

Service Manual

Colour Television

TX-28CK1P

TX-25CK1P

TX-21CK1P

Z8 Chassis



SPECIFICATION

(Information in brackets { } refers to model TX-25CK1P)
(Information in brackets [] refers to model TX-21CK1P)

Power Source:	220-240V a.c., 50Hz	RCA IN	Video 1V p-p 75Ω
Power Consumption:	97W {97W} [88W]	RCA IN	Audio 500mV rms 10kΩ
Stand-by Power Consumption:	0,9W {0,9W} [1W]	High Voltage:	28kV ± 1kV {28kV ± 1kV} [26,7kV ± 1kV]
Aerial Impedance:	75Ω unbalanced, Coaxial Type	Picture Tube:	A66ECF50X04 66cm {A59ECF50X04 59cm} [A51EER35X80 51cm]
Receiving System:	PAL B/G, PAL D/K ,PAL-60 SECAM B/G, SECAM D/K M.NTSC (AV) NTSC (AV only)	Audio Output:	2 x 10W (M.P.O.) 2 x 5W (R.M.S.) 8Ω Impedance
Receiving Channels:	VHF E2-E12 VHF H1-H2 (ITALY) VHF A-H (ITALY) VHF R1-R2 VHF R3-R5 VHF R6-R12 UHF E21-E69 CATV (S01-S05) CATV S1-S10 (M1-M10) CATV S11-S20 (U1-U10) CATV S21-S41 (HYPERBAND)	Headphones:	8Ω Impedance 3,5mm
Intermediate Frequency:		Accessories supplied :	Remote Control 2 x R6 (UM3) Batteries
Video/Audio	38,9MHz	Dimensions:	
Video	32,4MHz, 32,66MHz (A2 CZECH)	Height:	580mm {538mm} [476mm]
Audio	33,05MHz (NICAM) 33,4MHz, 33,16MHz (A2) 33,05MHz (NICAM B/G) 34,47MHz 34,5MHz, 34,65MHz	Width:	646mm {580mm} [512mm]
Colour		Depth:	471mm {442.5mm} [470mm]
Terminals:		Net weight:	33kg {27kg} [20.6kg]
AV1 IN	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 10kΩ RGB (21 pin) 0,7V p-p 75Ω	Specifications are subject to change without notice. Weights and dimensions shown are approximate.	
AV1 OUT	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 1kΩ	NOTE: This Service Manual should be used in conjunction with the Z8 Technical guide.	

CONTENTS

SAFETY PRECAUTIONS.....	2
SERVICE HINTS.....	3
ADJUSTMENT PROCEDURE AND FACTORY SETTINGS.....	4
WAVEFORM PATTERN TABLE.....	5
ALIGNMENT SETTINGS.....	6
BLOCK DIAGRAMS.....	7
PARTS LOCATION.....	10
REPLACEMENT PARTS LIST.....	11
SCHEMATIC DIAGRAMS.....	20
CONDUCTOR VIEWS.....	25

SAFETY PRECAUTIONS

GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the a.c. supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts that have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the a.c. outlet.
5. Potentials as high as 29kV, {29kV}, [27,7kV] are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

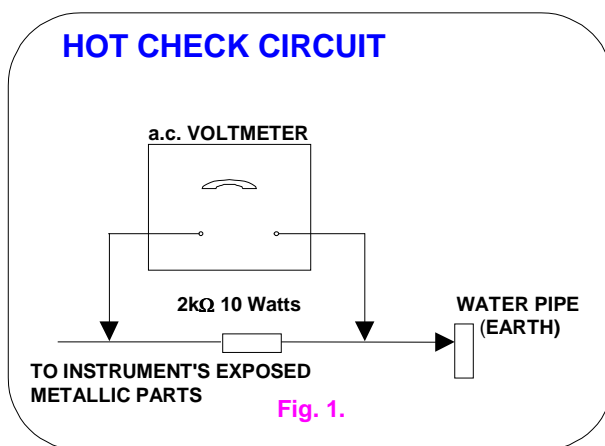
LEAKAGE CURRENT COLD CHECK

1. Unplug the a.c. cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered a.c. plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the a.c. cord directly into the a.c. outlet. Do not use an isolation transformer for this check.
2. Connect a 2k Ω 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an a.c. voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at each point.

5. Reverse the a.c. plug at the outlet and repeat each of the above measurements.



6. The potential at any point should not exceed 1,4Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that the jig is capable of handling 29kV, {29kV}, [27,7kV] without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate.
TX-28,25CK1P 28 kV \pm 1kV.
TX-21CK1P 26,7kV \pm 1kV.

If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

SERVICE HINTS

How to remove the rear cover

1. Remove the 5 screws as shown in Fig.2.



LOCATION OF CONTROLS

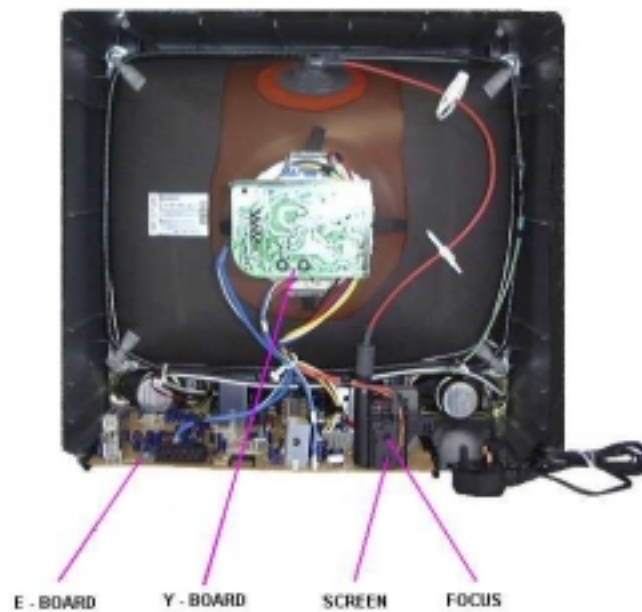


Fig.3.


ADJUSTMENT PROCEDURE

Item / Preparation	Adjustments		
+B SET-UP 1. Receive a Greyscale signal. 2. Set the controls :- Brightness Minimum Contrast Minimum Volume Minimum	Confirm the following voltages. <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> +B1 3,3 ± 0,3V +B2 195 ± 10V {195 ± 10V} [190 ± 10V] +B3 13,5 ± 1V {13,5 ± 1V} [12,5 ± 1V] +B4 10 ± 1V +B8 5 ± 0,3V +B11 147 ± 10V { 147 ± 10V} [127 ± 10V] </td><td style="width: 50%; vertical-align: top;"> +B13 -13 ± 1V +B14 27,5 ± 1,5V {27,5 ± 1,5V} [27,5 ± 1,5V] +B15 28 ± 1,5V {28 ± 1,5V} [28 ± 1,5V] +B16 11,5 ± 1V {11,5 ± 1V} [11,5 ± 1V] +B17 8 ± 1V +B18 5 ± 0,3V </td></tr> </table>	+B1 3,3 ± 0,3V +B2 195 ± 10V {195 ± 10V} [190 ± 10V] +B3 13,5 ± 1V {13,5 ± 1V} [12,5 ± 1V] +B4 10 ± 1V +B8 5 ± 0,3V +B11 147 ± 10V { 147 ± 10V} [127 ± 10V]	+B13 -13 ± 1V +B14 27,5 ± 1,5V {27,5 ± 1,5V} [27,5 ± 1,5V] +B15 28 ± 1,5V {28 ± 1,5V} [28 ± 1,5V] +B16 11,5 ± 1V {11,5 ± 1V} [11,5 ± 1V] +B17 8 ± 1V +B18 5 ± 0,3V
+B1 3,3 ± 0,3V +B2 195 ± 10V {195 ± 10V} [190 ± 10V] +B3 13,5 ± 1V {13,5 ± 1V} [12,5 ± 1V] +B4 10 ± 1V +B8 5 ± 0,3V +B11 147 ± 10V { 147 ± 10V} [127 ± 10V]	+B13 -13 ± 1V +B14 27,5 ± 1,5V {27,5 ± 1,5V} [27,5 ± 1,5V] +B15 28 ± 1,5V {28 ± 1,5V} [28 ± 1,5V] +B16 11,5 ± 1V {11,5 ± 1V} [11,5 ± 1V] +B17 8 ± 1V +B18 5 ± 0,3V		
CUT OFF / Ug2 Adjustment 1. Receive a Greyscale signal. 2. Degauss the tube externally. 3. Set the TV into Service Mode 1. 4. Select Ug2 Test.	Set Contrast on maximum, set Brightness on center, switch on AV mode. Enter Service mode. Set Sub-Brightness to 31. Select Ug2 Test. Press "+" and adjust screen Vr till sharp vertical line is visible and LED switches off. Then reduce screen Vr till LED is just switched on (pin6 of connector E1 must be connected to GND).		

Note: To set up "white balance" first set up "Cut off" register to 8. Then set up "high-light" with the help of "drive" registers. Finish setting-up of "Low-light" with the help of "Cut-off" register.

Carry out setting-up of "white balance" in available TV systems (PAL, SECAM).

FACTORY SETTINGS

To return customer settings to factory settings and clear owner ID of all information input by the customer, enter Self-Check mode. Press the down (-/v) button on the customer controls at the front of the TV set, at the same time pressing the **STATUS** button  on the remote control. To exit Self Check, switch off the TV set at the power button.

NOTE: Self Check should only be used when refurbishing the TV set and not during normal repair work.

OPTION 1 6C {OPTION 1 6C} [OPTION 1 4C]

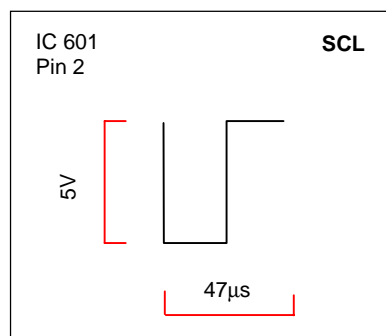
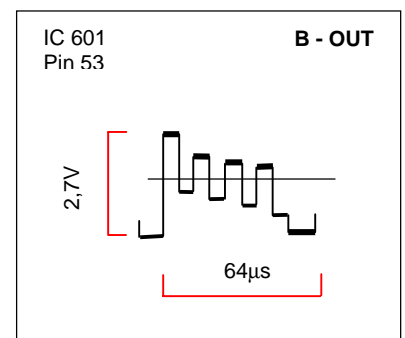
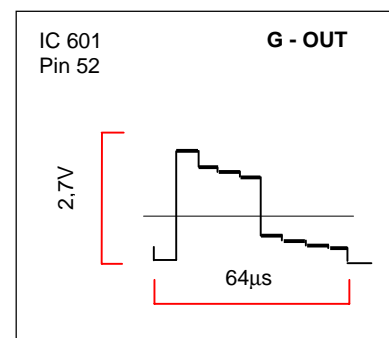
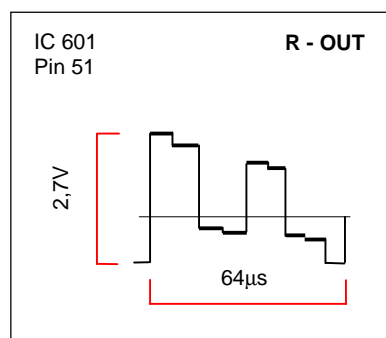
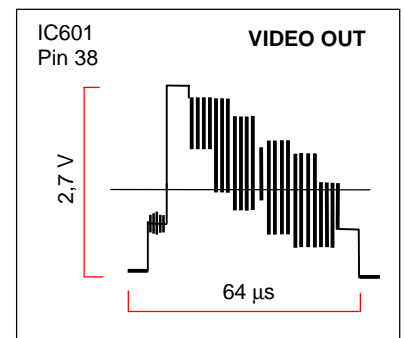
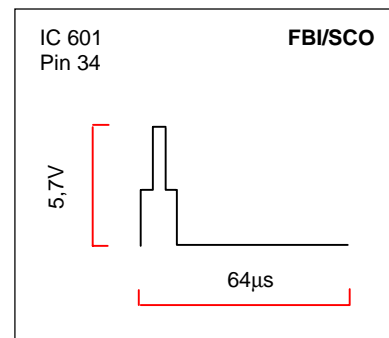
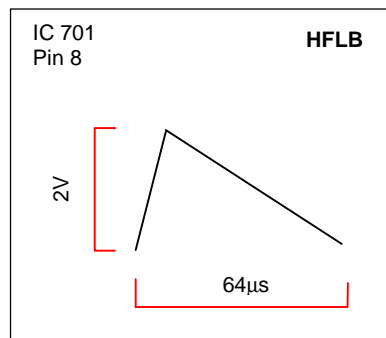
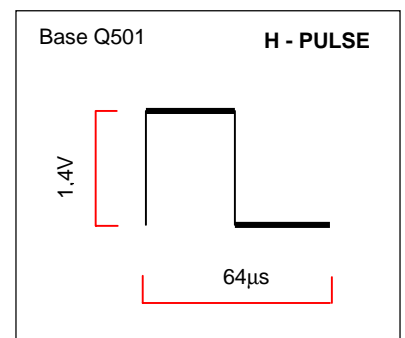
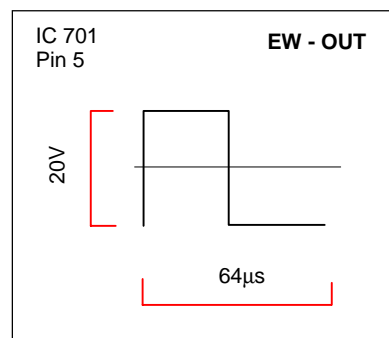
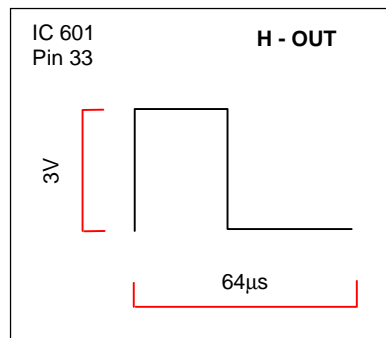
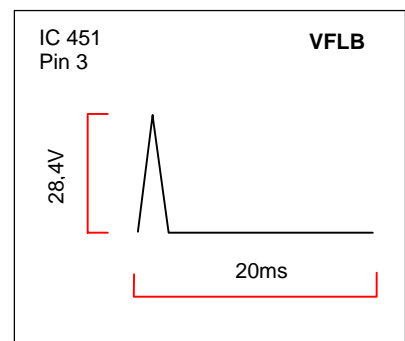
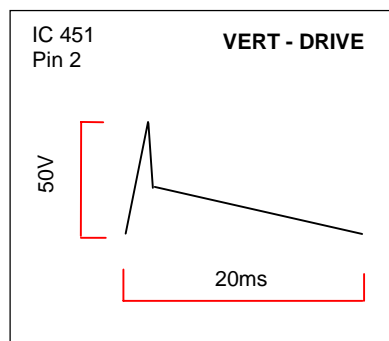
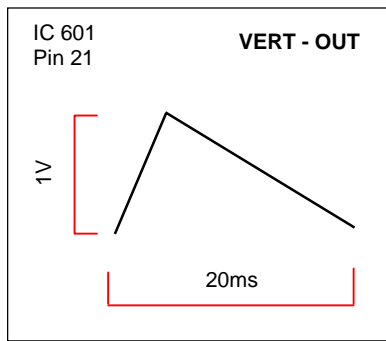
OPTION 2 00 {OPTION 2 00} [OPTION 2 00]

Service Aids

To aid in the service of our current chassis there are a number of Service Aids which have been made available.

- **LUCI** interface kit (Linked Utility Computer Interface)
 Part number: TZS6EZ002
 This contains interface and cables for connecting TV service connector and a PC as well as diagnostic software. As new models are introduced upgrade software will become available.
- **VICI** (Visual Interactive Computer Information)
 These C.D.'s contain multimedia documentation providing quick access to service information.
 Part No. TZS7EZ006, TZS7EZ005, TZS8EZ001 & TZS9EZ001
 1. Service Manuals
 2. Instruction Books
 3. Technical Information
- **TASMIN** (Technically Advanced System for Multimedia Interactive Notes)
 As well as providing a first step towards more interactive training this product also achieves quick access to Technical Information.

WAVEFORM PATTERN TABLE



ALIGNMENT SETTINGS

To access Service Mode select program position 99 and set sharpness to minimum.

Press **"MUTE"** button on remote control and at the same time press the **"V"** button on the customer controls at the front of the TV, this will place the TV set into Service Mode.

Press **▲ / ▼** buttons to step up / down through the functions.

Press **+ / -** buttons to alter the function values.

Press **"STR"** button on the customer controls at the front of the TV after each adjustment has been made to store the required values.

To exit Service Mode press **"N"** button.

Alignment Function	Setting indication Note: All setting values are approximate	Settings / Special features
1. Cut off (Ug2)	LED On/Off (pin6 of connector E1 to the GND)	LED to be just On
2. Vertical slope	V-SLO 32	Optimum setting
3. Vertical shift	V-POS 43	Optimum setting.
4. Vert. Amplitude	V-AMP 60	Optimum setting.
5. Horizontal shift	H-CTR 31	Optimum setting.
6. Horizontal parallelogram	H-PAR 034 {034} [-]	Optimum setting.
7. Horizontal bow	H-BOW 031 {031} [-]	Optimum setting.
8. R - Cut	R - CUT 08	Optimum setting.
9. G - Cut	G - CUT 08	Optimum setting.
10. R - Drive	R - DRV 31	Optimum setting.
11. G - Drive	G - DRV 31	Optimum setting.
12. B - Drive	B - DRV 31	Optimum setting.
13. AGC	AGC 20	Optimum setting.
14. Sub Colour	S - COL 15	Optimum setting.
15. Sub Brightness	S - BRI 31	Optimum setting.

For models TX-25CK1P and TX-28CK1P only:

Alignment Function	Setting indication Note: All setting values are approximate	Settings / Special features
16. Horizontal Width	EW – WD 34	Optimum setting.
17. EW parabola	EW – PR 32	Optimum setting.
18. EW Upper corners	EW – UC32	Optimum setting.
19. EW Lower corners	EW – LC 33	Optimum setting.
20. EW Trapezoid	EW – TP 36	Optimum setting.

Input remote code **"FA"** followed by key 5 (14 hex) or press **"Status button"** on remote control (numerical keys 0-6 to change value, TV/AV button to store on remote control):

Option Byte - 1		Option Byte Table		Option Byte - 2		Option Byte Table	
Bit No.	Value	Functions		Bit No.	Value	Functions	
0	0	French model	0 NO 1 YES	0	0		
1	0	Irish model	0 NO 1 YES	1	0		
2	1	NICAM enabled	0 NO 1 YES	2	0		
3	1	A2 stereo enabled	0 NO 1 YES	3	0		
4	0	Tuner manufacturer	0 MACO 1 ALPS	4	0		
5	1 [0]	CRT	0 21" 1 25",28"	5	0		
6	1	Q - link enabled	0 NO 1 YES	6	0		