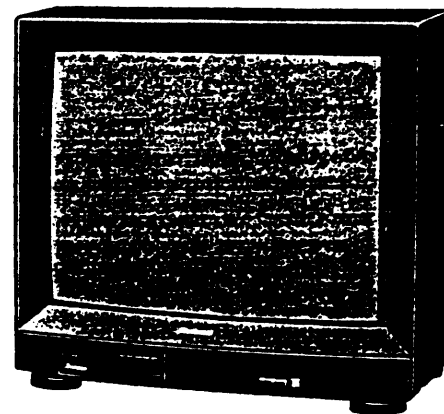


Service Manual

Colour Television

TC-2686TR

M15LW chassis



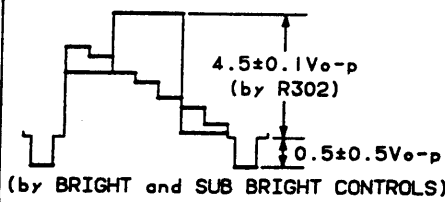
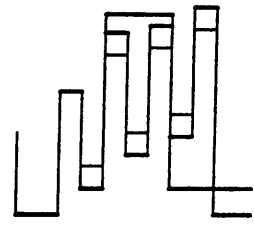
Specifications

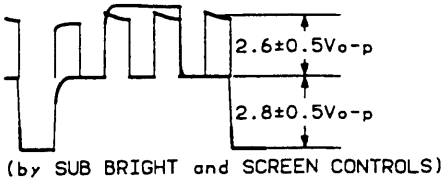
Power Source :	AC Automatic Voltage Selection 110 - 240 V, 50 / 60 Hz	High Voltage :	28.6 kV at zero beam current
Power Consumption :	140 W (Max.) Stand-by condition 12 W	Picture Tube :	M63JUA025X Type 26 (66 cm) measured diagonally, 110° deflection
Aerial Impedance :	75 Ω unbalanced, Coaxial Type	Audio Output :	3.0 W (Max.)
Receiving System :	SECAM - B, G PAL - B, G NTSC 4.43 MHz (VTR playback only)	Speaker :	12 x 5 cm, 8 Ω , Oval Type
Receiving Channels :	VHF ch. 2 - 12 UHF ch. 21 - 69	Connecting Terminals :	Video IN 1 V p-p, 75 Ω Audio IN Approx. 400 mV
Intermediate Frequency :	Video 38.9 MHz Sound 33.4 MHz Colour 34.47 MHz (PAL) 34.5 MHz (SECAM) 34.65 MHz (SECAM)	Remote Controller :	25 functions Infrared Controller
		Dimensions :	Height : 564 mm Width : 627 mm Depth : 450 mm
		Mass (Weight) :	32.0 kg (Net)

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

ADJUSTMENTS

ITEM / PREPARATION	ADJUSTMENT PROCEDURE
<u>B VOLTAGE</u> 1. Operate the TV set. 2. Set controls : Screen (on FBT) minimum Contrast minimum Colour minimum	1. Confirm that the indicated test points for the specified voltage. TPE1 : $113 \pm 2 \text{ V}$ Pin 1 of E33 : $207 \pm 15 \text{ V}$ TPE2 : $12 \pm 1 \text{ V}$ TPE51 : $4.7 \pm 0.5 \text{ V}$ TPE4 : $26.9 \pm 1.5 \text{ V}$ TPE52 : $5.0 \pm 0.5 \text{ V}$ TPS4 : $17 \pm 2 \text{ V}$
<u>TUNING AFC</u> 1. Operate the TV set and disconnect an aerial. (No reception) 2. Connect a DC voltmeter to TPE91. 3. Connect a short jumper between TPE2 and TPE40.	1. Adjust Tuning AFC control (R1212) : 2.7 (+0.1 , -0.05) V
<u>RF AGC</u> 1. Receive a colour bar pattern. 2. Set the input level to $61 \pm 2 \text{ dB}$. (75 Ω opened) 3. Connect an oscilloscope to TPE12 with DC mode.	1. Turn RF AGC control (R108) fully clockwise. 2. Slowly turn RF AGC control counterclockwise to set it at the point just before voltage at TPE12 drops. 3. Increase the input level by 2 dB and confirm that the voltage changes.
<u>HIGH VOLTAGE</u> 1. Operate the TV set. 2. Set controls : Screen (on FBT) minimum Contrast minimum Colour minimum	1. Connect a DC voltage meter to TPE1 and confirm the voltage is $113 \pm 2 \text{ V}$. 2. Connect a high voltage meter (Resistor type) to an anode of the picture tube. 3. Confirm that the high voltage is within a range of 28.6 (+1.5 , -1.3) kV.

ITEM / PREPARATION	ADJUSTMENT PROCEDURE	WAVEFORM
<u>SUB CONTRAST</u> 1. Receive a colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Connect a short jumper between TPE7 and TPE52. 4. Set Colour control to Normal (Centre) and Contrast control to Max.	1. Adjust Bright and Sub Bright controls : $0.5 \pm 0.5 \text{ V}$ 2. Adjust Sub Contrast control (R302) : $4.5 \pm 0.1 \text{ V o-p}$ (Waveform should not be saturated.)	 Fig. 3
<u>PAL COLOUR PHASE</u> 1. Receive PAL colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Connect a short jumper between Pin 8 and Pin 9 of IC601. 4. Connect a short jumper between Pin 3 of IC601 and TPE52.	1. Set Colour control to Normal (Centre) and Contrast control to Max. 2. Adjust APC trimmer (C617) to obtain synchronous waveform.	 Fig. 4

ITEM / PREPARATION	ADJUSTMENT PROCEDURE	WAVEFORM
SECAM COLOUR OUTPUT 1. Receive SECAM colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Set Contrast control to Max.	1. Push Normalization button of the Remote Controller. 2. Confirm that the amplitude of waveform is $2.6 \pm 0.5 \text{ V o-p}$.	 Fig. 10

ITEM / PREPARATION	ADJUSTMENT PROCEDURE
A/V INPUT LEVEL Note : Before making this adjustment, VIDEO and COLOUR adjustments must be finished. 1. Operate the TV set. 2. Push the TV/AV button (AV mode). 3. Apply standard A/V signals. Video : 1.0 V p-p, 75 Ω terminated Audio : 750 mV p-p, Opened	1. Connect an oscilloscope to TPE102. 2. Adjust Video input level control (R2553) : TPE102 : 2.0 V p-p $\pm 0.2 \text{ V}$ 3. Change connection of the oscilloscope into TPE101. 4. Adjust Audio input level control (R2560) : TPE101 : 750 mV p-p $\pm 50 \text{ mV}$

SERVICE HINTS

HOW TO DISASSEMBLE THE REMOTE CONTROL TRANSMITTER

1. Remove the battery compartment cover and the screw.
(See Fig. 11)
2. Remove the bottom case from the upper case. To remove it, insert minus (-) screw driver into the slot as shown in the Fig. 12. Positions of minus (-) screw driver to be inserted are also indicated in the Fig. 12.
3. Once one side of the bottom case is opened, slide the bottom case as shown in the Fig. 13. The bottom case comes apart from the upper case.

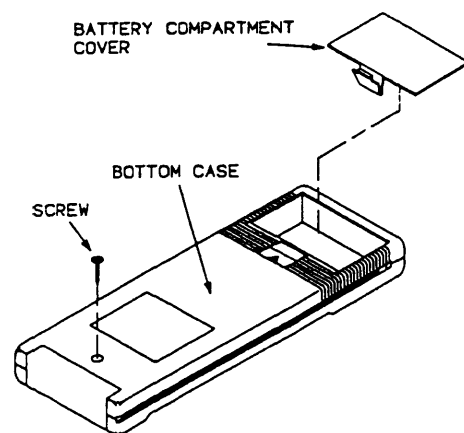


Fig. 11

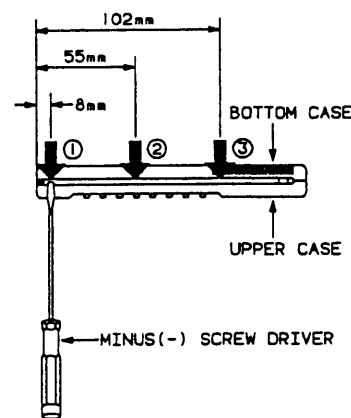


Fig. 12

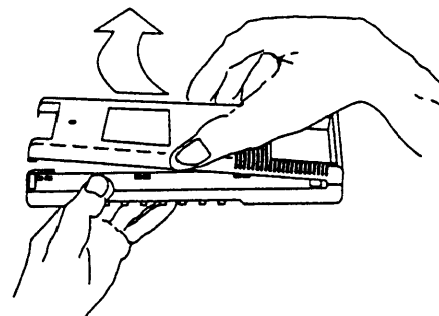
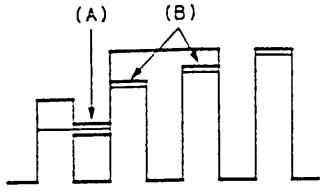
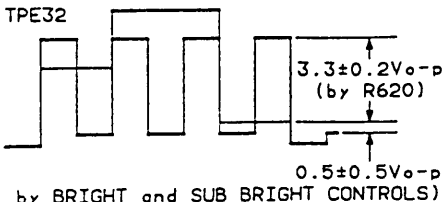
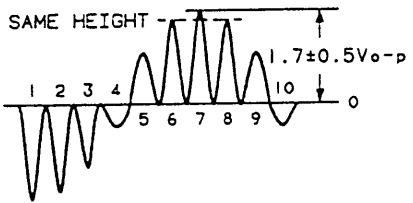
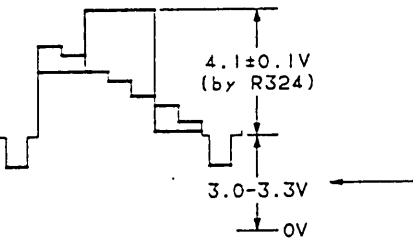
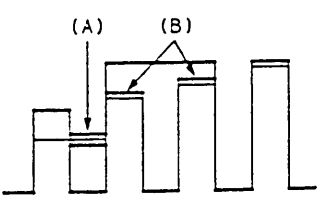
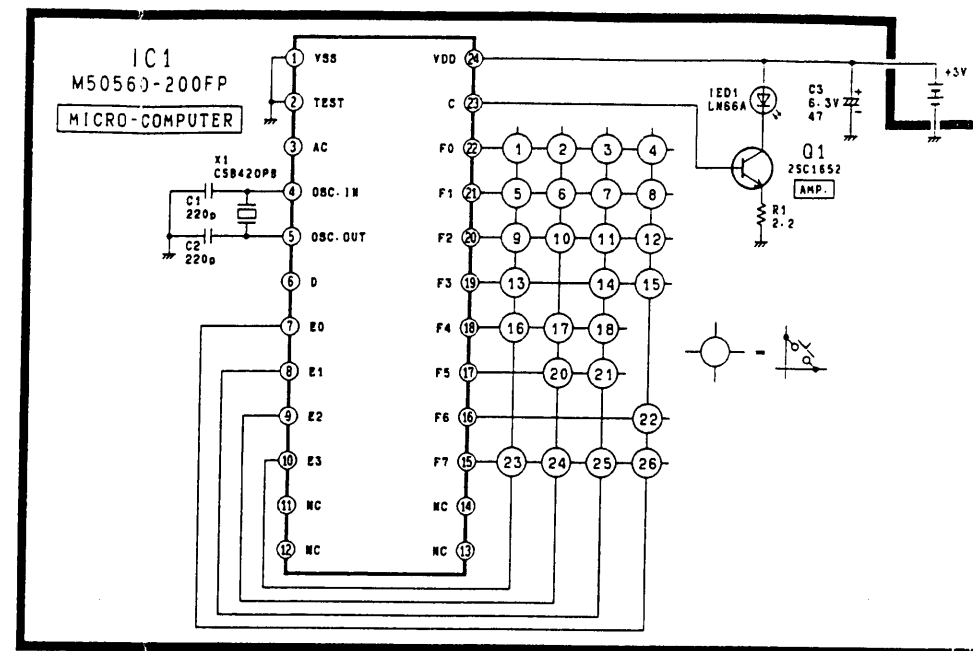


Fig. 13

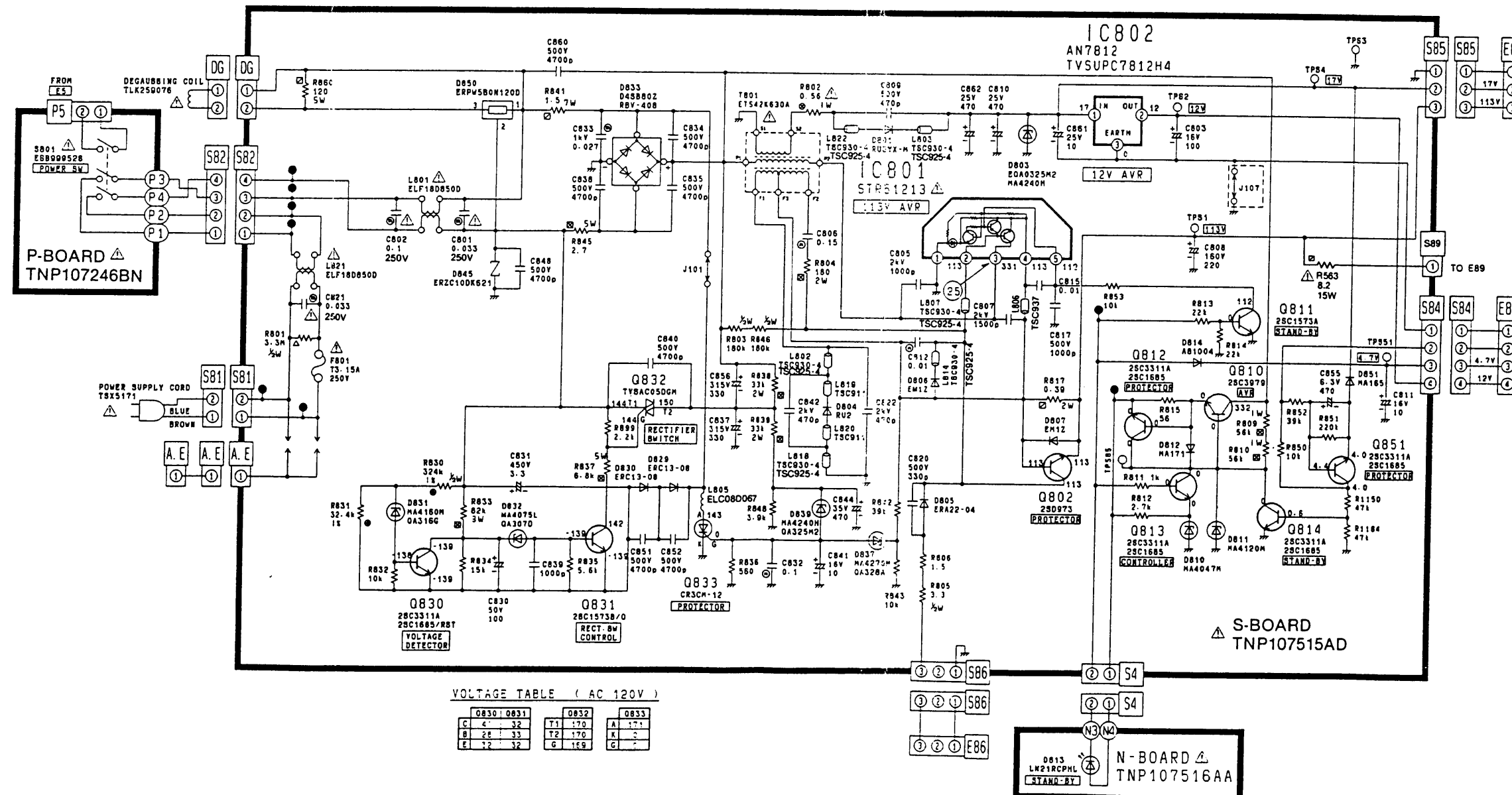
ITEM / PREPARATION	ADJUSTMENT PROCEDURE	WAVEFORM
DELAY LINE 1. Receive PAL colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Set Colour control to Normal (Centre) and Contrast control to Max.	1. Adjust the position (A) shown in Fig. 5 to zero level by R611. 2. Minimize the differences (B) shown in Fig. 5 by L601. 3. Change the signal into SECAM colour bar. 4. Minimize the differences (C) shown in Fig. 5 by R611.	 Fig. 5
PAL COLOUR OUTPUT 1. Receive PAL colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Set Colour control to Normal (Centre) and Contrast control to Max. 4. Connect a short jumper between TPE7 and TPE52.	1. Adjust Bright and Sub Bright controls : $0.5 \pm 0.5 \text{ V o-p}$ 2. Adjust Sub Colour control (R620) : $3.3 \pm 0.2 \text{ V o-p}$ 3. Connect the oscilloscope to TPE34. 4. Confirm that the amplitude of waveform is $4.4 \pm 0.3 \text{ V o-p}$.	 Fig. 6
NTSC COLOUR OUTPUT Note : Before making this adjustment, PAL COLOUR PHASE adjustment must be finished. 1. Apply NTSC rainbow pattern. 2. Connect an oscilloscope to TPE32. 3. Set Colour control to Normal (Centre) and Contrast control to Max.	1. Confirm that the amplitude of waveform is $1.7 \pm 0.5 \text{ V o-p}$. 2. Set Colour control to Max. and confirm that the colour level is saturated enough. 3. Turn Tint control and confirm that the variable range is more than 60°.	 Fig. 7
BELL FILTER 1. Receive SECAM colour bar pattern. 2. Connect an oscilloscope to TPE32. 3. Set Colour control to Normal (Centre) and Contrast control to Max.	1. Adjust L653 to obtain waveform at TPE32 as shown in Fig. 8.	 Fig. 8
LINE DISCRIMINATOR 1. Receive SECAM colour bar pattern. 2. Connect an oscilloscope to TPE48.	1. Adjust L650 and R650 alternately so that levels (A), (B) and (C) shown in Fig. 9 become the same.	 Fig. 9

REMOTE CONTROLLER TNQ2649



KEY FUNCTION TABLE

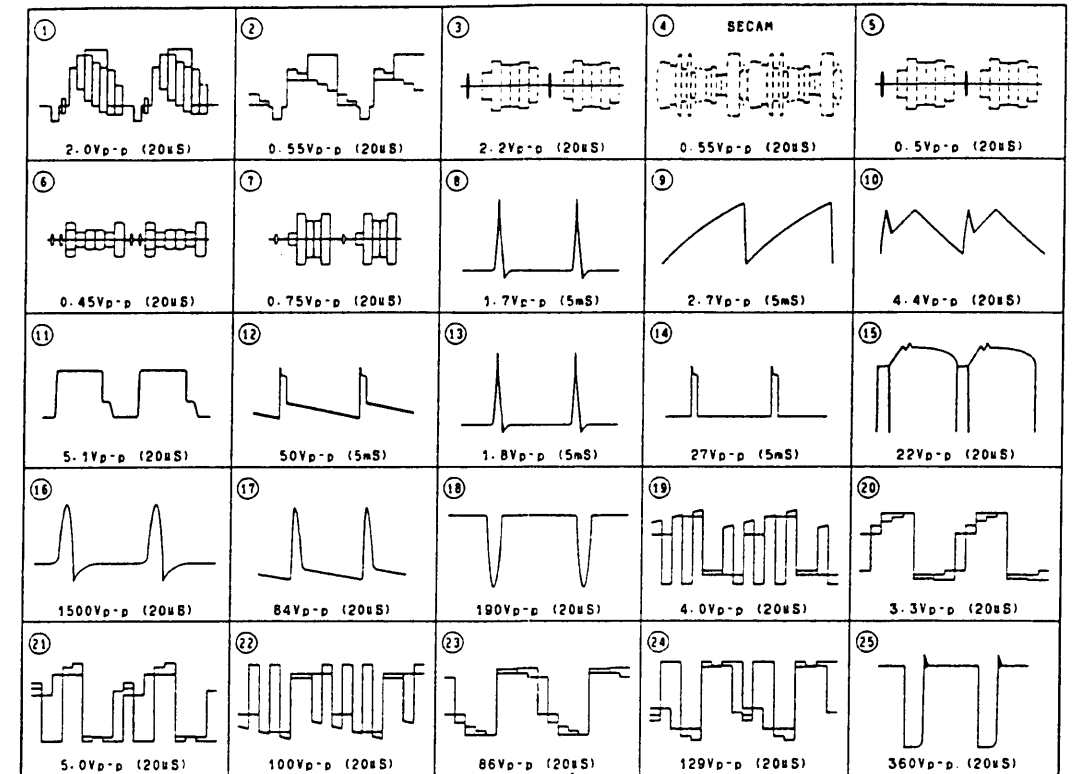
KEY NO.	DATA CODE	FUNCTION	KEY NO.	DATA CODE	FUNCTION
1	20	POWER	14	19	10
2	10	1	15	2A	TV/AV
3	11	2	16	0D	VOL. -
4	12	3	17	0B	MUTE
5	22	PROG. UP	18	07	N
6	13	4	20	1A	11
7	14	5	21	1B	12
8	15	6	22	26	RECALL
9	23	PROG. DN	23	0E	COLOUR -
10	16	7	24	0C	COLOUR +
11	17	8	25	0F	BRIGHT -
12	18	9	26	06	BRIGHT +
13	01	VOL. +			



VOLTAGE TABLE (AC 120V)

Q830	Q831	Q832	Q833
C 4 32	T1 170	A 171	A 171
B 25 33	T2 170	K 172	K 172
E 22 32	G 169	G 169	G 169

WAVEFORM PATTERN TABLE



BLOCK DIAGRAM FOR INTEGRATED CIRCUITS

