximum, and adjust the VIF sweep output so that the VIF waveform becomes 1.0Vp-p.
6. Release 20dB attenuation from the attenuator of the VIF Sweep.
7. Readjust VR1 of the JIG so that the VIF waveform becomes 1.0Vp-p.
8. Adjust T702 so that the 33.5MHz trap becomes minimum.
9. Adjust T701-(E) so that the 41.5MHz trap becomes minimum.
10. Adjust T701-(C) so that the 31.5MHz trap becomes minimum.
11. Adjust the Tuner converter coil and T701-(A), (B), (D), (F) so that the VIF waveform becomes as follows.

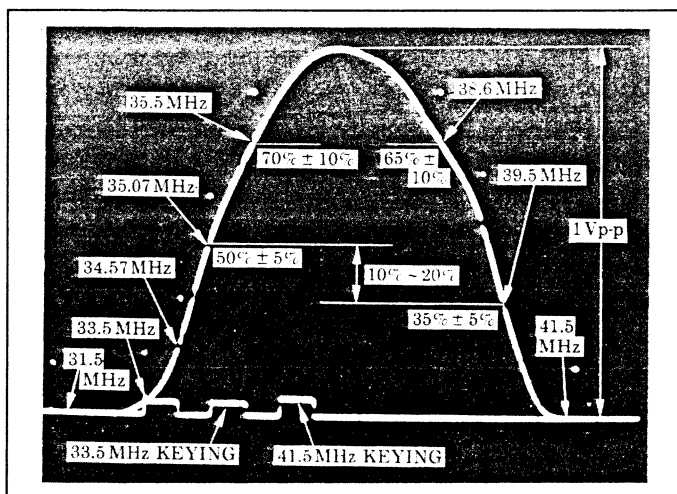


Fig. 31

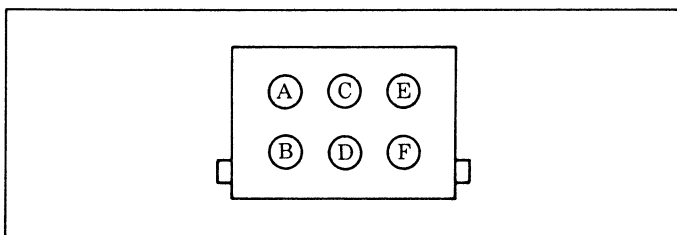


Fig. 32 HLB Transformer T701

5-13. SIF SWEEP ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP710	T751 T752		SIF SWEEP
TAPE	M. EQ.	SPEC.	
	SIF SWEEP/ D.V.M./ MONITOR SCOPE		

1. Set the channel to near 32CH.
2. Adjust the SIF Sweep output to 6mVp-p (75Ω terminated).
3. Connect the SIF Sweep output to TP706 and connect the Monitor input to TP710.
4. Connect a jumper wire between TP709 and the GND.
Turn T752 clockwise so that the 6.0MHz portion of the waveform becomes maximum and adjust T751 so that the 6.0MHz portion of the waveform becomes maximum.

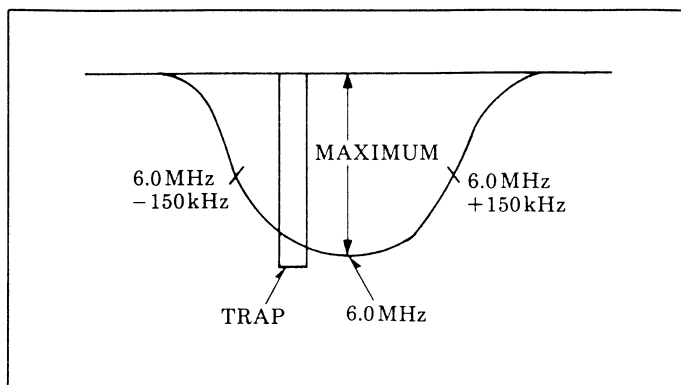


Fig. 33

5. Adjust T752 so that the 6.0MHz trap becomes minimum.
6. Release 20dB attenuation from the attenuator of the SIF Sweep and confirm the waveform between the 6.0MHz - 150kHz portion and 6.0MHz + 150kHz portion is straight as follows.

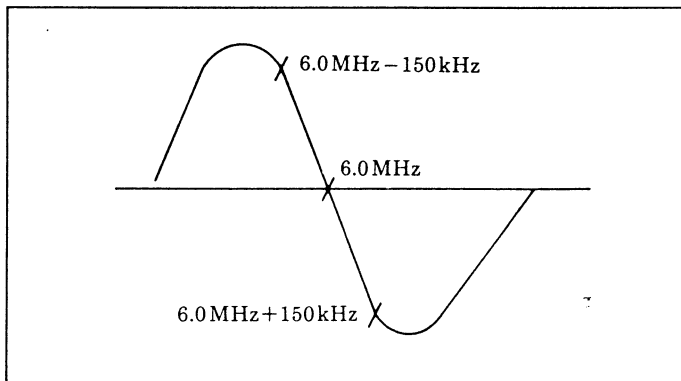


Fig. 34 SIF Waveform

5-14. AFT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TUNER TP TP702	T704		CW OSC
TAPE	M. EQ.	SPEC.	
	CW OSCIL- LATOR/ D.V.M.	A ± 0.3V	

1. Set the channel to 52CH.
2. Set the CW oscillator so that the 39.5MHz CW signal becomes 1Vp-p.
3. Supply this signal to the Tuner Test Point.
4. Connect the Digital Voltmeter to the Tuner AFT terminal P702-(2).

- Confirm the reading of the D.V.M., "A" is between 6.4 V and 6.8 V, when the AFT switch is off.
- Adjust T704 so that the level at the Tuner AFT terminal P702-(2) becomes " $A \pm 0.3 V$ ".
- Change the frequency of the CW oscillator $\pm 100 \text{ kHz}$, centered at 39.5 MHz and confirm that the difference of the AFT voltage is more than $\pm 3 V$.

5-15. BURST LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP711	R728		RF COLOUR BAR SIGNAL
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE	240 mVp-p	

- Connect the 75 Ω terminator between TP711 and the GND, and connect the oscilloscope to TP711.
- Tune in the UHF RF Colour Bar Signal.
- Adjust R728 so that the burst level becomes $240 \text{ mV} \pm 10 \text{ mVp-p}$.

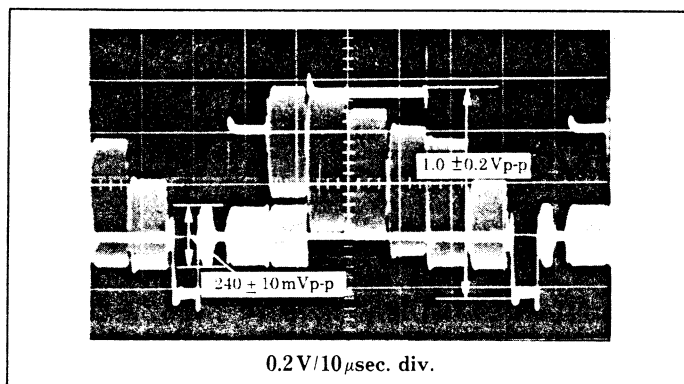


Fig. 35

TIMER SECTION

5-16. TEST EQUIPMENTS

To make adjustment completely, following equipments are required.

- Frequency Counter
Frequency Range: 0 ~ 10 MHz
- DC Power Supply
- D.V.M.
Input Impedance: more than 1 M Ω
- Plastic Tip Driver

5-17. TIMER CLOCK ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC6721-(37)	C6723		
TAPE	M. EQ.	SPEC.	
	FREQUENCY COUNTER	$7812.5 \pm 0.012 \mu\text{sec.}$	

5-18. TIMER RESET VOLTAGE ADJUSTMENT

TP	ADJ.	MODE	INPUT
Q6725-(C)	R6733		
TAPE	M. EQ.	SPEC.	
	D.V.M./DC POWER SUPPLY		

- Disconnect the AC plug of the deck and disconnect the connector P6702.
- Set the voltage of the DC POWER SUPPLY for $4.0 \pm 0.05 V$, then connect the DC POWER SUPPLY to cathode of D6746.
- Adjust R6733 so that the indication of the D.V.M. changes from low to high.

5-19. SERIAL DECODER RESET ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC7001-(12)	R7007		
TAPE	M. EQ.	SPEC.	
	D.V.M./DC POWER SUPPLY		

- Disconnect the AC plug of the deck and disconnect the connector P6702.
- Set the volage of the DC POWER SUPPLY for $4.5 \pm 0.05 V$, then connect the DC POWER SUPPLY to IC7001-(8).
- Adjust R7007 so that the indication of the D.V.M. changes from low to high.

5-20. SYNC SEPARATION FREE RUN ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC6801-(4)	R6803		
TAPE	M. EQ.	SPEC.	
	FREQUENCY COUNTER	$15.625 \text{ kHz} \pm 50 \text{ Hz}$	

5-21. INFRARED TUNING FREQUENCY ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC6501-(3)	T6501		
TAPE	M. EQ.	SPEC.	
	OSCILLOSCOPE SIGNAL GENERATOR (SINE WAVE)		

1. Set the SIGNAL GENERATOR for 35kHz $\pm$ 50Hz, then connect the SIGNAL GENERATOR to IC6501-(7), and connect the scope to IC6501-(3).
2. Adjust the output level of the signal generator so that the waveform on the scope becomes sine wave.
3. Adjust T6501 so that the waveform becomes maximum.

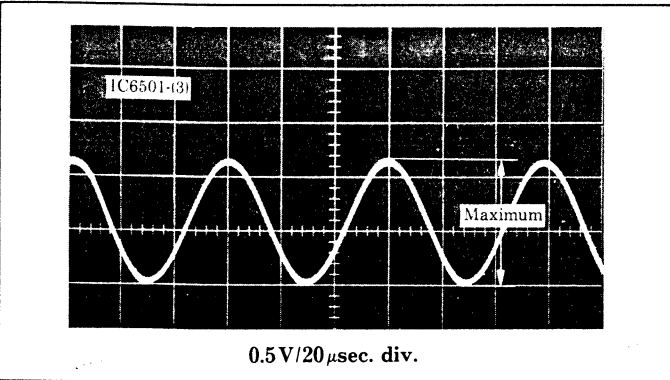
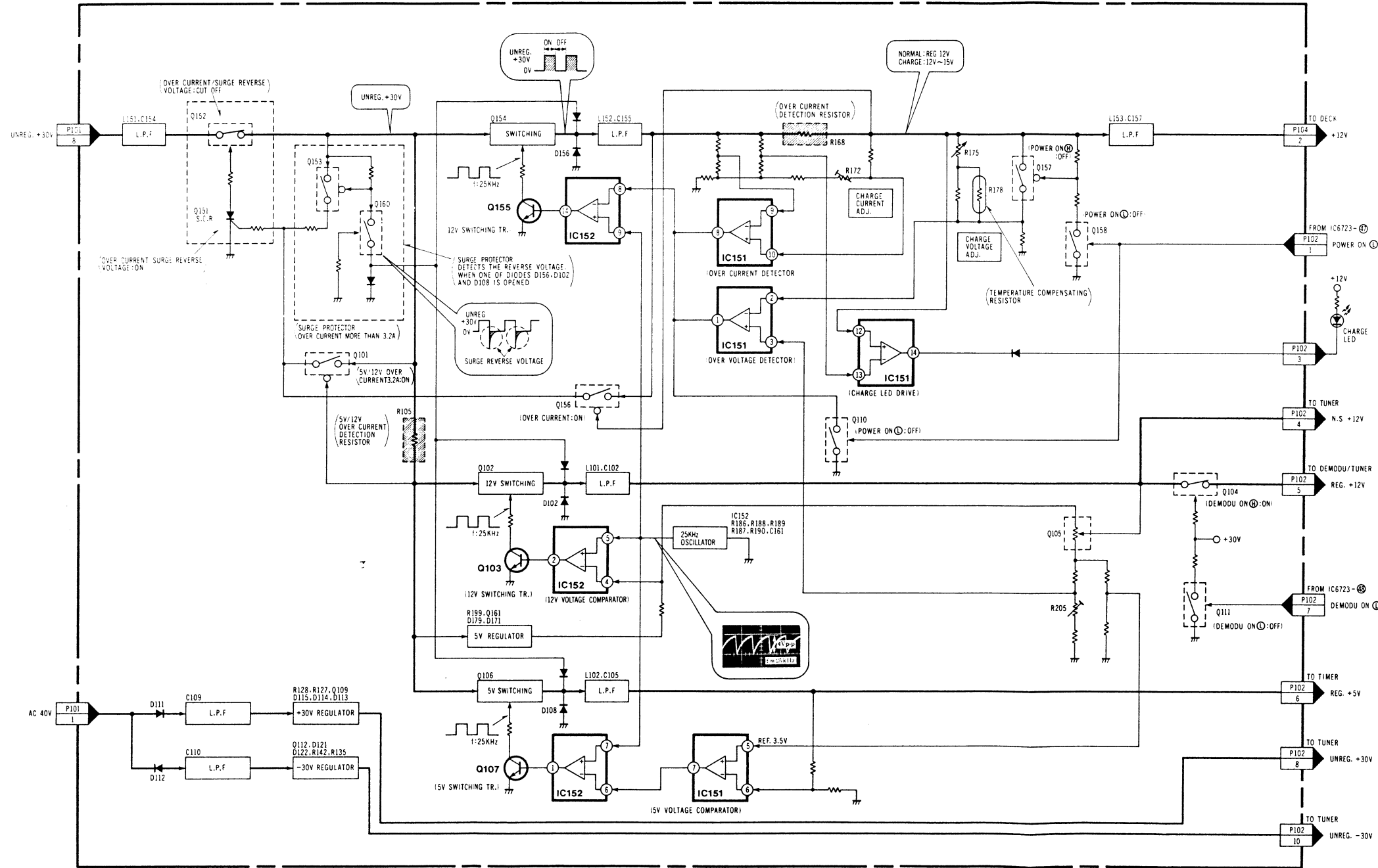
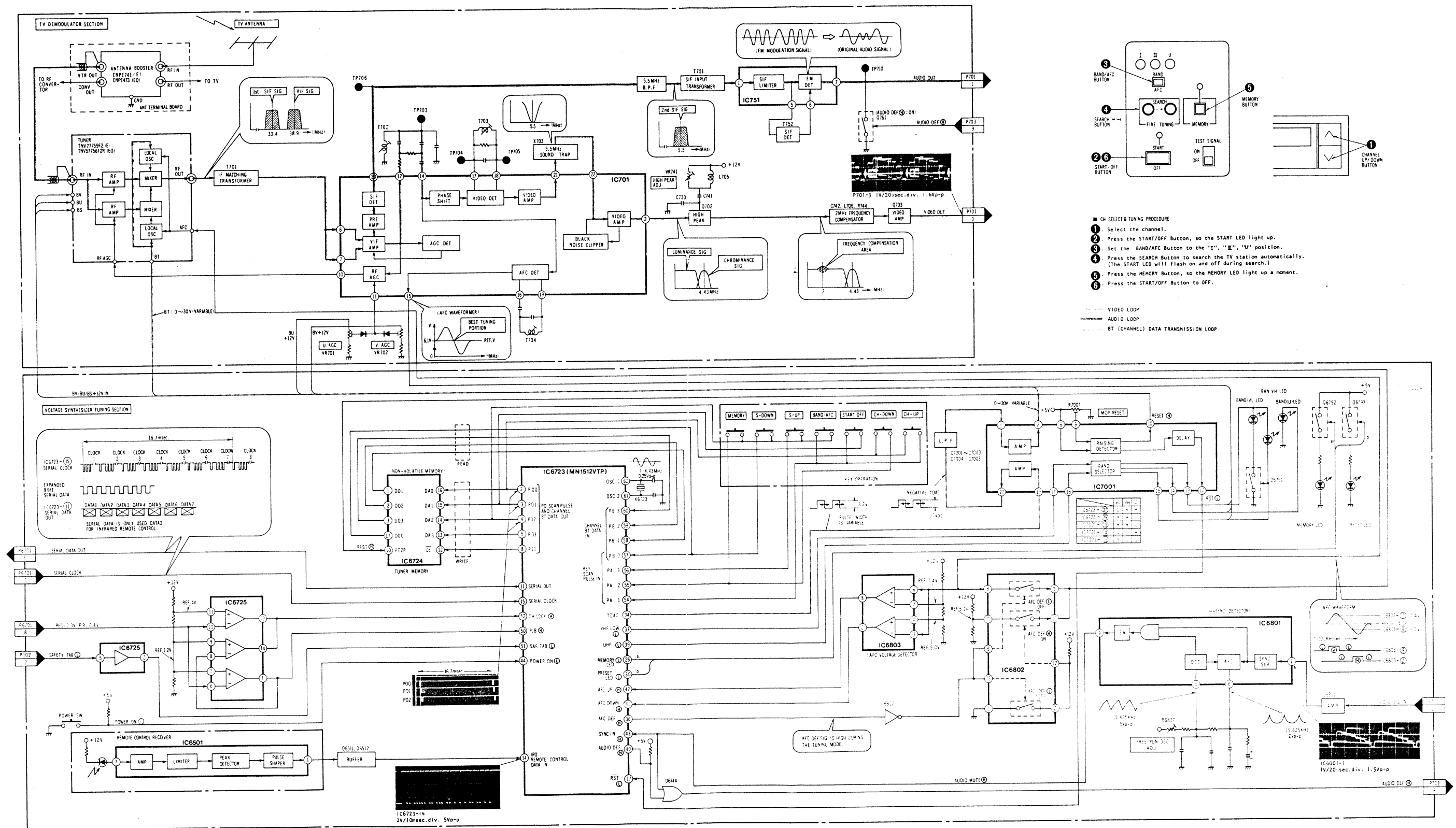


Fig. 36

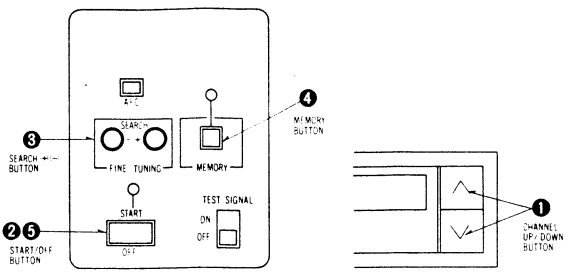
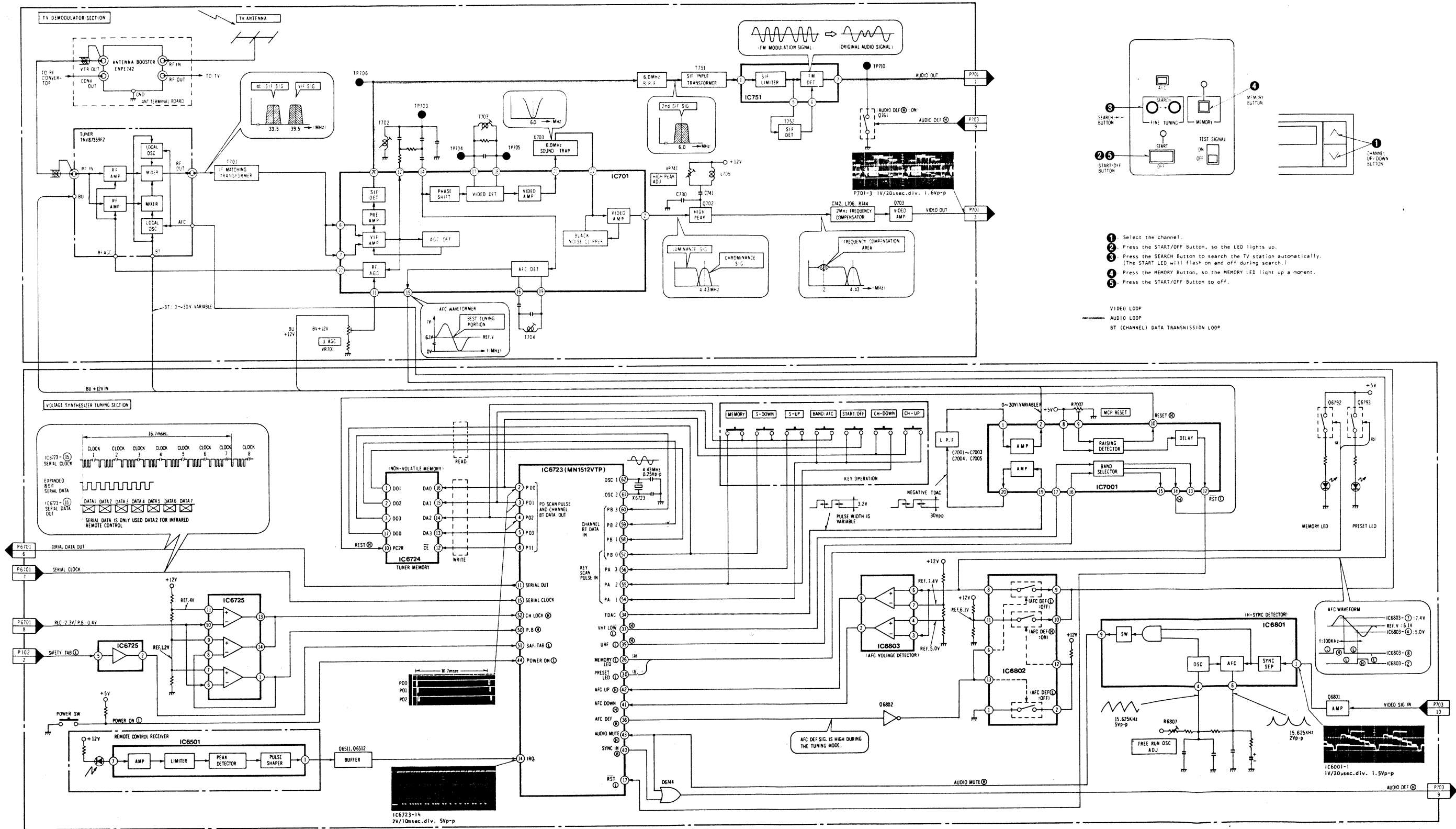
6. POWER SUPPLY BLOCK DIAGRAM



7. TUNER & TV DEMODULATOR BLOCK DIAGRAM (VW-ET180E/EO)



8. TUNER & TV DEMODULATOR BLOCK DIAGRAM (VW-ET180B)

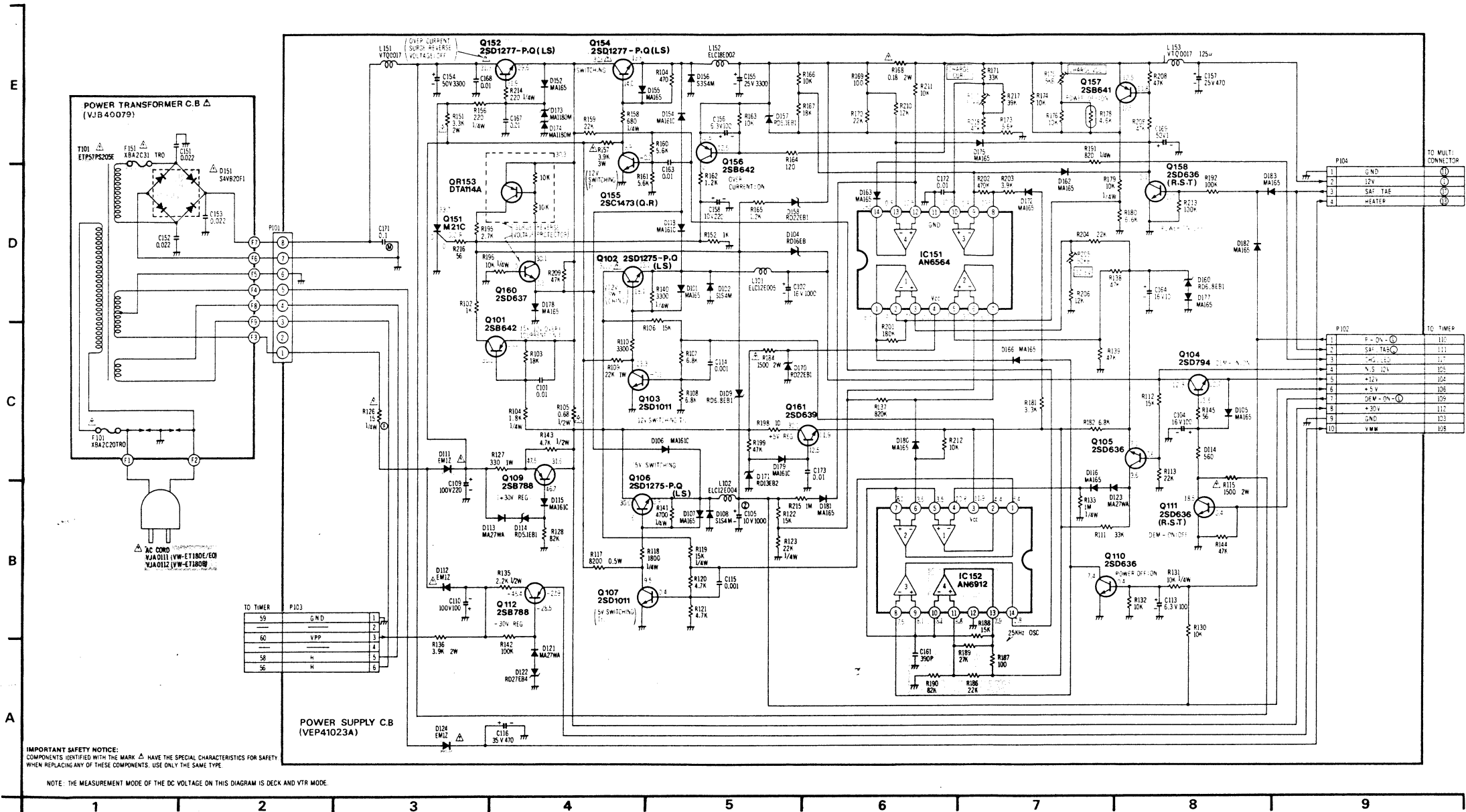


- 1 Select the channel.
- 2 Press the START/OFF Button, so the LED lights up.
- 3 Press the SEARCH Button to search the TV station automatically. (The START LED will flash on and off during search.)
- 4 Press the MEMORY Button, so the MEMORY LED light up a moment.
- 5 Press the START/OFF Button to off.

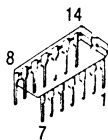
Back Page:
TUNER & TV DEMODULATOR Section



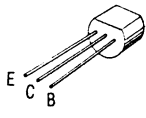
10. POWER SUPPLY SCHEMATIC DIAGRAM



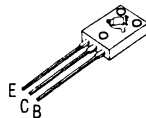
ICs & TRANSISTORS INFORMATION



AN6564
AN6912



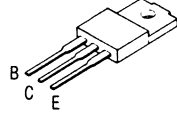
M21C
2SC1473
2SD1011



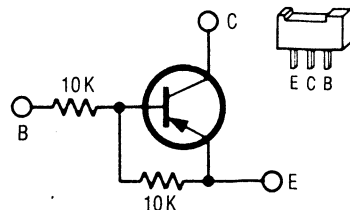
2SD794



2SB642
2SB788
2SD636
2SB641
2SD637
2SD639

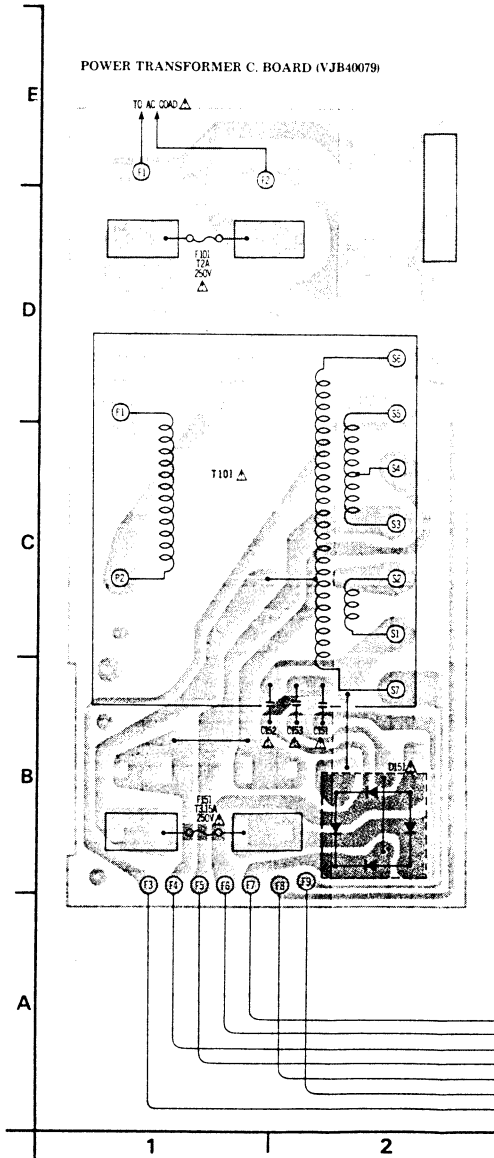


2SD1275
2SD1277



DTA114A

11. POWER TRANSFORMER
(VEP41023A) CIRCUIT



POWER SUPPLY SCHEMATIC	
Transistor	
Q101	C-4
Q102	D-4
Q103	C-5
Q104	C-8
Q105	C-8
Q106	B-5
Q107	B-5
Q109	B-4
Q110	B-8
Q111	B-8
Q112	B-4
Q151	D-3
Q152	E-4
Q154	E-4
Q155	E-4
Q156	E-5
Q157	E-8
Q158	D-8
Q160	D-4
Q161	C-6
Transistor & Resistor	
QR153	D-4
Integrated Circuit	
IC151	D-6
IC152	B-7
Adjustment	
R172	E-7
R175	E-7
R205	D-7
Connector	
P102	C-9
P103	B-2
P104	D-9

ADDRESS INFORMATION

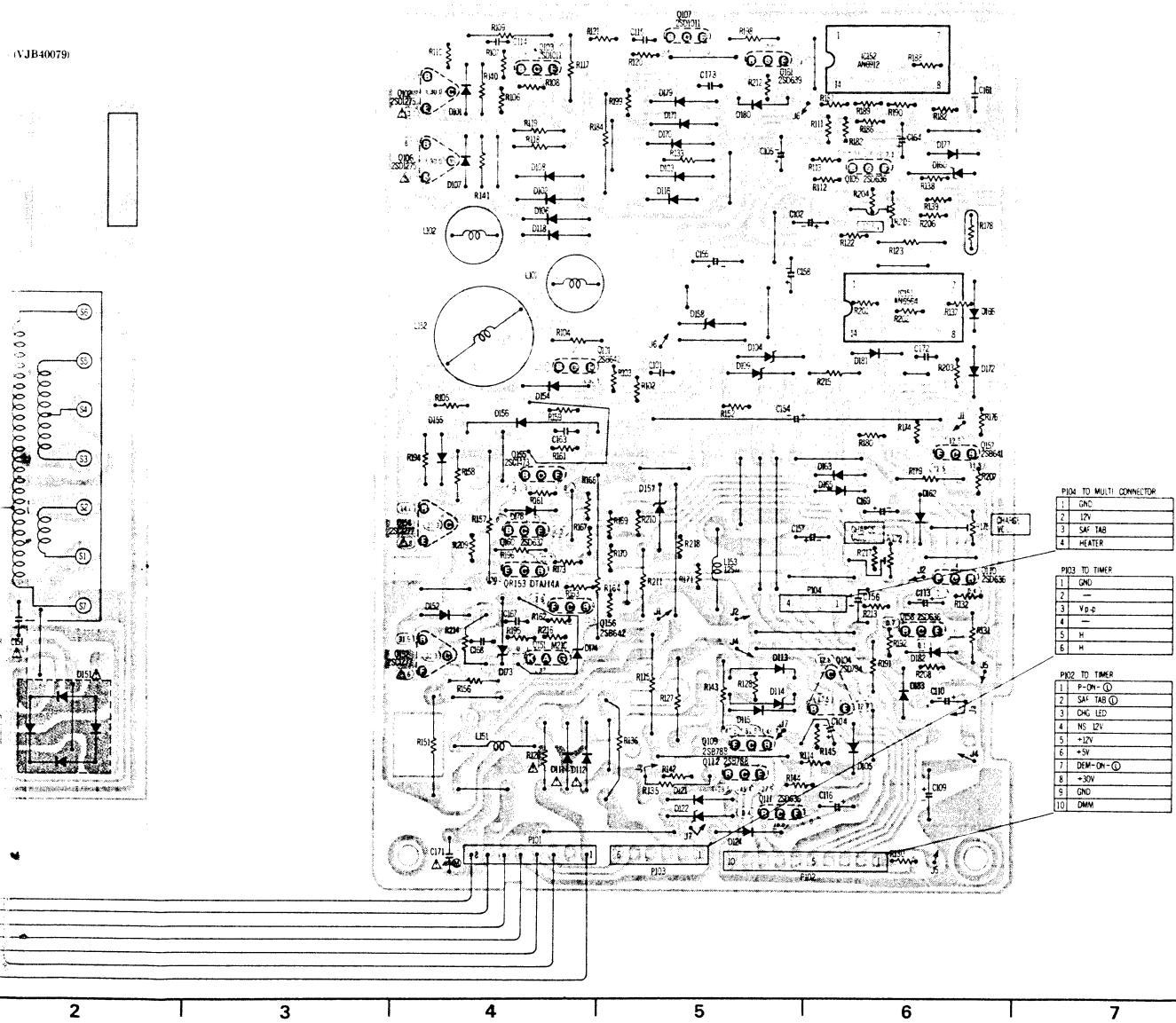
POWER SUPPLY CIRCUIT BOARD	
Transistor	
Q101	D-4
Q102	E-4
Q103	E-4
Q104	B-6
Q105	D-6
Q106	E-4
Q107	E-5
Q109	B-5
Q110	B-6
Q111	A-5
Q112	B-5
Q151	B-4
Q152	B-4
Q154	C-4
Q155	C-4
Q156	B-4
Q157	C-6
Q158	C-6
Q160	C-4
Q161	E-5
Transistor & Resistor	
QR153	C-4
Integrated Circuit	
IC151	D-6
IC152	E-6
Adjustment	
R172	C-6
R175	C-6
R205	D-6

ADDRESS INFORMATION

TRANSFORMER (VJB40079) & POWER SUPPLY
CIRCUIT BOARDS

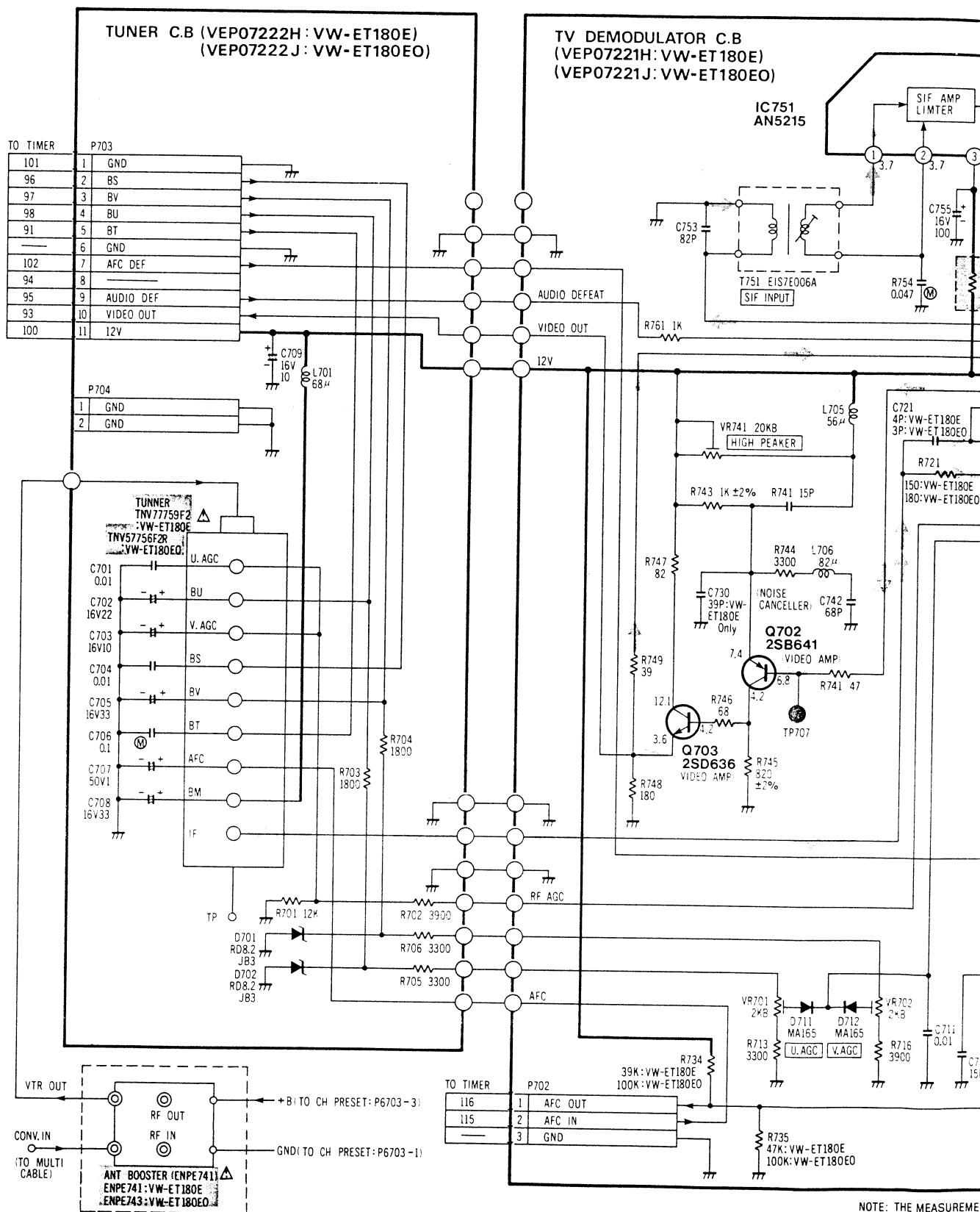
POWER SUPPLY Section

POWER SUPPLY C. BOARD (VEP41023A)

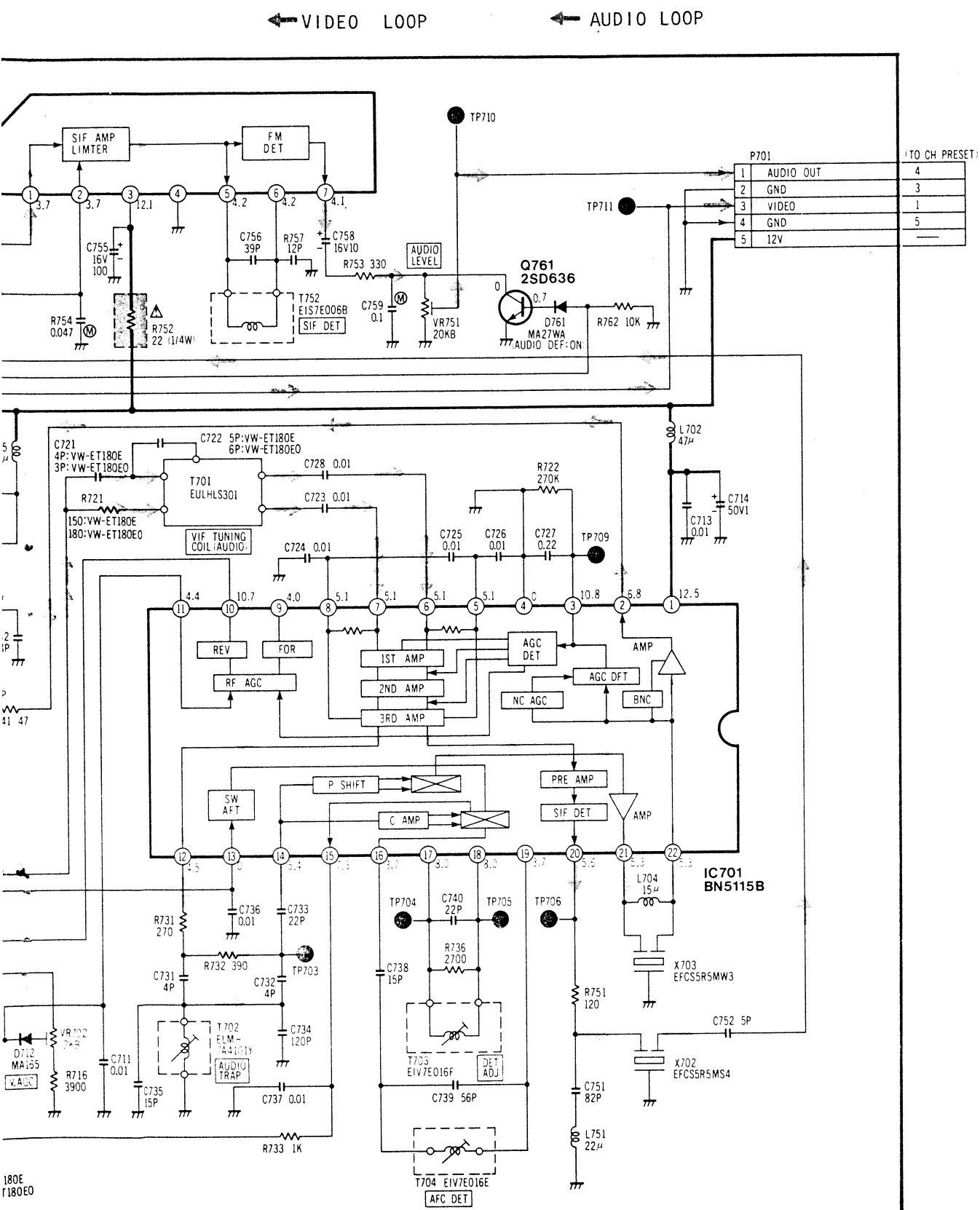


Next Page:
TV DEMODULATOR Section

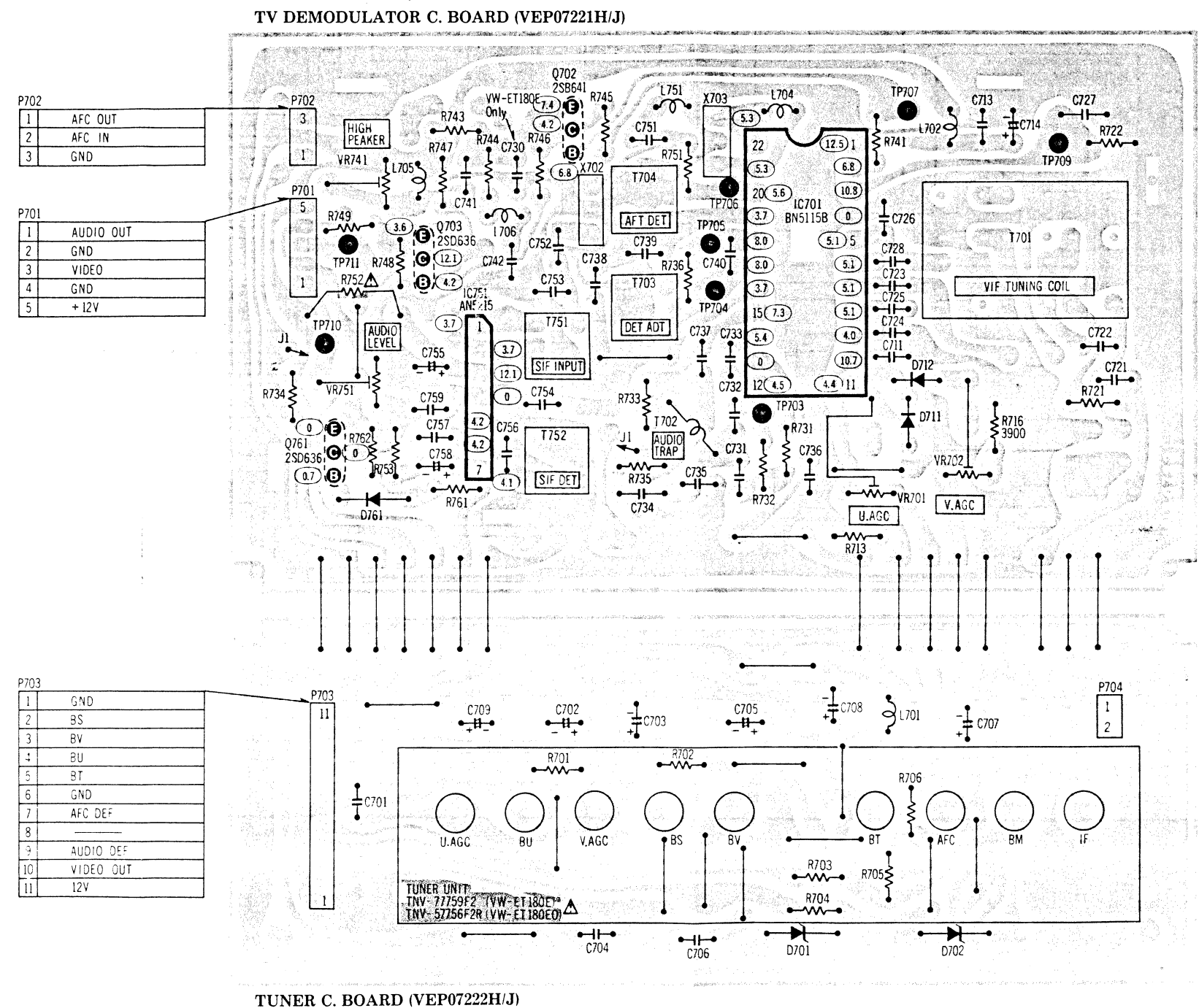
12. TV DEMODULATOR SCHEMATIC DIAGRAM (VW-ET180E/EO)



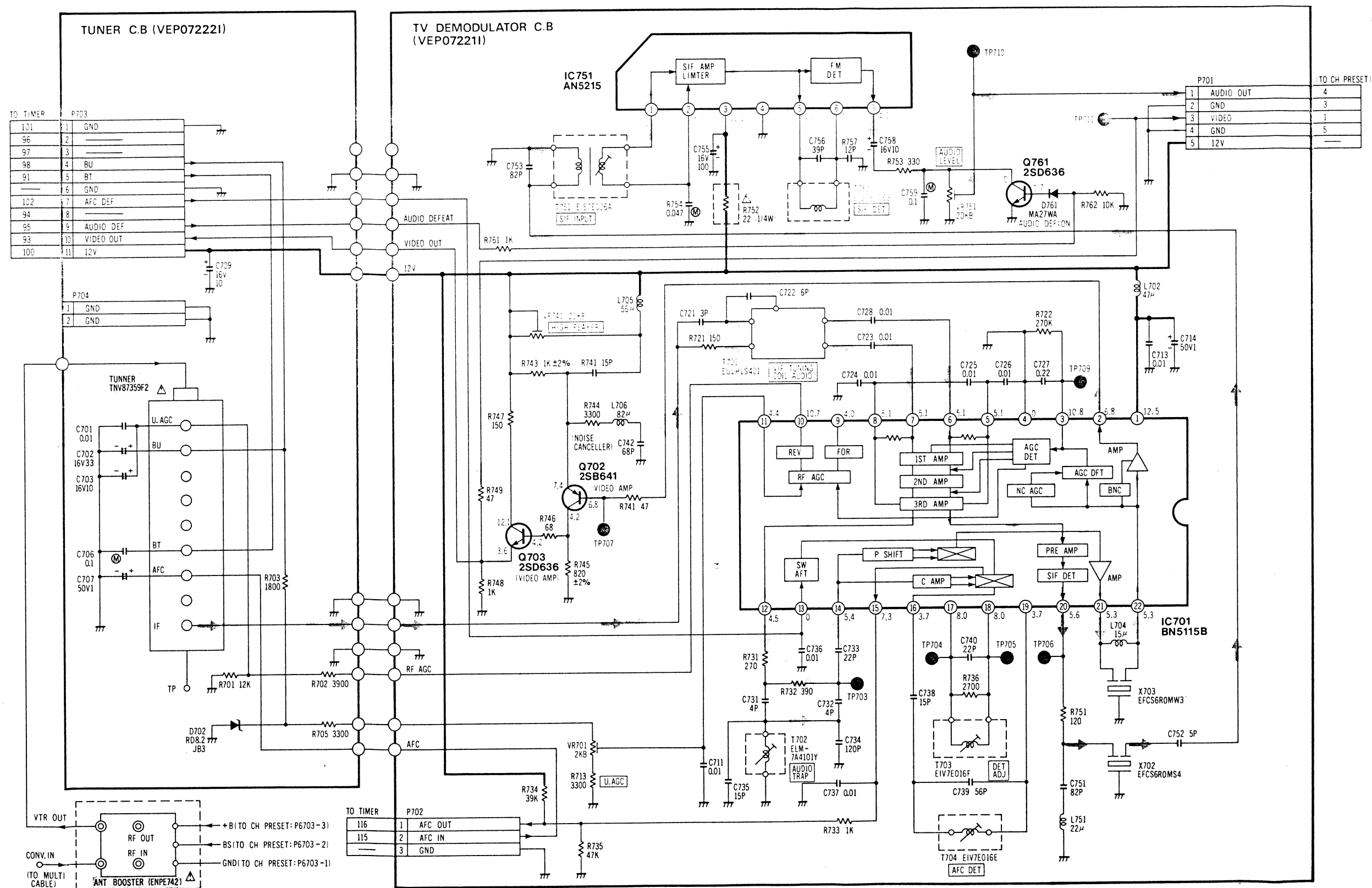
E/EO)



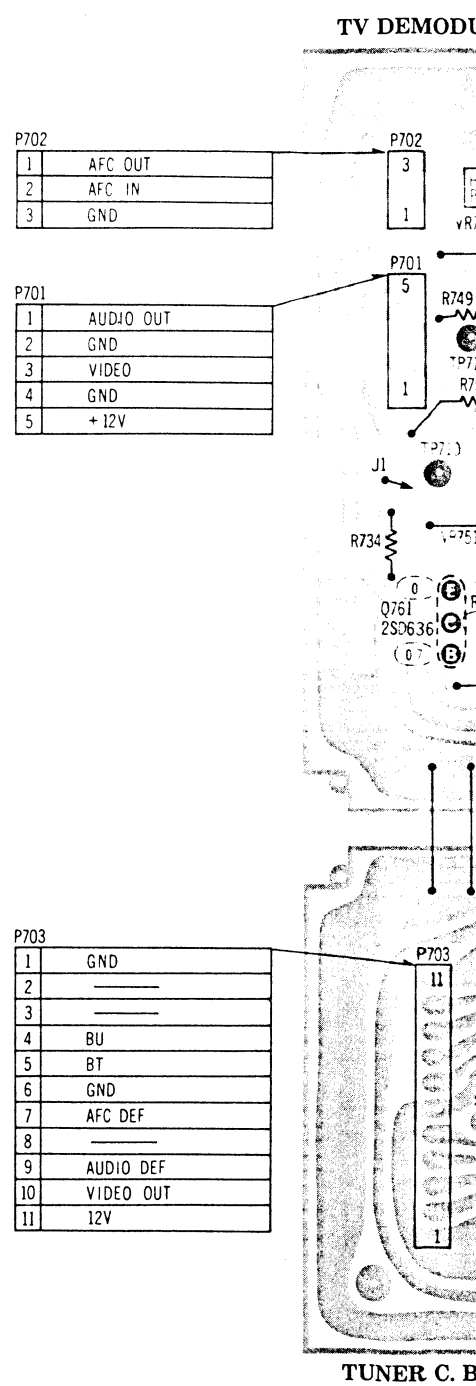
13. TV DEMODULATOR (VEP07221H: VW-ET180E/VEP07221J: VW-ET180EO) & TUNER (VEP07222H: VW-ET180E/VEP07222J: VW-ET180EO) CIRCUIT BOARDS



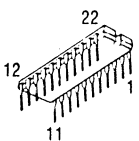
14. TV DEMODULATOR SCHEMATIC DIAGRAM (VW-ET180B)



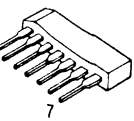
15. TV DEMODULATOR
CIRCUIT BOARDS



ICs & TRANSISTORS INFORMATION



BN5115B

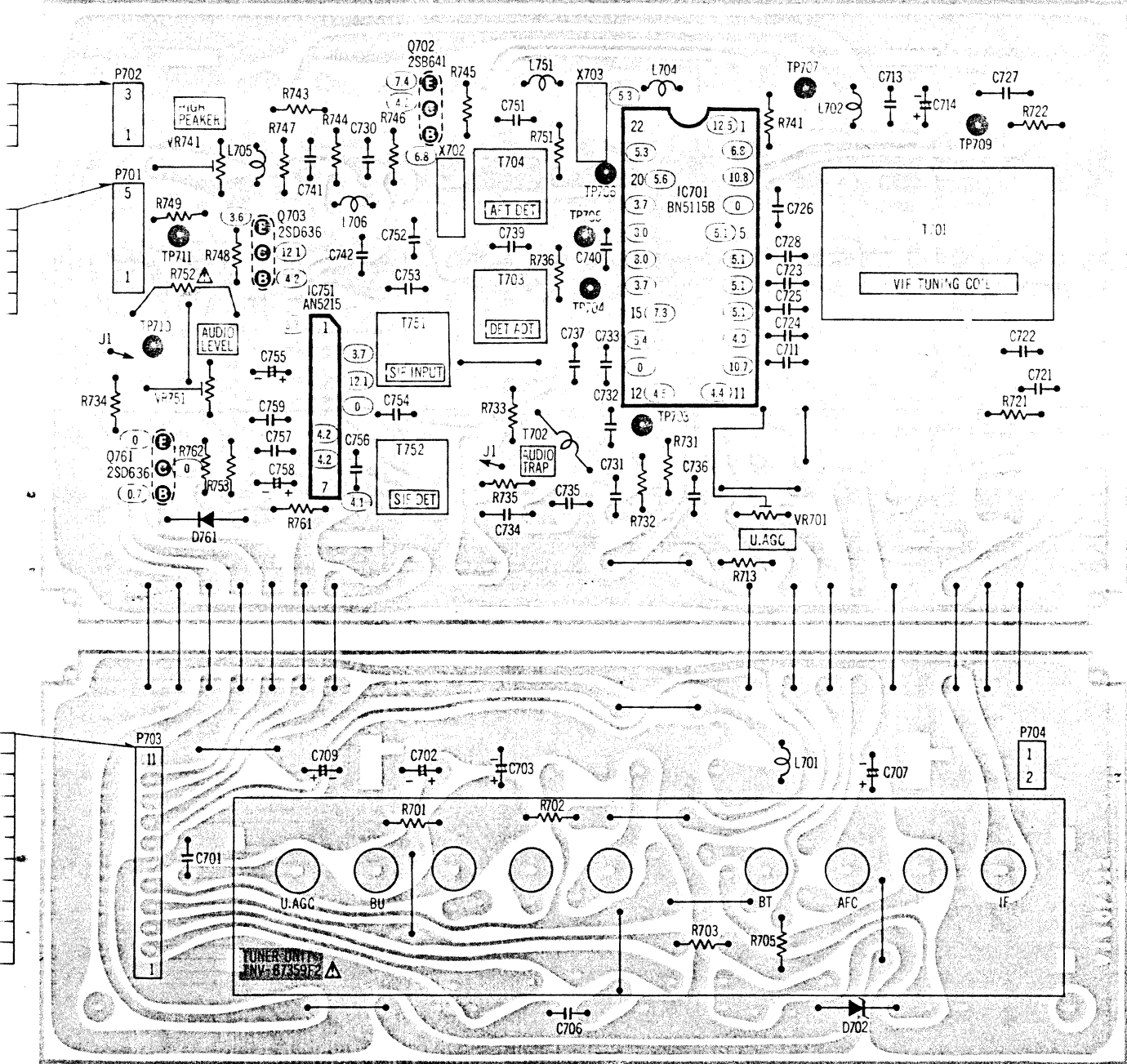


AN5215

DULATOR (VEP07221I) & TUNER (VEP07222I) BOARDS

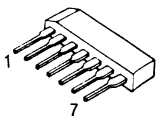
TV DEMODULATOR Section

TV DEMODULATOR C. BOARD (VEP07221I)



TUNER C. BOARD (VEP07222I)

Rs INFORMATION



AN5215



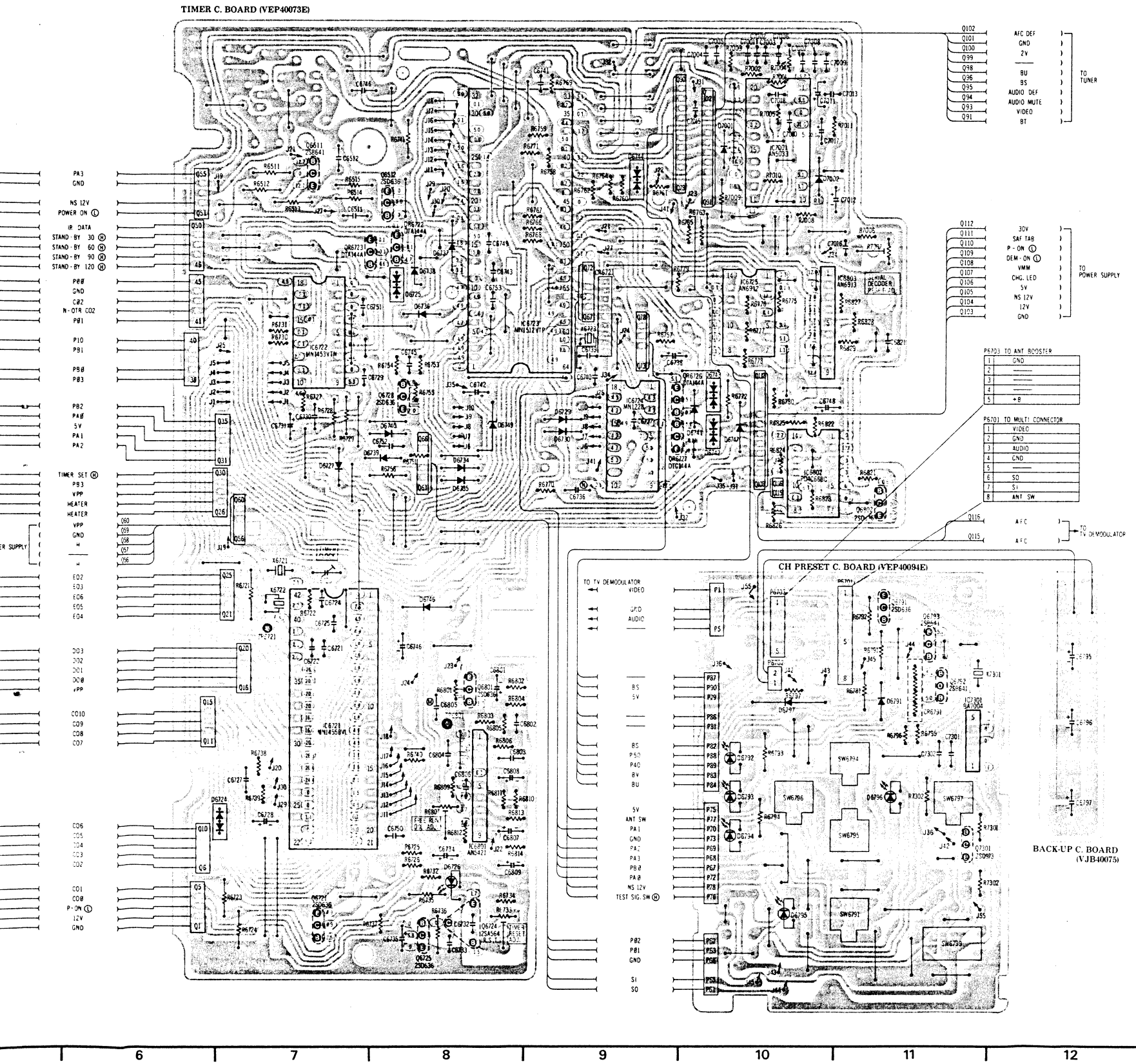
2SB641
2SD636

Next Page:
TIMER Section

IR RECEIVER C. BOARD (VEP40076E)

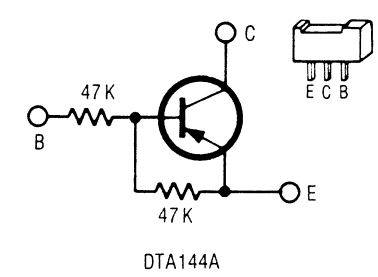
TIMER DISPLAY C. BOARD (VEP40072E)

Receiver

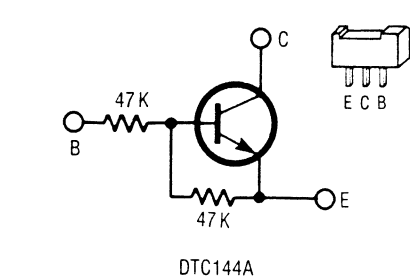


TIMER, CH PRESET, TIMER DISPLAY & IR RECEIVER CIRCUIT BOARD		
Transistor		
Q6511	F-7	
Q6512	F-8	
Q6721	A-7	
Q6724	A-8	
Q6725	A-8	
Q6728	E-8	
Q6791	C-11	
Q6792	C-11	
Q6793	C-11	
Q6801	C-8	
Q6802	D-11	
Q7301	A-11	
Transistor & Resistor		
QR6701	C-4	
QR6702	B-4	
QR6703	B-4	
QR6704	F-4	
QR6705	F-4	
QR6706	F-4	
QR6707	F-5	
QR6708	D-4	
QR6722	F-8	
QR6723	E-7	
QR6726	E-10	
QR6727	D-10	
Integrated Circuit		
IC6501	F-2	
IC6701	C-4	
IC6721	B-7	
IC6722	E-7	
IC6723	E-9	
IC6724	E-9	
IC6725	E-10	
IC6801	B-8	
IC6802	C-10	
IC6803	E-11	
IC7001	F-10	
IC7301	C-11	
Adjustment		
C6723	C-7	
R6733	A-8	
R6807	B-8	
R7007	F-11	
T6501	F-1	

ADDRESS INFORMATION



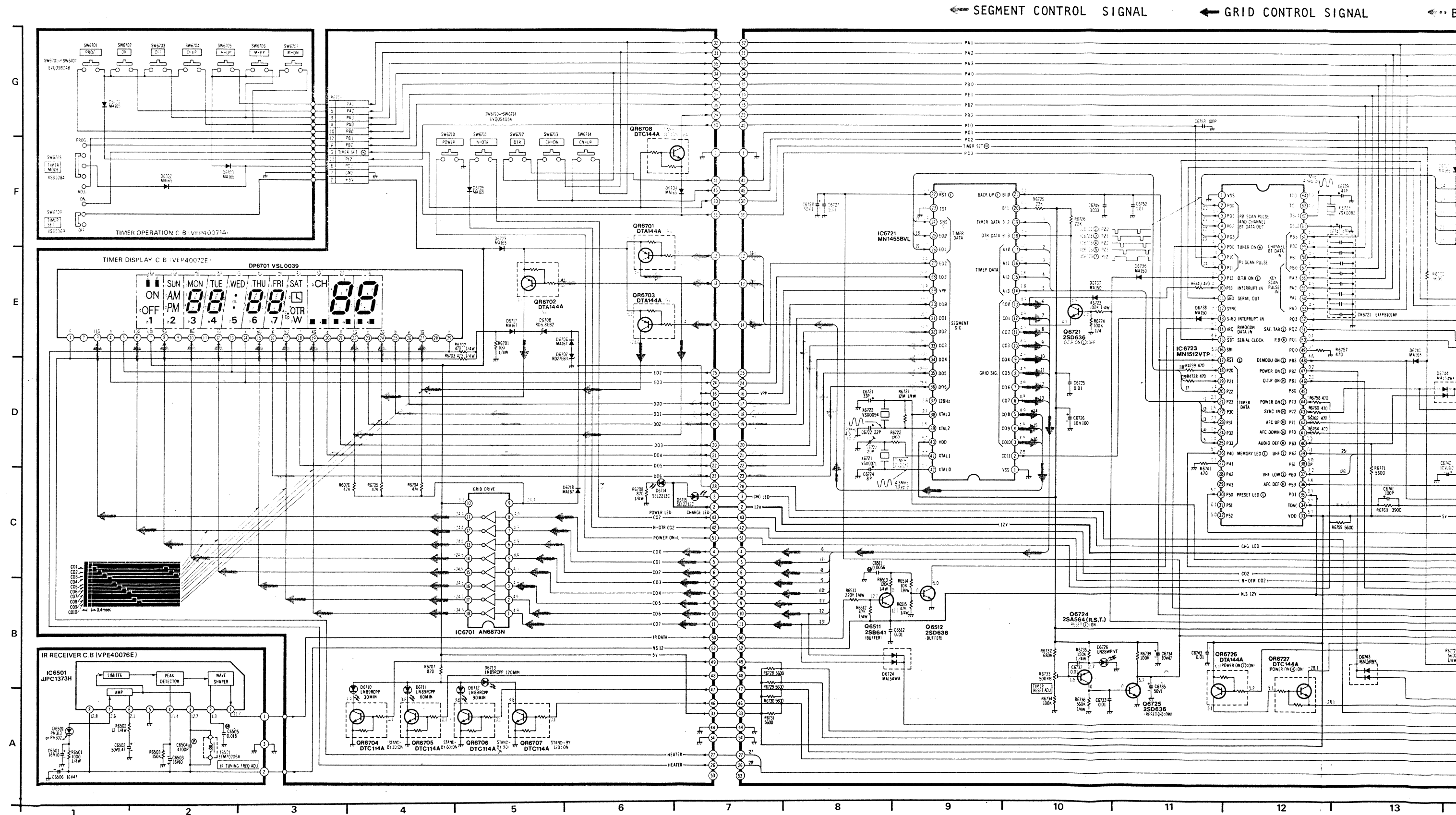
ICs & TRANSISTORS INFORMATION	
MN1455BVL	MN1453VTN MN1219 AN6873N
AN6912 μPD4066BC	AN5421 AN6913
2SB641 2SD636 2SD973	2SA564
MN1512VIP	BA7004
AN5033	μPC1373H

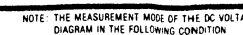


TIMER, CH PRESET, TIMER DISPLAY & IR RECEIVER SCHEMATIC		
Transistor		
Q6511	B-8	
Q6512	B-9	
Q6721	E-10	
Q6724	B-10	
Q6725	A-11	
Q6728	F-17	
Q6791	E-22	
Q6792	F-23	
Q6793	F-24	
Q6801	B-24	
Q6802	C-19	
Q7301	E-26	
Transistor & Resistor		
QR6701	F-6	
QR6702	E-5	
QR6703	E-6	
QR6704	A-4	
QR6705	A-4	
QR6706	A-5	
QR6707	A-5	
QR6708	F-6	
QR6722	B-17	
QR6723	B-17	
QR6726	B-12	
QR6727	B-12	
Integrated Circuit		
IC6501	A-1	
IC6701	B-5	
IC6721	F-9	
IC6722	C-15	
IC6723	E-12	
IC6724	E-15	
IC6725	C-18	
IC6801	C-25	
IC6802	B-20	
IC6803	C-22	
IC7001	F-18	
IC7301	F-17	
Adjustment		
C6723	D-8	
R6733	B-10	
R6807	B-25	
R7007	F-19	
T6501	A-2	
Connector		
P102	B-28	
P103	A-28	
P104	D-28	
P701	F-28	
P702	C-28	
P703	D-28	
P6701	G-26	
P6702	E-27	
P6703	G-26	
P6705	G-3	

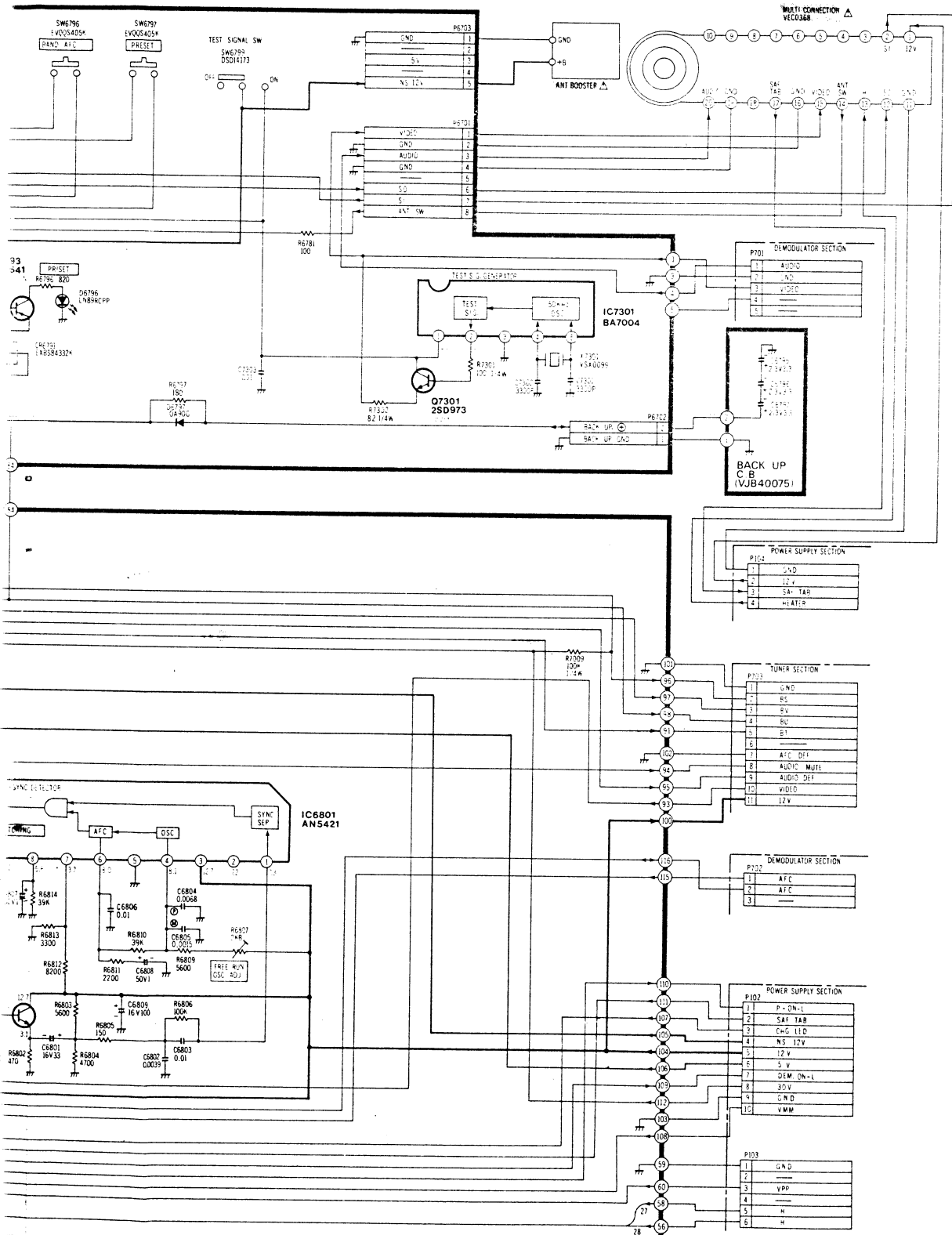
ADDRESS INFORMATION

17. TIMER [Timer Operation/Timer Display/Timer/CH Preset/ IR Receiver] SCHEMATIC DIAGRAM (VW-ET180E/EO)





TIMER Section



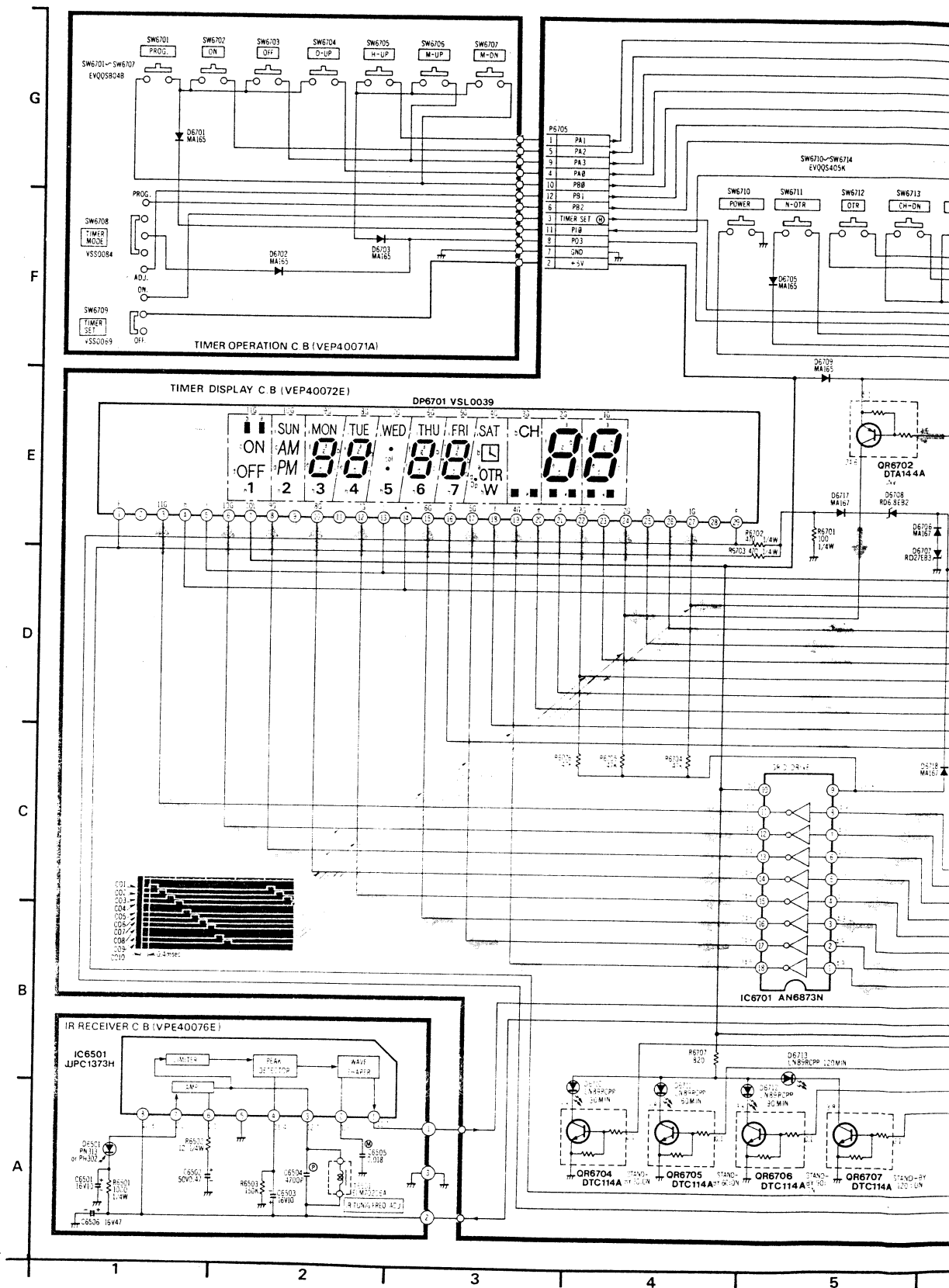
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IN THE FOLLOWING CONDITION:

- 1) MODE SELECTOR: CLOCK
- 2) SELECTION TIME: SUN CH200, CH DISPLAY: AFC 1

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED WITH THE MARK Δ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

Next Page:
TIMER Section

18. TIMER [Timer Operation/Timer Display/Timer/CH Preset/IR Receiver] SCHEMATIC DIAGRAM (VW-ET180B)

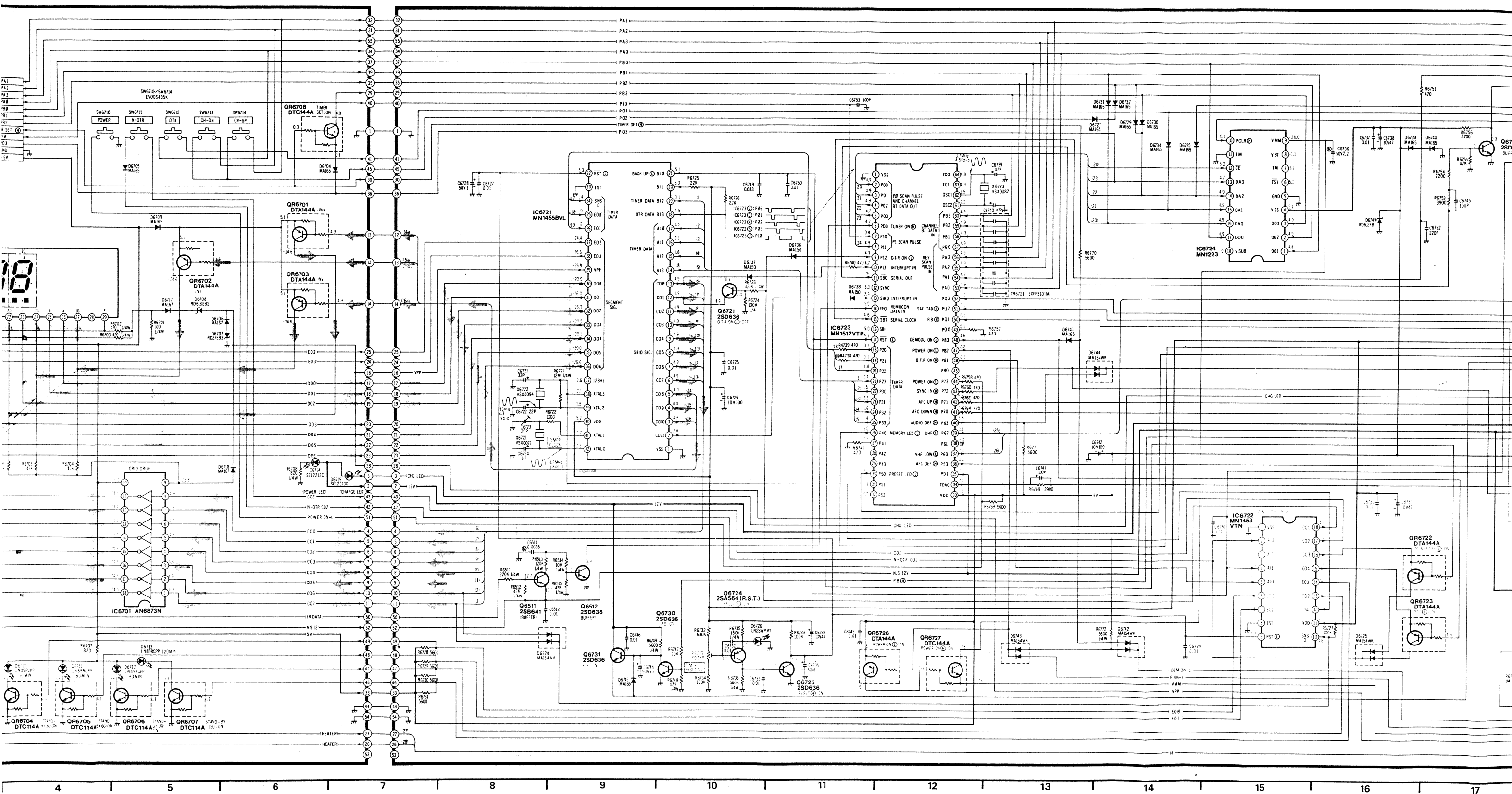


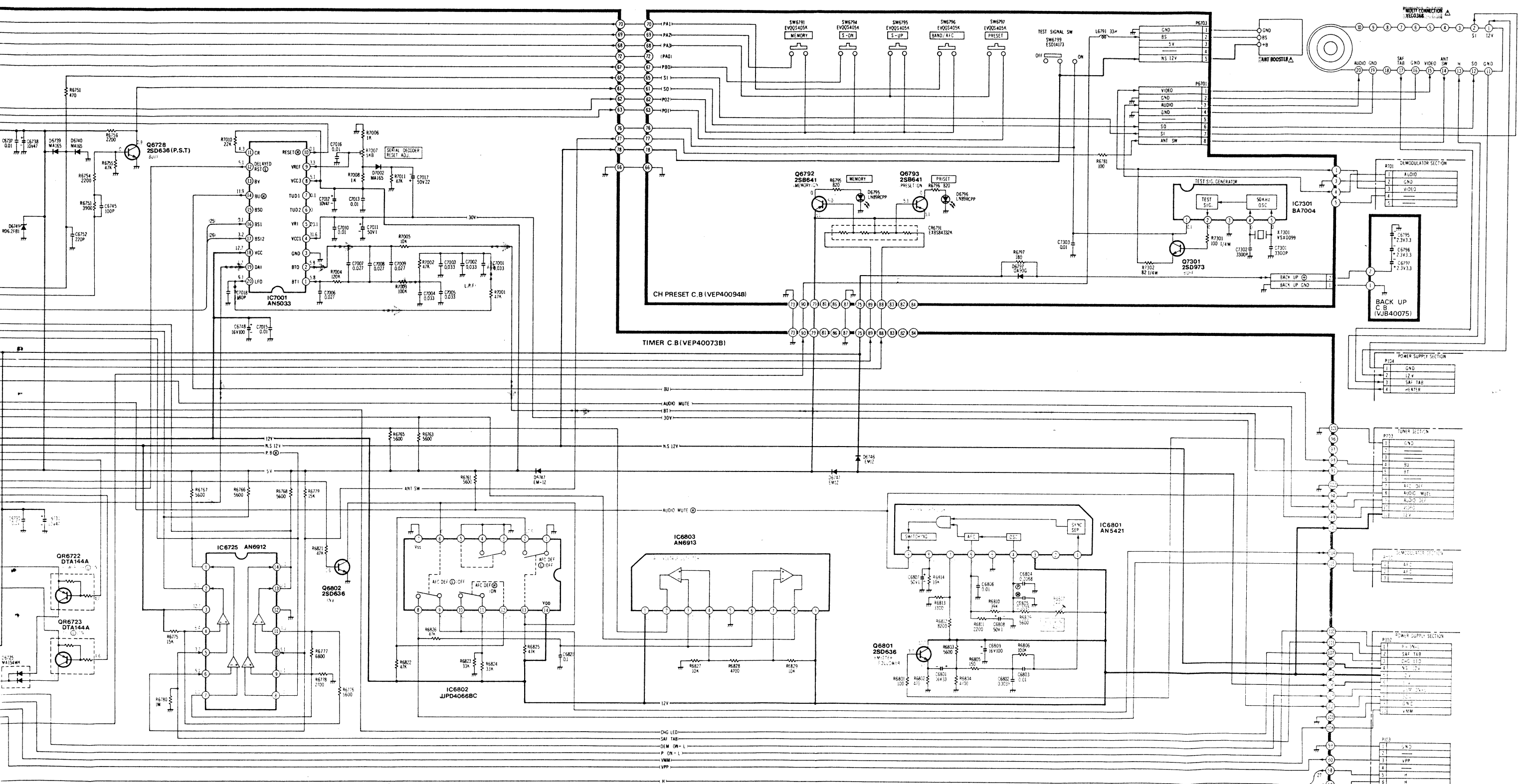
ty/Timer/CH Preset/
M (VW-ET180B)

← SEGMENT CONTROL SIGNAL

← GRID CONTROL SIGNAL

← BT (CHANNEL) DATA TRANSMISSION LOOP





NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IN THE FOLLOWING CONDITION

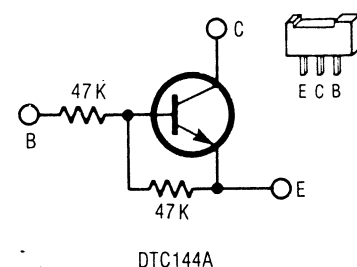
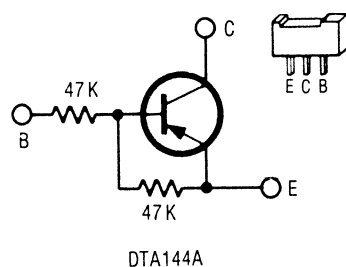
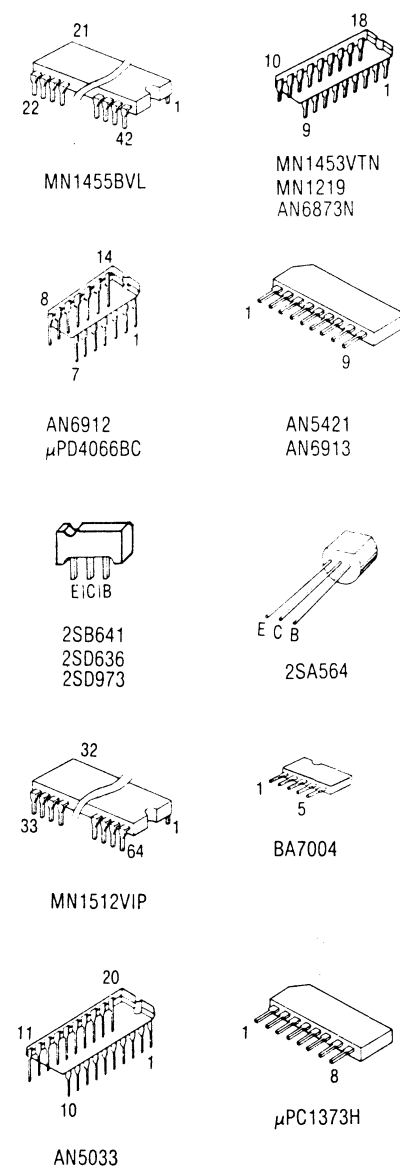
1) MODE SELECTOR: CLOCK
2) SELECTION TIME: SW1 (ON), CH DISPLAY: AFE 1

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK Δ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE

TIMER, CH PRESET, TIMER DISPLAY & IR RECEIVER SCHEMATIC	
Transistor	
Q6511	B-8
Q6512	B-9
Q6521	E-10
Q6724	B-10
Q6725	A-11
Q6728	F-17
Q6730	B-10
Q6731	B-9
Q6792	F-23
Q6793	F-24
Q6801	B-24
Q6802	C-19
Q7301	E-26
Transistor & Resistor	
QR6701	F-6
QR6702	E-5
QR6703	E-6
QR6704	A-4
QR6705	A-4
QR6706	A-5
QR6707	A-5
QR6708	F-6
QR6722	B-17
QR6723	B-17
QR6726	B-12
QR6727	B-12
Integrated Circuit	
IC6501	A-1
IC6701	B-5
IC6721	F-9
IC6722	C-15
IC6723	E-12
IC6724	E-15
IC6725	C-18
IC6801	C-25
IC6802	B-20
IC6803	C-22
IC7001	F-18
IC7301	F-17
Adjustment	
C6723	D-8
R6733	B-10
R6807	B-25
R7007	F-19
T6501	A-2
Connector	
P102	B-28
P103	A-28
P104	D-28
P701	F-28
P702	C-28
P703	D-28
P6701	G-26
P6702	E-27
P6703	G-26
P6705	G-3

ADDRESS INFORMATION

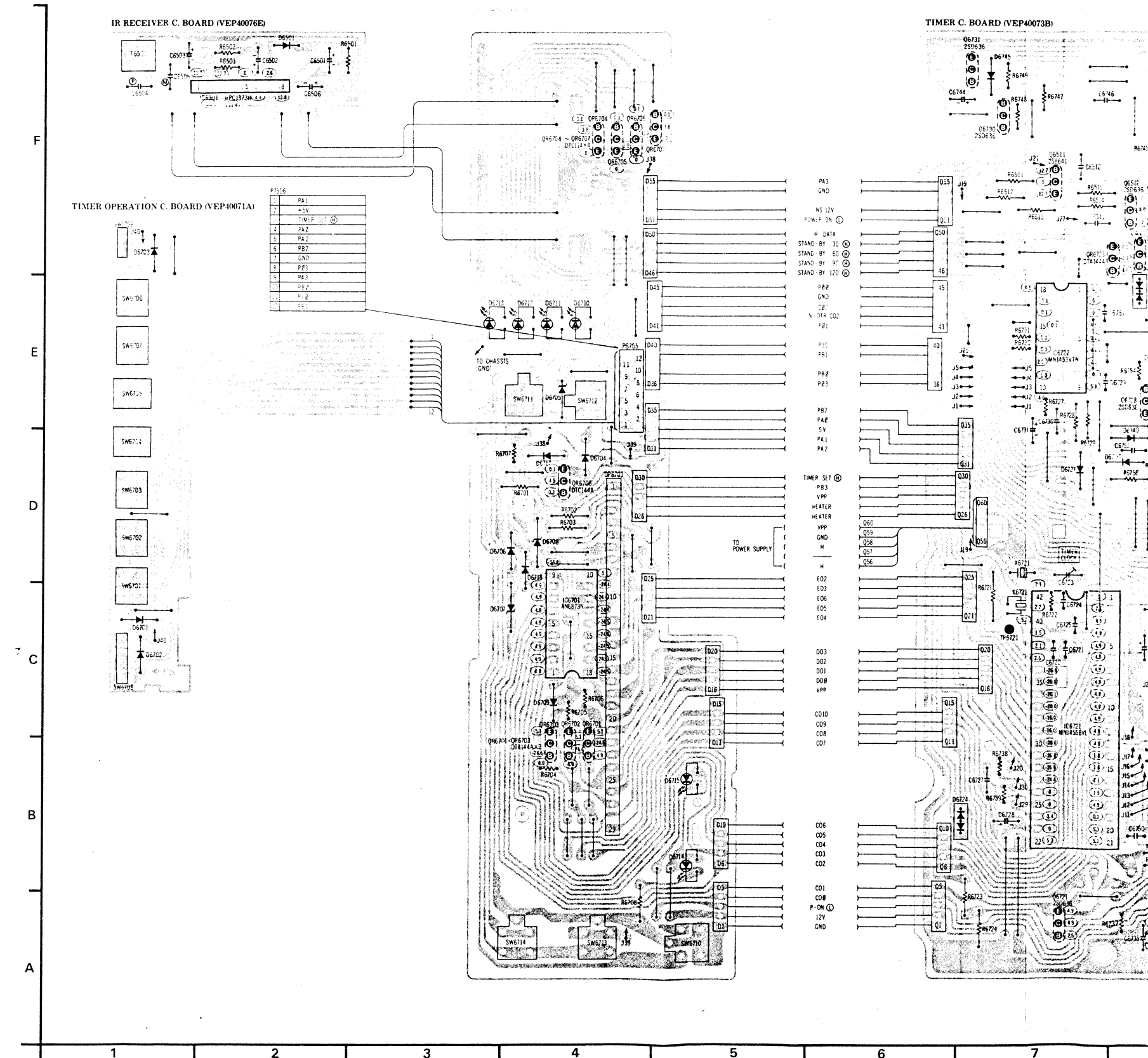
ICs & TRANSISTORS INFORMATION



TIMER, CH PRESET, TIMER DISPLAY & IR RECEIVER CIRCUIT BOARD	
Transistor	
Q6511	F-7
Q6512	F-8
Q6721	A-7
Q6724	A-8
Q6725	A-8
Q6728	E-8
Q6730	F-7
Q6731	F-7
Q6792	C-11
Q6793	C-11
Q6801	C-8
Q6802	D-11
Q7301	A-11
Transistor & Resistor	
QR6701	C-4
QR6702	B-4
QR6703	B-4
QR6704	F-4
QR6705	F-4
QR6706	F-4
QR6707	F-5
QR6708	D-4
QR6722	F-6
QR6723	E-7
QR6726	E-10
QR6727	D-10
Integrated Circuit	
IC6501	F-2
IC6701	C-4
IC6721	B-7
IC6722	E-7
IC6723	E-9
IC6724	E-9
IC6725	E-10
IC6801	B-8
IC6802	C-10
IC6803	E-11
IC7001	F-10
IC7301	C-11
Adjustment	
C6723	C-7
R6733	A-8
R6807	B-8
R7007	F-11
T6501	F-1

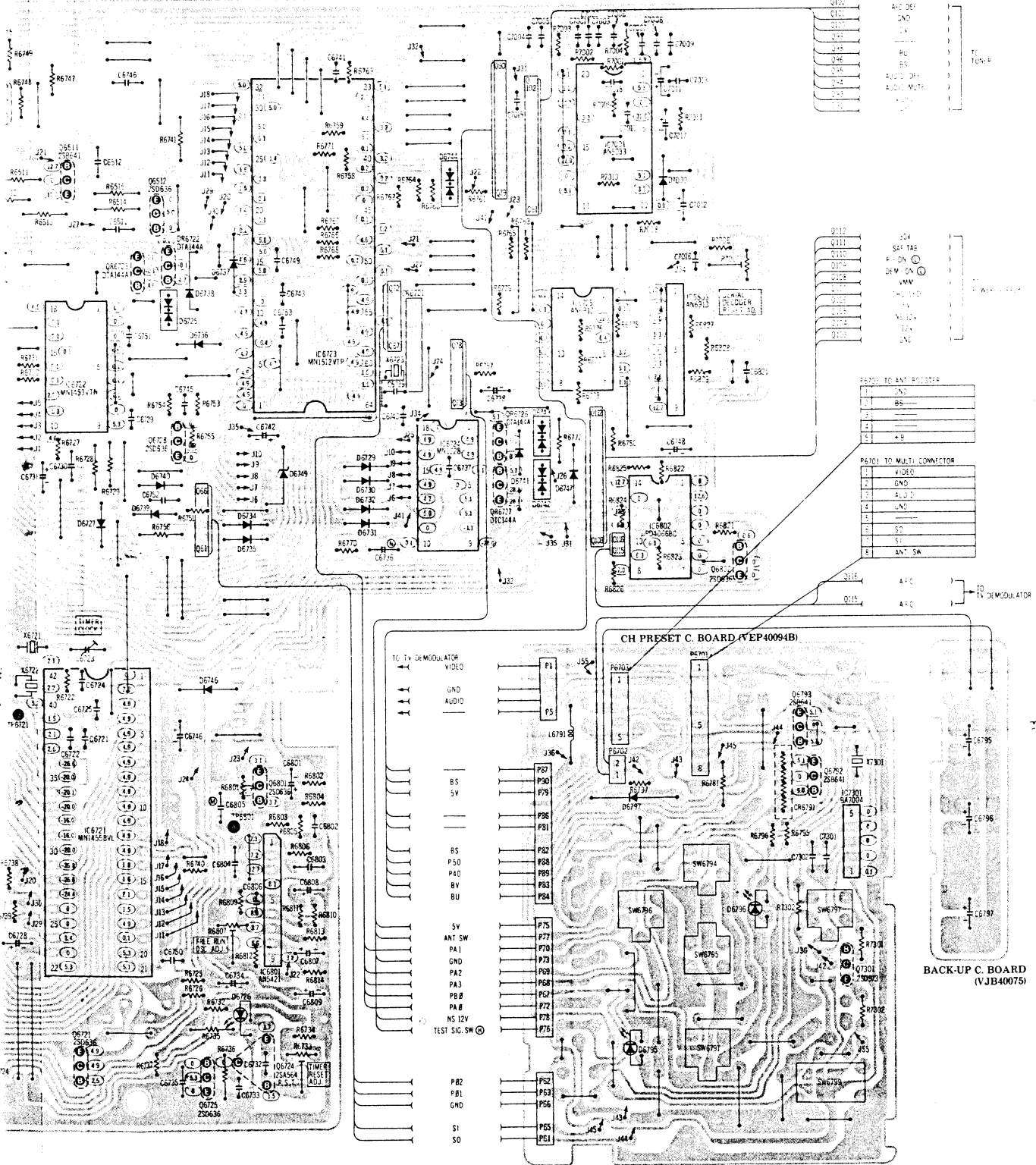
ADDRESS INFORMATION

19. TIMER [Timer Operation (VEP40071A)/Timer Display (VEP40072E)/Timer (VEP40073B)/CH Preset (VEP40094B)/IR Receiver (VEP40096E)] CIRCUIT BOARD



CIRCUIT BOARDS (VW-ET180B)

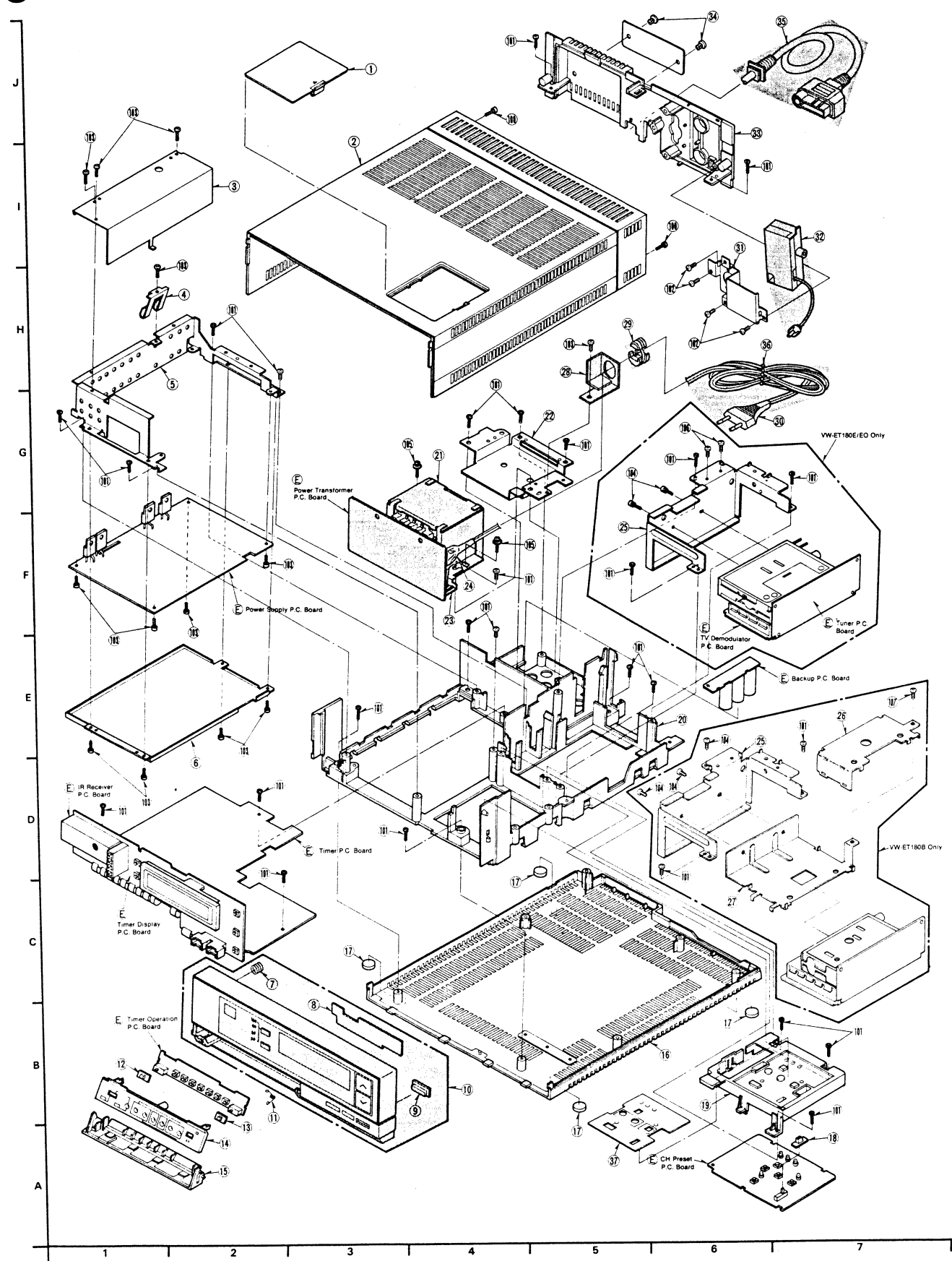
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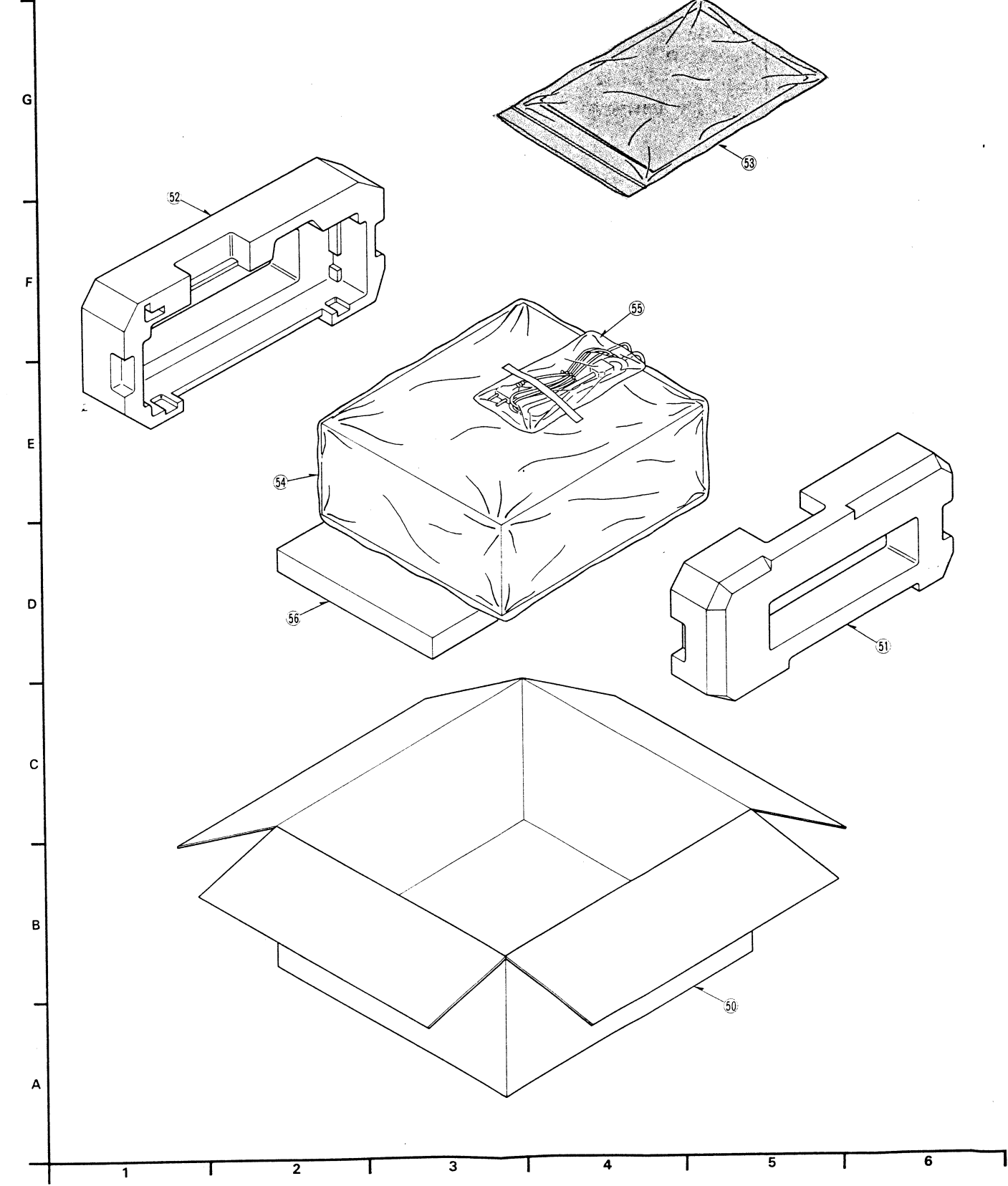
Next Page:
CIRCUIT BOARD LAYOUT
EXPLODED VIEWS

21. EXPLODED VIEWS

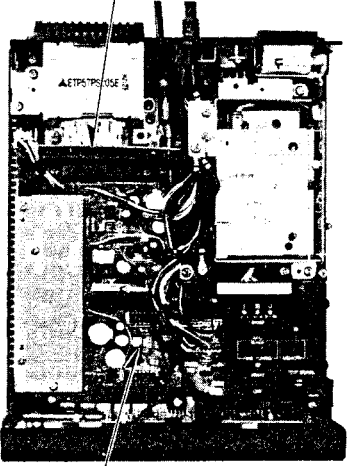
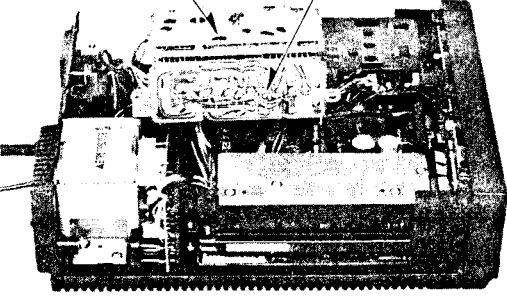
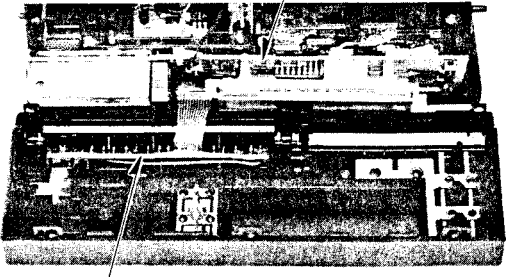
1 CHASSIS/CABINET



2 PACKING PARTS SECTION



20. CIRCUIT BOARD LAYOUT

TOP VIEW (1)	TOP VIEW (2)
POWER TRANSFORMER C. BOARD  POWER SUPPLY C. BOARD	CH PRESET C. BOARD  TIMER C. BOARD
SIDE VIEW	FRONT VIEW
TV DEMODULATOR C. BOARD TUNER C. BOARD 	TIMER DISPLAY C. BOARD  TIMER OPERATION C. BOARD

Next Page:
TIMER Section

22. MECHANICAL REPLACEMENT PARTS LIST

Notes: 1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
1(1)	VYF0456	CH Preset Door Unit	1	VW-ET180E/EO (Black)
1(1)	VYF0394	CH Preset Door Unit	1	VW-ET180EO (Silver)
1(1)	VYF0412	CH Preset Door Unit	1	VW-ET180B
2(1)	VYK0765	Top Case Unit	1	VW-ET180E/EO(Black)/B
2(1)	VYK0770	Top Case Unit	1	VW-ET180EO (Silver)
3(1)	VSCI1100	Power Shield Case (Top)	1	
4(1)	VMC0064	TR Spring	1	
5(1)	VMP0417	Power Supply Angle	1	
6(1)	VSCI1150	Power Shield Case(Bottom)	1	
7(1)	VMB1009	Earth Spring	1	
8(1)	VKWO300	FIP Filter	1	
9(1)	VGU1228	Power Button	1	
10(1)	VYP1079	Front Panel Unit	1	VW-ET180E/EO(Black)/B Δ
10(1)	VYP1084	Front Panel Unit	1	VW-ET180EO (Silver) Δ
11(1)	VMB1250	Timer Door Lock Spring	1	
12(1)	VGU1188	Timer Set Knob	1	
13(1)	VGU1186	Timer Rec Knob	1	
14(1)	VXU0291	Timer Preset Button	1	
		Bracket		
15(1)	VYF0455	Timer Preset Door Unit	1	VW-ET180E/EO(Black)/B
15(1)	VYF0463	Timer Preset Door Unit	1	VW-ET180EO (Silver)
16(1)	VKM0355	Bottom Case	1	
17(1)	VKA0039	Foot Rubber	4	
18(1)	VGTO257	Test Signal Switch Knob	1	
19(1)	VGQ0610	CH Preset Bracket	1	
19(1)	VXU0301	CH Preset Bracket Unit	1	VW-ET180B
19(1)	VXU0300	CH Preset Bracket Unit	1	VW-ET180EO
20(1)	VMD0603	Chassis Frame	1	
21(1)	ETP57PS205E	Power Transformer	1	VW-ET180E/EO Δ
21(1)	ETP57PE206E	Power Transformer	1	VW-ET180B Δ
22(1)	VMP0415	Power Transformer Angle	1	
23(1)	VJP0113	Earth Plate	1	
24(1)	VMO0237	AC Cord Cover	1	Δ
25(1)	VMP0416	TV Demodulator Angle	1	
26(1)	VMP0468	TV Demodulator Angle(Top)	1	VW-ET180B
27(1)	VMP0478	TV Demodulator Angle	1	VW-ET180B
		(Bottom)		
28(1)	VGQ0691	AC Cord Bracket	1	Δ
29(1)	VJF0017	AC Cord Bushing	1	Δ
30(1)	VJA0111	AC Cord	1	VW-ET180E/EO Δ
30(1)	VJA0112	AC Cord	1	VW-ET180B Δ
31(1)	VMP0467	Antenna Unit Support	1	
		Angle		
32(1)	ENPE741	Antenna Unit	1	VW-ET180E Δ
32(1)	ENPE742	Antenna Unit	1	VW-ET180B Δ
32(1)	ENPE743	Antenna Unit	1	VW-ET180EO Δ
33(1)	VYP1018	Rear Panel Unit	1	
34(1)	VHN0011	Clip	2	
35(1)	VEC0368	Multi Connector Cable	1	Δ
		Unit		
36(1)	TMM16423	Cord Band	1	
37(1)	VGHO233	CH Preset Name Plate	1	VW-ET180E/EO
37(1)	VGHO235	CH Preset Name Plate	1	VW-ET180B
50(2)	VPG1710	Packing Case	1	VW-ET180E
50(2)	VPG1711	Packing Case	1	VW-ET180B
50(2)	VPG1712	Packing Case	1	VW-ET180EO (Silver)
50(2)	VPG1794	Packing Case	1	VW-ET180EO (Black)
51(2)	VPN0989	Cushion (R)	1	
52(2)	VPN0990	Cushion (L)	1	
53(2)	VQF1231	Fan Bag Kit	1	VW-ET180E Δ

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
53(2)	VQF1232	Fan Bag Kit	1	VW-ET180B Δ
53(2)	VQF1245	Fan Bag Kit	1	VW-ET180EO Δ
54(2)	VPF0204	Polyethylene Bag (Large)	1	
55(2)	VPF0169	Polyethylene Bag (Small)	1	
56(2)	VPN1098	Bottom Pad	1	
100(1)	XTB4+12AFZ		2	
101(1)	XTN4+12A		25	
102(1)	XTV3+10A		4	
103(1)	XTV3+8B		13	
104(1)	XYN3+E5		2	
105(1)	XYN4+F8S		2	
106(1)	XTV3+6B		2	
107(1)	XIV3+8B		1	VW-ET180B

23. ELECTRICAL REPLACEMENT PARTS LIST

- Notes: 1. * Be sure to make your orders of replacement parts according to this list.
 2. IMPORTANT SAFETY NOTICE
 Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.
 3. Unless otherwise specified.
 All resistors are in OHMS (Ω), 1/4W $\pm 5\%$ carbon. K=1,000G, M=1,000KG. All capacitors are in MICROFARADS (μ F), $\pm 10\%$ P= μ F.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	VEP07221H	TV Demodulator P.C. Board Unit	1	VW-ET180E
	VEP07221I	TV Demodulator P.C. Board Unit	1	VW-ET180B
	VEP07221J	TV Demodulator P.C. Board Unit	1	VW-ET180EO
	VEP07222H	Tuner P.C. Board Unit	1	VW-ET180E
	VEP07222I	Tuner P.C. Board Unit	1	VW-ET180B
	VEP07222J	Tuner P.C. Board Unit	1	VW-ET180EO
	VEP40071A	Timer Operation P.C. Board Unit	1	
	VEP40072E	Timer Display P.C. Board Unit	1	
	VEP40073B	Timer P.C. Board Unit	1	VW-ET180B
	VEP40073E	Timer P.C. Board Unit	1	VW-ET180E/EO
	VEP40094B	CH Preset P.C. Board Unit	1	VW-ET180B
	VEP40094E	CH Preset P.C. Board Unit	1	VW-ET180E/EO
	VEP40076E	IR Receiver P.C. Board Unit	1	
	VJB40079	Power Transformer P.C. Board	1	
	VEP41023A	Power Supply P.C. Board Unit	1	
	VJB-0075	Backup P.C. Board Unit	1	
	ENPE741	Antenna Unit	1	VW-ET180E Δ
	ENPE742	Antenna Unit	1	VW-ET180B Δ
	ENPE743	Antenna Unit	1	VW-ET180EO Δ
T101	ETP57PS205E	Power Transformer	1	VW-ET180E/EO Δ
T101	ETP57PS206E	Power Transformer	1	VW-ET180B Δ
F101	XBA2C20TR0	Fuse	2A 1	Δ
F151	XBA2C31TR0	Fuse	3.15A 1	Δ

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	VEP07221H/I/J	TV Demodulator P.C. Board Unit	1	
		Integrated Circuits		
IC701	BN5115B		1	VLF IC
IC751	AN5215		1	SIF IC
		Transistors		
Q702	2SB641		1	(Q,R,S,T)
Q703	2SD636		1	(S,T)
Q761	2SD636		1	(Q,R,S,T)
		Diodes		
D711,712	MA165		2	VW-ET180E/EO
D761	MA27WA		1	
		Resistors		
R713	ERDS2TJ332		3.3K 1	
R716	ERDS2TJ392		3.9K 1	VW-ET180E/EO
R721	ERDS2TJ151		150 1	VW-ET180E/B
R721	ERDS2TJ181		180 1	VW-ET180EO
R722	ERDS2TJ274		270K 1	
R731	ERDS2TJ271		270 1	
R732	ERDS2TJ391		390 1	
R733	ERDS2TJ102		1K 1	
R734	ERDS2TJ393		39K 1	VW-ET180E/B
R734	ERDS2TJ104		100K 1	VW-ET180EO
R735	ERDS2TJ473		47K 1	VW-ET180E/B
R735	ERDS2TJ104		100K 1	VW-ET180EO
R736	ERDS2TJ272		2.7K 1	
R741	ERDS2TJ470		47 1	
R743	EROS2CKG1001	Metal	1K 1	
R744	ERDS2TJ332		3.3K 1	
R745	EROS2CKG8200	Metal	820 1	
R746	ERDS2TJ680		68 1	
R747	ERDS2TJ151		150 1	
R748	ERDS2TJ102		1K 1	
R749	ERDS2TJ470		47 1	
R751	ERDS2TJ121		120 1	
R752	ERQ14AJ220	Metal	22 1	
R753	ERDS2TJ331		330 1	
R761	ERDS2TJ102		1K 1	
R762	ERDS2TJ103		10K 1	
		Variable Resistors		
VR701	EVN69AA00B23		2K 1	
VR702	EVN69AA00B23		2K 1	VW-ET180E/EO
VR741	EVNE4AA00B24		20K 1	
VR751	EVNE4AA00B24		20K 1	
		Capacitors		
C711	ECKFH103ZF	Ceramic	50V 0.01 1	
C713	ECKFH103ZF	Ceramic	50V 0.01 1	
C721	ECCFH040CC	Ceramic	50V 4P 1	VW-ET180E
C721	ECCFH030CC	Ceramic	50V 3P 1	VW-ET180B/EO

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C722	ECCF1H050CC	Ceramic 50V 5P	1	VW-ET180E		VEP07222H/I/J	Tuner P.C. Board Unit		
C722	ECCF1H060CC	Ceramic 50V 6P	1	VW-ET180B/EO					
C723-726	ECKF1H103ZF	Ceramic 50V 0.01	4				Diodes		
C727	ECQV1H224JZ	Mylar 50V 0.22	1		D701	RD8.2JB3	Zener	1	VW-ET180E/EO
C728	ECKF1H103ZF	Ceramic 50V 0.01	1		D702	RD8.2JB3	Zener	1	
C730	ECCF1H390JC	Ceramic 50V 39P	1	VW-ET180E					
C731,732	ECCF1H040CC	Ceramic 50V 4P	2				Resistors		
C733	ECCF1H220JC	Ceramic 50V 22P	1		R701	ERDS2TJ123	12K	1	
C734	ECCF1H121JP	Ceramic 50V 120P	1		R702	ERDS2TJ392	3.9K	1	
C735	ECCF1H150JP	Ceramic 50V 15P	1		R703	ERDS2TJ182	1.8K	1	
C736,737	ECKF1H103ZF	Ceramic 50V 0.01	2		R704	ERDS2TJ182	1.8K	1	VW-ET180E/EO
C738	ECCF1H150JC	Ceramic 50V 15P	1		R705	ERDS2TJ332	3.3K	1	
C739	ECCF1H560JR	Ceramic 50V 56P	1		R706	ERDS2TJ332	3.3K	1	VW-ET180E/EO
C740	ECCF1H220JR	Ceramic 50V 22P	1				Capacitors		
C741	ECCF1H150JC	Ceramic 50V 15P	1		C701	ECKJ1H103ZF	Ceramic 50V 0.01	1	
C742	ECCF1H680JC	Ceramic 50V 68P	1		C702	ECEA1CKS220	Electrolytic 16V 22	1	VW-ET180E/EO
C751	ECCF1H820JC	Ceramic 50V 82P	1		C702	ECEA1CK330	Electrolytic 16V 33	1	VW-ET180B
C752	ECCF1H050CC	Ceramic 50V 5P	1		C703	ECEA1CKS100	Electrolytic 16V 10	1	
C753	ECCF1H820JP	Ceramic 50V 82P	1		C704	ECKJ1H103ZF	Ceramic 50V 0.01	1	VW-ET180E/EO
C754	ECQB1H473JZ	Mylar 50V 0.047	1		C705	ECEA1CKS330	Electrolytic 16V 33	1	VW-ET180E/EO
C755	ECEA1CK101	Electrolytic 16V 100	1		C706	ECQB1H104JZ	Mylar 50V 0.1	1	
C756	ECCF1H390JR	Ceramic 50V 39P	1		C707	ECEA1HKS010	Electrolytic 50V	1	
C757	ECCF1H120JC	Ceramic 50V 12P	1		C708	ECEA1CKS330	Electrolytic 16V 33	1	VW-ET180E/EO
C758	ECEA1CK100	Electrolytic 16V 10	1		C709	ECEA1CKS100	Electrolytic 16V 10	1	
C759	ECQB1H104JZ	Mylar 50V 0.1	1				Coil		
		Coils			L701	VLQEL05F680K	68uH	1	VW-ET180E/EO
L702	VLQEL05F470K	47uH	1				Connectors		
L704	VLQEL05F150K	15uH	1		P703	VJP1251	11P	1	
L705	VLQEL05F560K	56uH	1		P704	VJP1242	2P	1	
L706	VLQEL05F820K	82uH	1				Miscellaneous		
						TNV77759F2	Tuner	1	VW-ET180E Δ
L751	VLQEL05F220K	22uH	1			TNV87359F2	Tuner	1	VW-ET180B Δ
						TNV57756F2R	Tuner	1	VW-ET180EO Δ
		Transformers							
T701	EULHLS301		1	VW-ET180E/EO					
T701	EULHLS401		1	VW-ET180B					
T702	ELM7A4101Y		1						
T703	EIV7E016F		1						
T704	EIV7E016E		1						
T751	EIS7E006A		1						
T752	EIS7E006B		1						
		Crystal Oscillators							
X702	EFCS5R5MS4		1	VW-ET180E/EO					
X702	EFCS6ROMS4		1	VW-ET180B					
X703	EFCS5R5HW3		1	VW-ET180E/EO					
X703	EFCS6ROMW3		1	VW-ET180B					
		Connectors				VEP40071A	Timer Operation P.C. Board Unit	1	
P701	VJP1245	5P	1						
P702	VJP1243	3P	1				Diodes		
					D6701-6703	MA165		3	
		Miscellaneous							
	VSCI147	Shield Case (Main)	1				Switches		
	VSCI148	Shield Case (Bottom)	1						
	VSCI216	Shield Case (Top)	1		SW6701-6707	EVQQS804B		7	

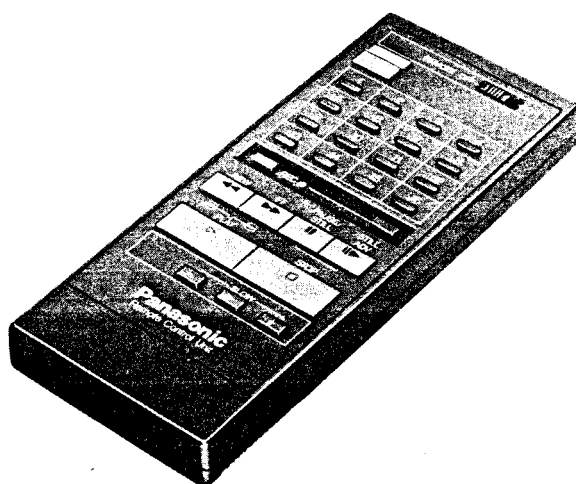
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Ref. No.	Part No.	Part Name & Description	Pos / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pos / Set	Remarks
C7015,7016	ECUX1H103ZF	Chip 50V 0.01	2				Capacitors		
C7017	ECEA1HK220	Electrolytic 50V 22	1		C7301,7302	ECKF1H332KB	Ceramic 50V 3300P	2	
C7018	ECUX1H181KB	Chip 50V 180P	1						
							Resistor Array		
		Capacitor Array			CR6791	EXBS84332K	3.3Kx4	1	
CR6721	EXFP8101MF	100Px8	1						
							Coil		
		Crystal Oscillators			L6791	TLQ330K126		1	VW-ET180B
X6721	VSX0071		1						
X6722	VSX0094		1						
X6723	VSX0082		1				Switches		
					SW6791	EVQQS405K		1	
		Miscellaneous			SW6794-6797	EVQQS405K		4	
	KL02	Spacer	1		SW6799	ESD14173		1	
WQ001-024	ERJ8GC0R00	Chip Jumper	24						
							Crystal Oscillator		
					X7301	VSX0099		1	
							Connectors		
					P6701	VJP1145	8P	1	
					P6702	VJP1229	2P	1	
					P6703	VJP1143	5P	1	
							Miscellaneous		
	VEP40094B/E	CH Preset P.C. Board Unit				KL02	Spacer	5	
						VGQ0696	Earth Sheet	1	
		Integrated Circuit			WP001,002	ERJ8GCJ0R00	Chip Jumper	2	
IC7301	BA7004		1			VGT0257	Test Signal SW Knob	1	
		Transistors							
Q6791	2SD636		1	VW-ET180E/EO					
Q6792,6793	2SB641		2						
Q7301	2SD973		1			VEP40076E	IR Receiver P.C. Board Unit		
		Diodes					Integrated Circuit		
D6791	MA163		1	VW-ET180E/EO	IC6501	LPC1373H		1	
D6792-6794	LN89RCPP	LED	3	VW-ET180E/EO					
D6795,6796	LN89RCPP	LED	2						
D6797	OA90		1				Diode		
					D6501	PN313		1	
		Resistors							
R6781	ERDS2TJ101		100	1			Resistors		
R6791	ERDS2TJ224		220K	1	R6501	ERDS2TJ102	1K	1	
R6792	ERDS2TJ473		47K	1	R6502	ERDS2TJ120	12	1	
R6793,6794	ERDS2TJ272		2.7K	2	R6503	ERDS2TJ154	150K	1	
R6795,6796	ERJ8GCYJ821	Chip 1/8W 820	2						
R6797	ERJ8GCYJ181	Chip 1/8W 180	1						
R7301	ERDS2TJ101		100	1					
R7302	ERDS2TJ820		82	1					

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R106	ERJ8GCVJ153	Chip	1/8W 15K	1	R191	ERDS2TJ821		820	1
R107,108	ERJ8GCVJ682	Chip	1/8W 6.8K	2	R192	ERJ8GCVJ104	Chip	1/8W 100K	1
R109	ERG1SJ223	Metal Oxide	1W 22K	1	R194	ERDS2TJ471		470	1
R110	ERJ8GCVJ332	Chip	1/8W 3.3K	1	R195	ERJ8GCVJ272	Chip	1/8W 2.7K	1
R111	ERJ8GCVJ333	Chip	1/8W 33K	1	R196	ERDS2TJ103		10K	1
R112	ERJ8GCVJ153	Chip	1/8W 15K	1	R198	ERDS2TJ100		10	1
R113	ERJ8GCVJ223	Chip	1/8W 22K	1	R199	ERJ8GCVJ473	Chip	1/8W 47K	1
R114	ERJ8GCVJ561	Chip	1/8W 560	1	R201	ERJ8GCVJ184	Chip	1/8W 180K	1
R115	ERJ8GCVJ152	Metal Oxide	2W 1.5K	1	R202	ERJ8GCVJ474	Chip	1/8W 470K	1
R117	ERG12SJ822	Metal Oxide	1/2W 8.2K	1	R203	ERJ8GCVJ392	Chip	1/8W 3.9K	1
R118	ERDS2TJ182		1.8K	1	R204	ERJ8GCVJ223	Chip	1/8W 22K	1
R119	ERDS2TJ153		15K	1	R205	EVNC3AA00B54	Variable	50K	1
R120,121	ERJ8GCVJ472	Chip	1/8W 4.7K	2	R206	ERJ8GCVJ123	Chip	1/8W 12K	1
R122	ERJ8GCVJ153	Chip	1/8W 15K	1	R207-209	ERJ8GCVJ473	Chip	1/8W 47K	3
R123	ERD25TJ223		22K	1	R210	ERJ8GCVJ123	Chip	1/8W 12K	1
R126	ERQ14AJ150	Metal	1/4W 15	1	R211	ERD25TJ103		10K	1
R127	ERG1SJ331	Metal Oxide	1W 330	1	R212	ERJ8GCVJ103	Chip	1/8W 10K	1
R128	ERJ8GCVJ823	Chip	1/8W 82K	1	R213	ERJ8GCVJ104	Chip	1/8W 100K	1
R130	ERJ8GCVJ103	Chip	1/8W 10K	1	R214	ERDS2TJ221		220	1
R131	ERDS2TJ103		10K	1	R215	ERDS2TJ105		1M	1
R132	ERJ8GCVJ103	Chip	1/8W 10K	1	R216	ERJ8GCVJ560	Chip	56	1
R133	ERDS2TJ105		1M	1	R217	ERJ8GCVJ393	Chip	39K	1
R135	ERG12SJ222	Metal Oxide	1/2W 2.2K	1	R218	ERJ8GCVJ473	Chip	47K	1
R136	ERG2SJ392	Metal Oxide	2W 3.9K	1					
R137	ERJ8GCVJ824	Chip	1/8W 820K	1			Capacitors		
R138,139	ERJ8GCVJ473	Chip	1/8W 47K	2	C101	ECUX1H103KB	Chip	50V 0.01	1
R140	ERDS2TJ332		3.3K	1	C102	ECEA1CU102	Electrolytic	16V 1000	1
R141	ERDS2TJ472		4.7K	1	C104	ECEA1CU101	Electrolytic	16V 100	1
R142	ERJ8GCVJ104	Chip	1/8W 100K	1	C105	ECEA10Z1000	Electrolytic	10V 1000	1
R143	ERG12SJ472	Metal Oxide	1/2W 4.7K	1	C109	ECEA2AU221	Electrolytic	100V 220	1
R144	ERJ8GCVJ473	Chip	1/8W 47K	1	C110	ECEA2AU101	Electrolytic	100V 100	1
R145	ERJ8GCVJ560	Chip	56	1	C113	ECEA0JU101	Electrolytic	6.3V 100	1
R151	ERG2SJ332	Metal Oxide	2W 3.3K	1					
R152	ERJ8GCVJ102	Chip	1/8W 1K	1	C114,115	ECUX1H102KB	Chip	50V 1000P	1
R156	ERDS2TJ221		220	1	C116	ECEA1VU471	Electrolytic	35V 470	1
R157	ERG3SJ392	Metal Oxide	3W 3.9K	1	C154	ECEB1HU332	Electrolytic	50V 3300	1
R158	ERDS2TJ681		680	1	C155	ECEA1EU332	Electrolytic	25V 3300	1
R159	ERJ8GCVJ223	Chip	1/8W 22K	1	C156	ECEA0JU101	Electrolytic	6.3V 100	1
R160,161	ERJ8GCVJ562	Chip	1/8W 5.6K	2	C157	ECEA1EU471	Electrolytic	25V 470	1
R162	ERJ8GCVJ122	Chip	1/8W 1.2K	1	C158	ECEA1AU221	Electrolytic	10V 220	1
R163	ERJ8GCVJ103	Chip	1/8W 10K	1	C161	ECKF1H591KB	Ceramic	50V 390P	1
R164	ERJ8GCVJ121	Chip	1/8W 120	1	C163	ECUX1H103KB	Chip	50V 0.01	1
R165	ERJ8GCVJ000	Chip	1/8W 0	1	C164	ECEA1CU100	Electrolytic	16V 10	1
R166	ERJ8GCVJ103	Chip	1/8W 10K	1	C167,168	ECUX1H103KB	Chip	50V 0.01	2
R167	ERJ8GCVJ183	Chip	1/8W 18K	1	C169	ECEA1HU010	Electrolytic	50V	1
R168	ERF2AJR18	Wire Wound	2W 0.18	1	C171	ECQX1H104JZ	Mylar	50V 0.1	1
R169	ERJ8GCVJ101	Chip	1/8W 100	1	C172,173	ECUX1H103KB	Chip	50V 0.01	2
R170	ERJ8GCVJ223	Chip	1/8W 22K	1					
R171	ERJ8GCVJ333	Chip	1/8W 33K	1			Coils		
R172	EVNC3AA00B54	Variable	50K	1	L101	ELC12E005			1
R173	ERJ8GCVJ562	Chip	1/8W 5.6K	1	L102	ELC12E004			1
R174	ERJ8GCVJ103	Chip	1/8W 10K	1	L151	VTQ0017			1
R175	EVNC3AA00B53	Variable	5K	1	L152	ELC18E002			1
R176	ERJ8GCVJ103	Chip	1/8W 10K	1	L153	VTQ0017			1
R178	ERTD2FHL462	Thermistor	4.6K	1					
R179	ERD25TJ103		10K	1			Connectors		
R180	ERJ8GCVJ562	Chip	1/8W 5.6K	1	P101	VJPI145		8P	1
R181	ERJ8GCVJ332	Chip	1/8W 3.3K	1	P102	VJPI146		10P	1
R182	ERJ8GCVJ682	Chip	1/8W 6.8K	1	P103	VJPI144		6P	1
R184	ERG2SJ152	Metal Oxide	2W 1.5K	1	P104	VJPI188		4P	1
R186	ERJ8GCVJ223	Chip	1/8W 22K	1					
R187	ERJ8GCVJ104	Chip	1/8W 100K	1					
R188	ERJ8GCVJ153	Chip	1/8W 15K	1					
R189	ERJ8GCVJ273	Chip	1/8W 27K	1					
R190	ERJ8GCVJ823	Chip	1/8W 82K	1					

Wireless Remote Controller

VW-R18E



SPECIFICATIONS

Power:	DC 3V
Weight:	80 g
Dimensions:	62(W) × 14(H) × 150(D) mm

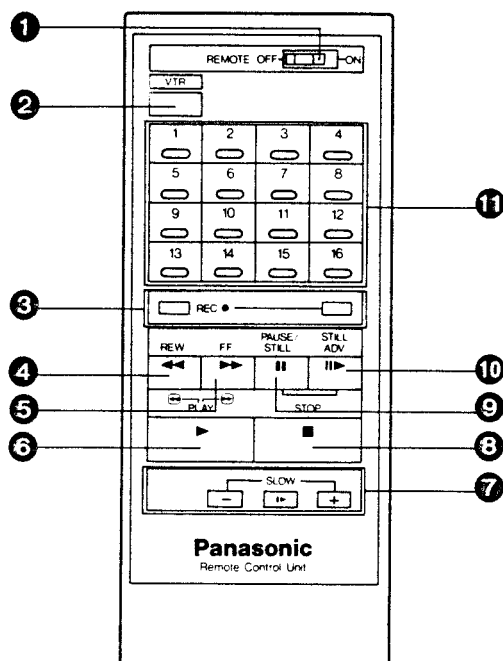
Weight and dimensions shown are approximate.

Specifications are subject to change without notice.

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1. CONTROLS AND COMPONENTS



1 REMOTE ON/OFF Switch

Set this to ON when using the unit.

2 VTR ON/OFF Button

Controls VTR power ON/OFF.

3 REC Buttons

Recording begins when both buttons are pressed at the same time.

4 Rewind/Review Button

Press this button to rewind tapes. When this button is kept depressed during playback, the VTR changes over to the Review mode.

5 Fast Forward/Cue Button

Press this button for the Fast Forward. When this button is kept depressed during playback, the VTR changes over to the cue mode.

6 PLAY Button

Press this button for playback mode.

7 Slow-Motion Buttons

First press the SLOW Button (▶) during playback to view a slow-motion picture. Press the "+" or "-" button to increase or decrease the speed of the SLOW-MOTION picture.

8 STOP Button

Press this button to set the unit in stop mode.

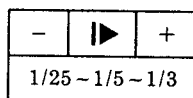
9 PAUSE/STILL Button

Press this button to stop the tape movement temporarily in either recording or playback mode. During playback, super still picture is produced when the pause button is pressed. Press again to release pause.

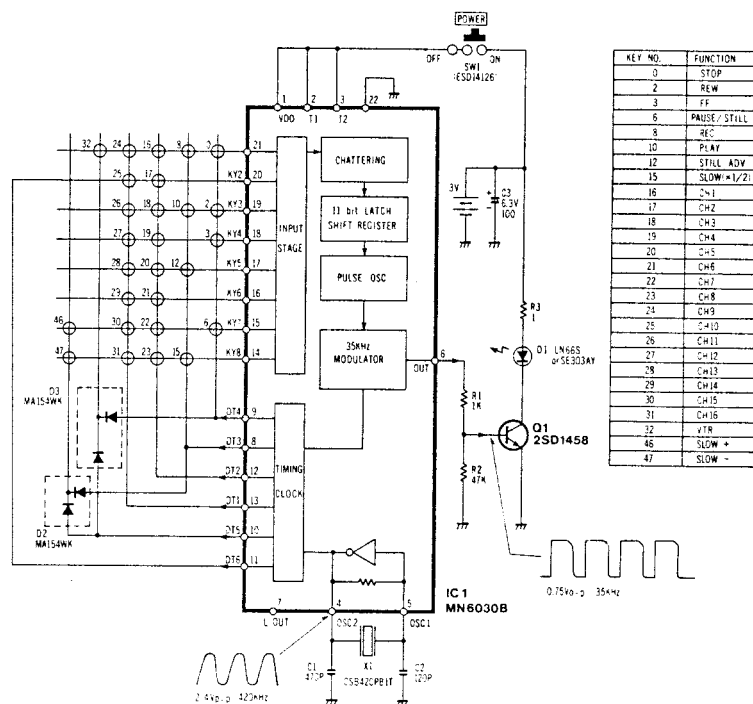
10 STILL ADV Button

During the still mode, press this button to advance of the picture one frame at a time.

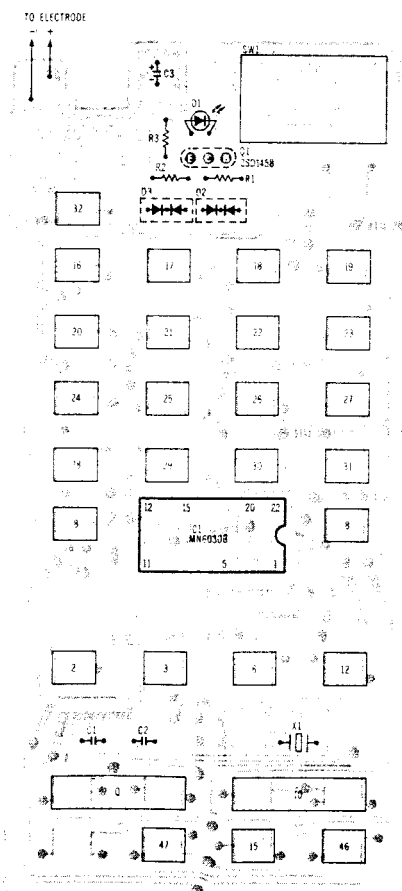
11 Channel Select Buttons



2. SCHEMATIC DIAGRAM

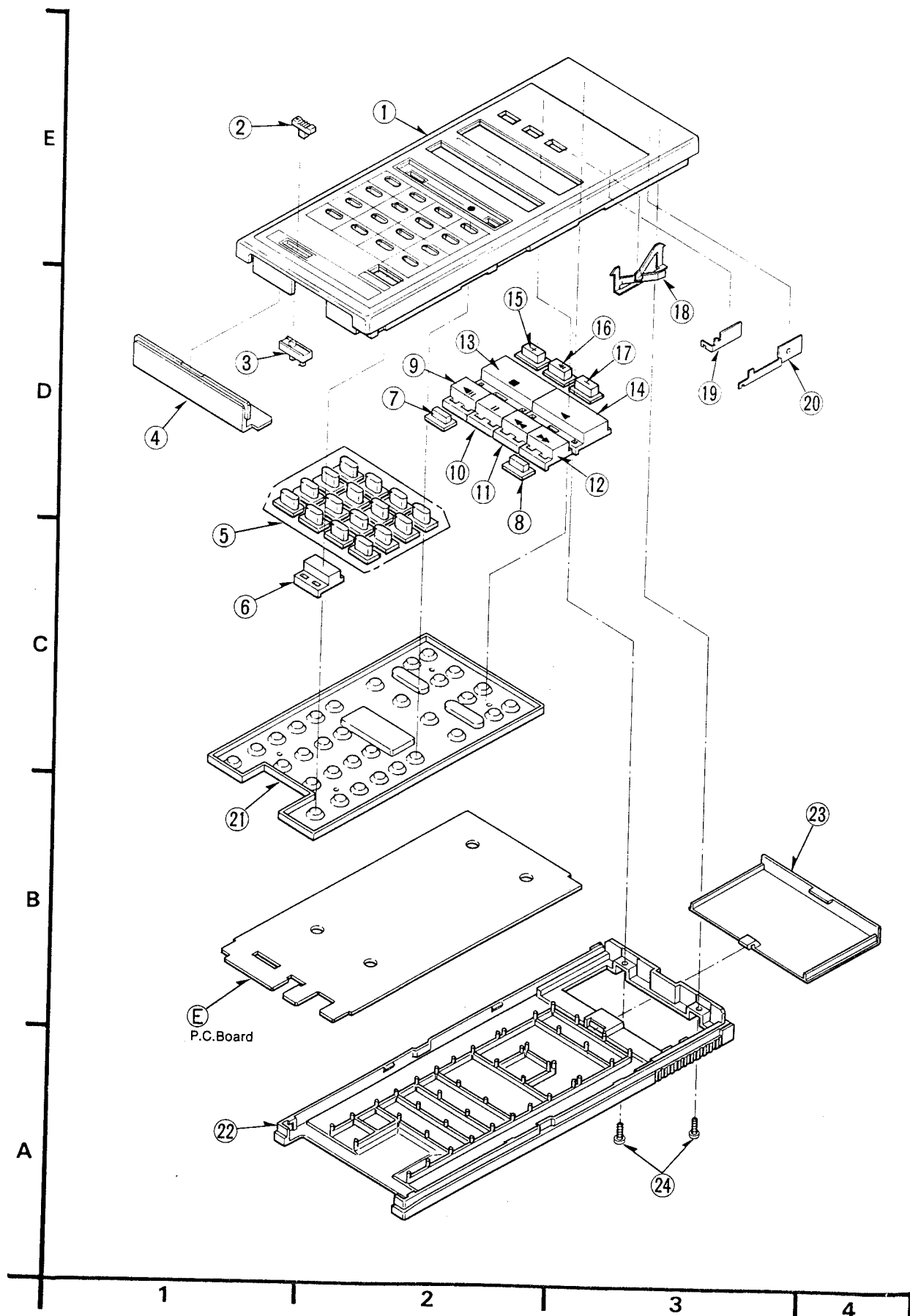


3. CIRCUIT BOARD (VEP22021B)

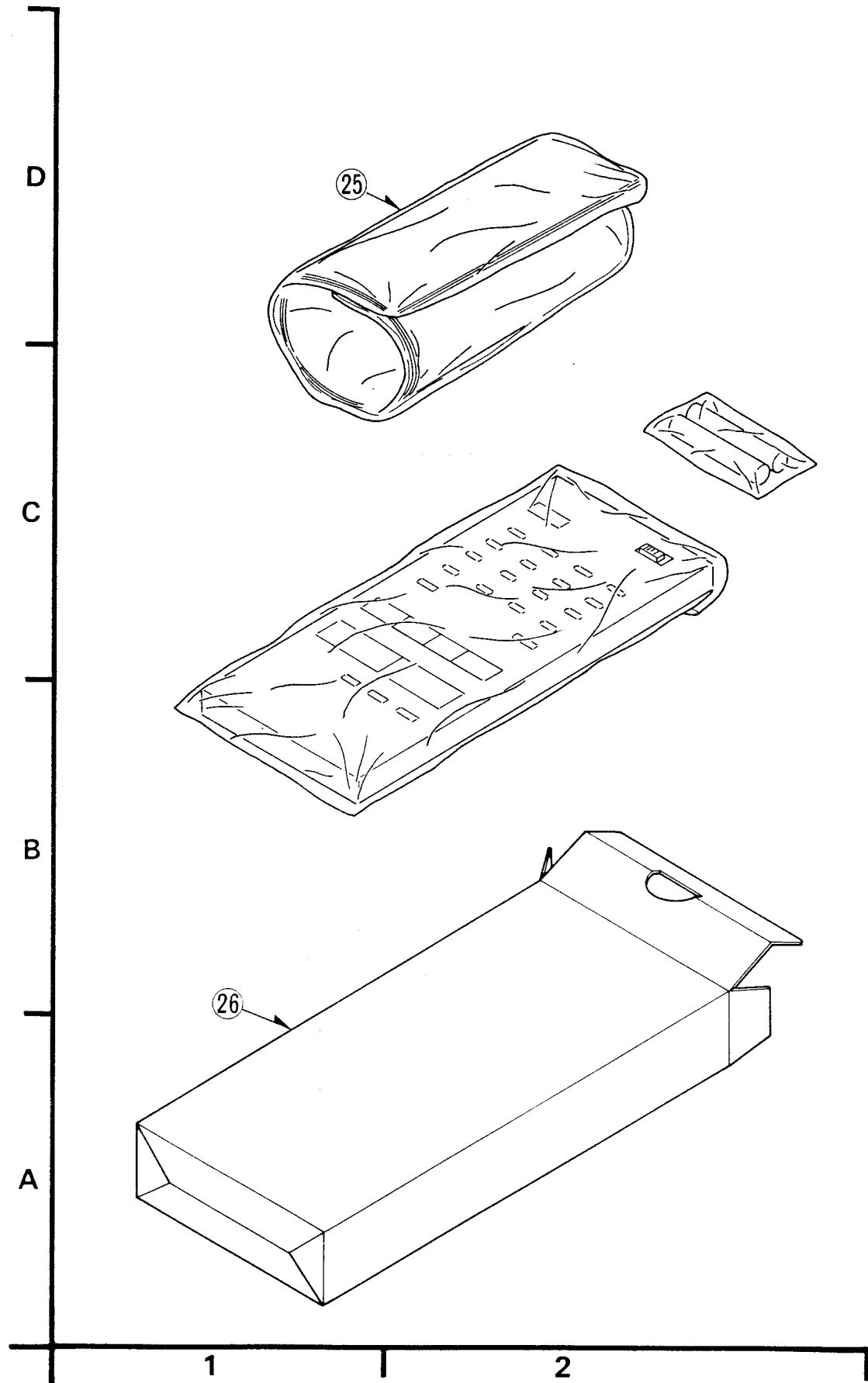


4. EXPLODED VIEWS

① REMOTE CONTROL UNIT



② PACKING PARTS SECTION



5. ELECTRICAL REPLACEMENT PARTS LIST

Notes: 1. • Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
1(1)	VYK0740	Top Case Unit	1	
2(1)	VGE2213	Power Button	1	
3(1)	VGO0601	Button Holder	1	
4(1)	VKW0297	Smoke Board	16	
5(1)	VGU1618	CH Select Button	1	
6(1)	VGU1672	VTR Button	1	
7(1)	VGU1619	Rec Button (Black)	1	
8(1)	VGU1211	Rec Button (Red)	1	
9(1)	VGU1667	STILL ADV Button	1	
10(1)	VGU1666	PAUSE/STILL Button	1	
11(1)	VGU1669	FF Button	1	
12(1)	VGU1668	Rew Button	1	
13(1)	VGU1665	Stop Button	1	
14(1)	VGU1664	Play Button	1	
15(1)	VGU1613	Slow (+) Button	1	
16(1)	VGU1612	Slow Button	1	
17(1)	VGU1611	Slow (-) Button	1	
18(1)	VJR0101	Electrode (Common)	1	
19(1)	VJR0099	Electrode (+)	1	
20(1)	VJR0100	Electrode (-)	1	
21(1)	VSP0150	Rubber Contact	1	
22(1)	VYK0741	Bottom Case Unit	1	
23(1)	VKF0340	Battery Cover	1	
24(1)	XTB2+SGFZ	Screw	1	
25(2)	VQF1221	Fan Bag Kit	1	
26(2)	VPK0374	Packing Case	1	

6. MECHANICAL REPLACEMENT PARTS LIST

Notes: 1. • Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS Ω , 1/4W $\pm 5\%$ carbon. K=1,000, M=1,000K Ω . All capacitors are in MICROFARADS (μ F), $\pm 10\%$ P= μ F.

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	VFP22021B	Wireless Remote Controller		
		P.C. Board Unit		
		Integrated Circuit		
IC1	MN6030B		1	
		Transistor		
Q1	2SD1458		1	
		Diodes		
D1	LN66S	LED	1	or SE303AY
D2,3	MA154WK		2	
		Resistors		
R1	ERDS2TJ102		1K	1
R2	ERDS2TJ473		47K	1
R3	ERDS2TJ1R0		1	1
		Capacitors		
C1	ECKF1H471KB	Ceramic	50V 470P	1
C2	ECKF1A121KB	Ceramic	50V 120P	1
C3	ECEAOJK101	Electrolytic	6.3V 100	1
		Crystal Oscillator		
X1	CSB420PB1T		1	
		Switch		
SW1	ESD14126		1	