

TEAC

SERVICE MANUAL

CT-M4897

48cm CTV

Effective: January, 1997

CTM4897SERV

SPECIFICATION

SYSTEM	:	PAL-B/G	
DESTINATION	:		
CHANNEL	:	0 - 5	CH
COVERAGE	:	5A - 11	CH
	:	21 - 65	CH
FREQUENCY RANGE	:	46.25 - 102.25	MHz
	:	138.25 - 216.25	MHz
	:	471.25 - 823.25	MHz
SCANNING	:	625	LINES
	:	15625	Hz
	:	50	Hz
IF FREQUENCY	:	38.9	MHz
	:	33.4	MHz
	:	37.13	MHz
VISION/SOUND SEPARATION	:	5.5	MHz
SENSITIVITY	:	32	uV
	:	56	uV
	:	80	uV
OUTPUT POWER MAXIMUM	:	2000	mW
	:	1800	mW
CRT	:	20" DIAGONAL, 90 DEGRESS DEFLECTION ANGLE	
SPEAKER	:	2" X 3 1/2" 16 OHM 2W	
ANTENNA IMPEDANCE	:	75	OHM
POWER CONSUMPTION	:	60	WATTS

VIF ALIGNMENT

A. Preparation Step (See Fig. 1)

- (i) Connect AGC bias voltage to TP101, the DC supply should be turned off this time.
- (ii) Connect 14V B+ bias voltage to D404 (-) and Ground.
- (iii) Connect sweep generator to tuner test point and Ground.
- (iv) Connect waveform detector to TP105 and Ground.

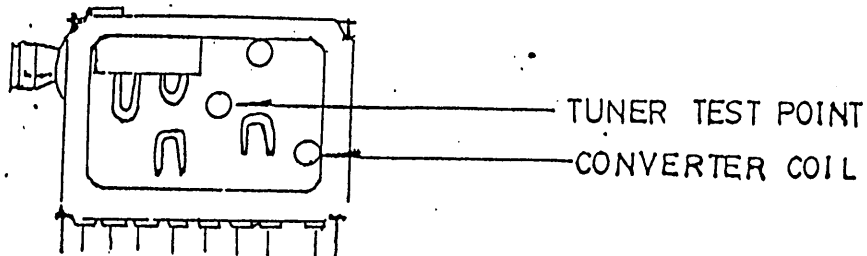
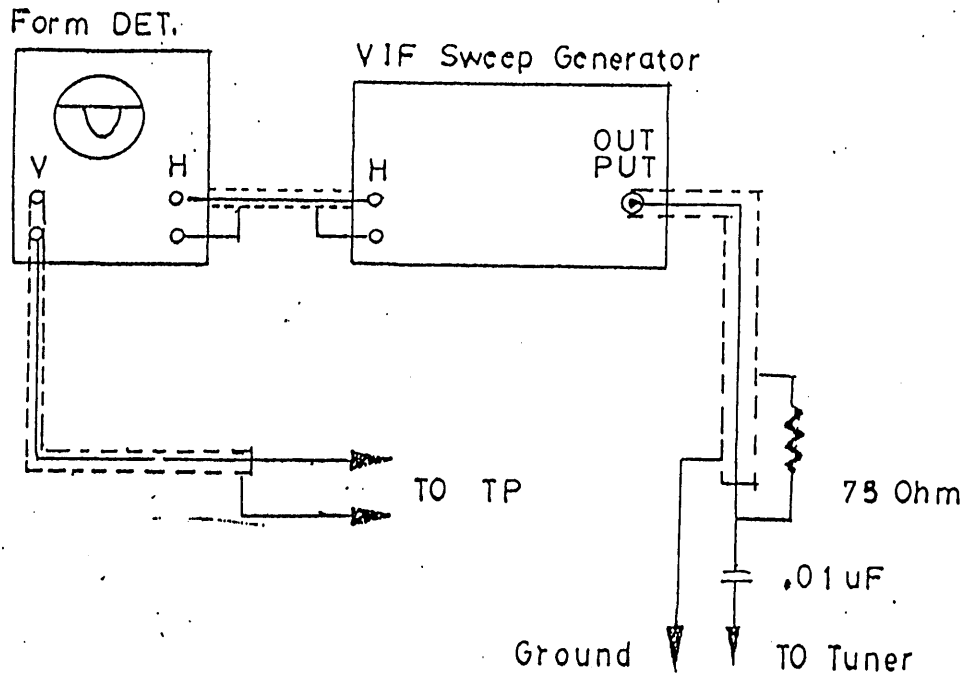


Fig.1

B. Tank Coil Alignment Step (See Fig.2)

- (i) Calibrate the Division of waveform Detector equal to 100mv per div.
- (ii) The output of sweep generator should be 50dB.
- (iii) Connect TP001 to Ground.
- (iv) Adjust AGC bias until the output waveform equal to 1V p.p.

(10 div.)

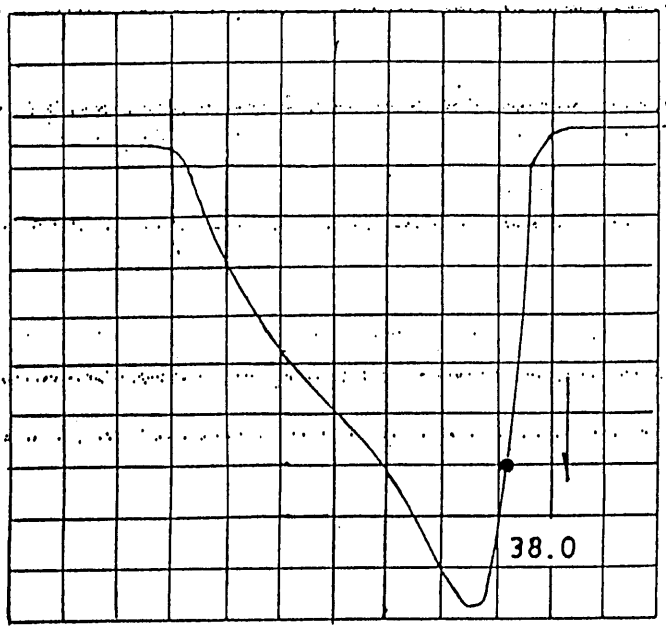


Fig . 2

- (v) Turn T101 until the marker 38.0 MHz falls to the lowest point as Fig.2

C: VIF ALIGNMENT

- (i) Connect 100 ohm resistor between TP103 and TP104.
- (ii) Adjust T104 until obtain the maximum waveform amplitude. (If provided)
- (iii) Adjust AGC bias, and maintain the waveform achieve 1V pp.
- (iv) Adjust tuner convertor coil, and obtain the waveform as Fig. 3.

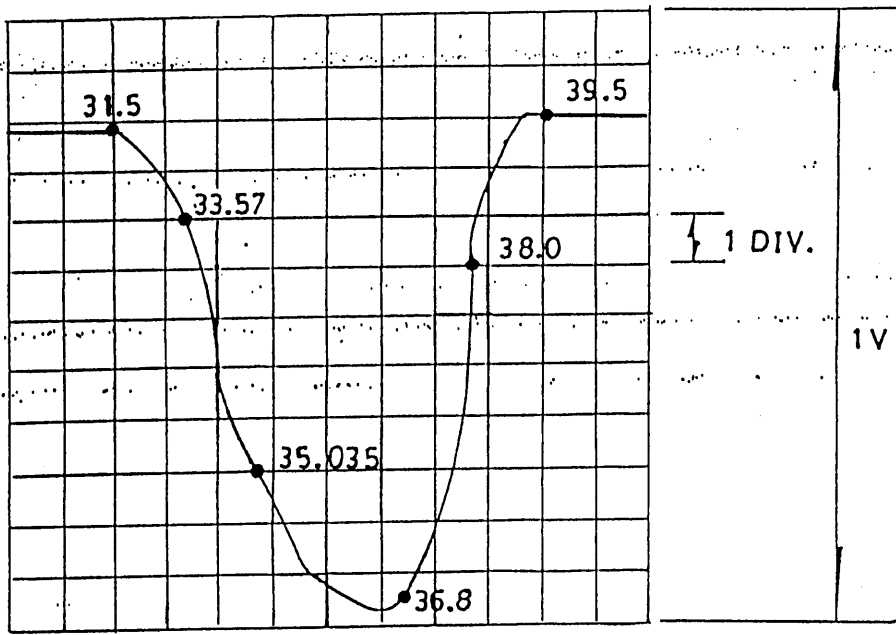


Fig. 3

D. AFC Alignment

- (i) Remove the 100 ohm resistor from TP103 and TP104.
- (ii) Connect the waveform detector to TP102. The output of sweep generator should be -40dB.
- (iii) Adjust AGC bias to 5V.
- (iv) Adjust T103 to obtain waveform as Fig. 4.

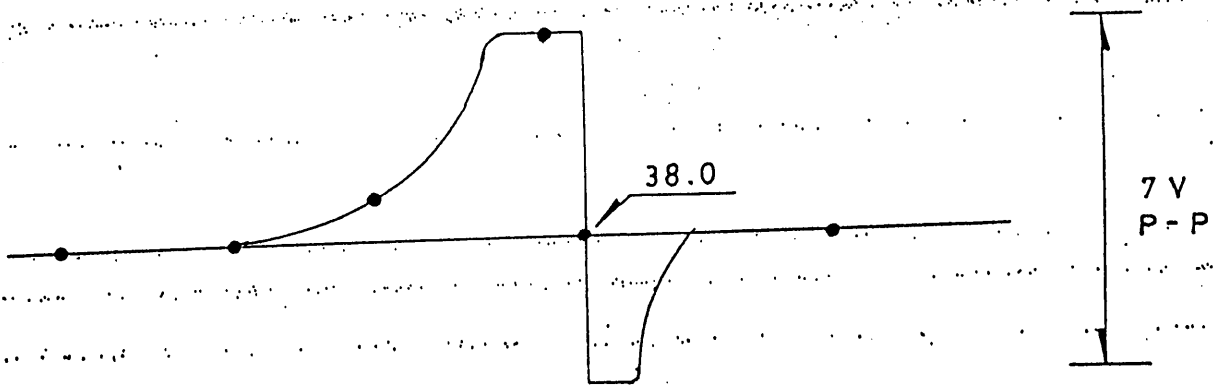
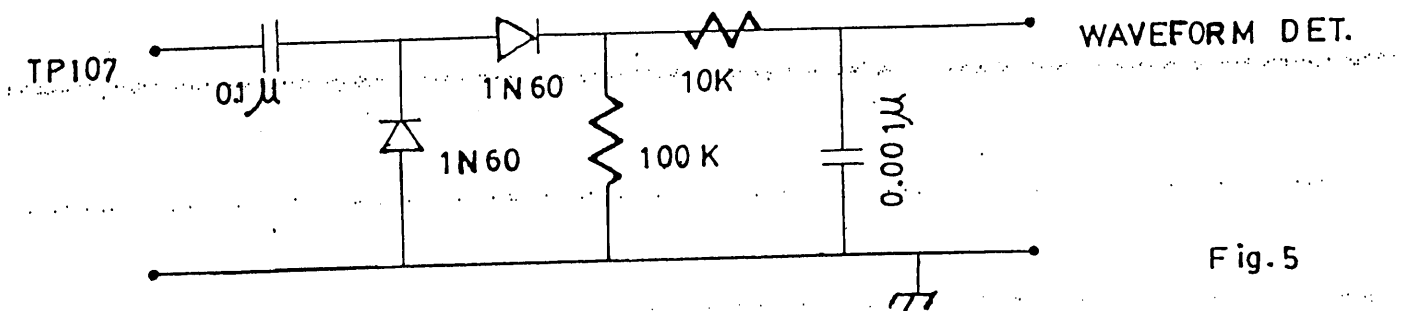


Fig. 4

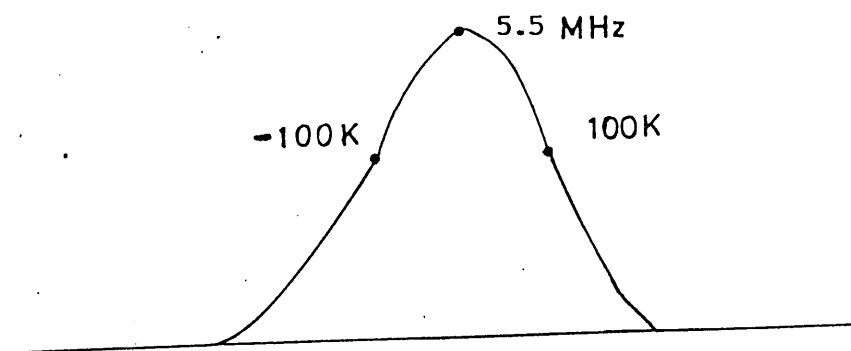
SIF Alignment

MIXER Alignment

- (i) Connect the sound IF sweep generator to TP 105.
- (ii) Connect the circuit as Fig.5 to TP107 and waveform detector.



- (iii) Adjust the sweep generator output to obtain a maximum amplitude.
- (iv) Adjust T221 to obtain the waveform as Fig.6.



E. SIF Alignment

- (i) Connect the sweep generator to TP105.
- (ii) Connect waveform detect to TP106.
- (iii) The output of sweep generator should be -50dB.
- (iv) Adjust T105 to obtain the waveform as Fig. 7.

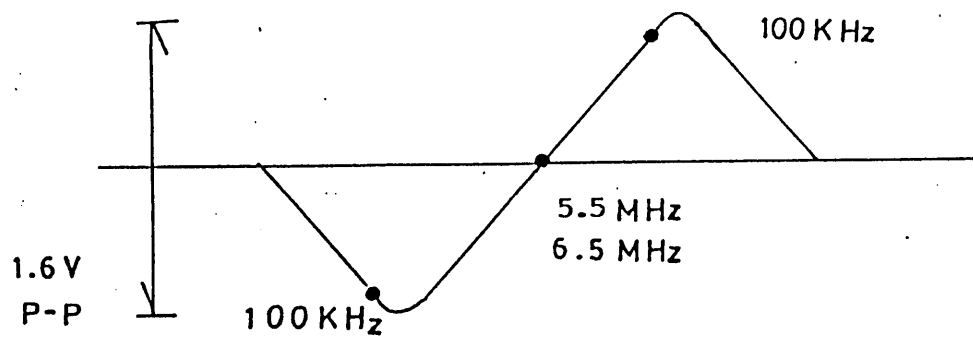


Fig. 7

B+ ADJUSTMENT

- 1) Connect a digital volt meter to TPB+ and ground.
- 2) Set Brightness, contrast and colour to maximum.
- 3) Adjust VR901 and obtain a reading of 112V.

HORIZONTAL CIRCUIT ADJUSTMENT

- 1) Receive Monoscope Pattern input signal 80dBuV.
- 2) Connect terminal TP305 and the earth with the short Jumper wire.
- 3) Adjust VR304 to obtain the picture running at center.
- 4) Adjust VR303 to obtain the picture at center.

VERTICAL CIRCUIT ADJUSTMENT

- 1) Receive the Monoscope Pattern.
- 2) Adjust V-size (VR301) to obtain a normal picture.

WHITE BALANCE ALIGNMENT STEP

(deguss the picture by deguassing coil if necessary)

- 1) Turn the brightness, contrast and picture control to minimum value.
- 2) Turn VR501,503,505 to middle position. Turn VR502,504 to minimum position.
- 3) Turn VR306 to middle position.
- 4) Receive a black and white pattern.
- 5) Set S301 to service position.
- 6) Turn off the screen voltage.
- 7) Turn on the screen control volume on flyback transformer, & a horizontal red line appears.
- 8) Adjust VR502 to obtain a yellow line.
- 9) Adjust VR504 to obtain a white line.
- 10) Set S301 to normal position.
- 11) Adjust VR503, 505 to make the picture uniformly white.(9300°K)

SUB-BRIGHTNESS ALIGNMENT

- 1) Receive a colour bar pattern.
- 2) Turn the brightness, contrast and colour to minimum.
- 3) Adjust VR306 until the brightest bar can just be seen.

FOCUS ALIGNMENT

- 1) Set the brightness and contrast to middle position.
- 2) Receive a monoscope pattern.
- 3) Adjust focus control to obtain sharpest picture.

AGC ALIGNMENT

- 1) Receive CH69 (UHF) and input field strength in 63dB ±3dB input.
- 2) Adjust VR101 to the point where noise is disappeared.

PAL COLOUR ALIGNMENT

- (1) Receive Philips Pattern.
- (2) Connect Oscilloscope to TP303
- (3) Set the service switch (S301) to service position.
- (4) Set color control to maximum position.
- (5) Adjust T301, 302 and VR305 to obtain the waveform as Fig.6.

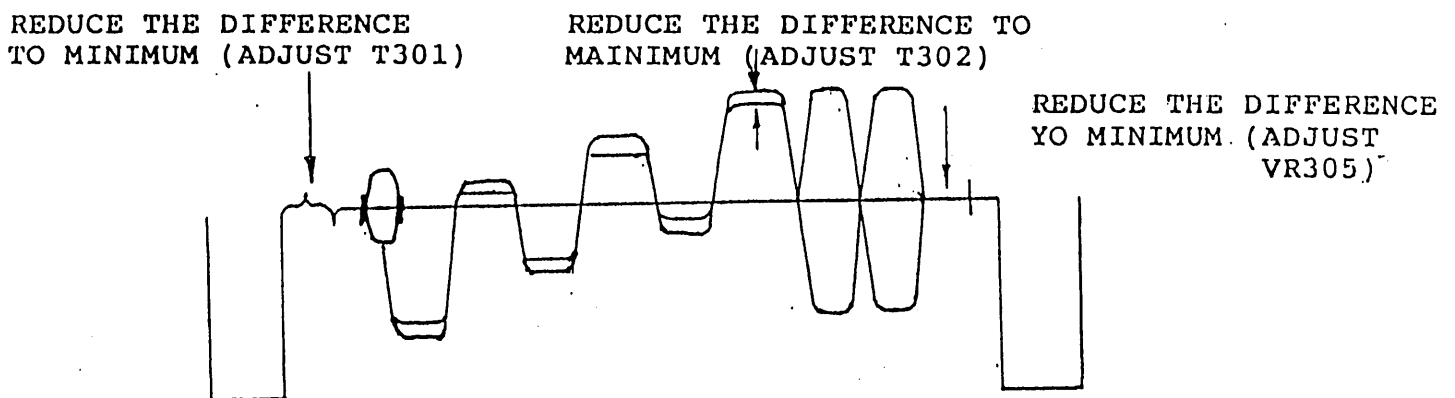


Fig.6

COLOR SYNC. ADJUSTMENT

- (1) Receive Philips pattern and warm up for five minutes.
- (2) Connect terminal TP302 and the earth with the short Jumper wire.
- (3) Connect the TP306 and TP301 with 10K OHM resistor so that the color killer turns off.
- (4) Then the color stripes appear on the screen when the adjustment is inconnect. Adjust the color sync (CT301) so that the PHILIPS pattern stands still.
- (5) Remove the 10K ohm resistor and jumper wire.

VOLTAGE TABLE FOR IC

SYMBOL PIN NO.	IC201	IC202	IC401	IC701	IC801	
	(V)	(V)	(V)	(V)	PAL	SECAM
1	8	9.5	GEN	GEN	2.9	2.9
2	15.9	4.6	13.2	GEN	5.9	6
3	15.3	4.5	24.2	3	GEN	GEN
4	0.3	GEN	0.9	0	0	2.8
5	0.4	3.9	0.7	3	5.9	5.8
6	3.3	9.5	23.7	0	5.1	4
7	3.2	7.2	1.7	3	2.5	2.5
8	3.2			3	8.1	8.2
9	GEN			3	11.8	11.8
10	GEN			3	5.1	4.3
11	GEN			NC	2.5	2.5
12	GEN			0	8	8
13	GEN			0	11.8	11.8
14	GEN			0	2.8	2.8
15	GEN			0	2.8	2.8
16	GEN			0	2.8	2.8
17				0	2.8	2.8
18				0	7.1	7.1
19				0	3.8	3.8
20				3	7.1	7.1
21					3.8	3.8
22					7.1	7.1
23					3.8	3.8
24					GEN	GEN
25					2.9	2.9
26					0.7	9.8
27					1.3	5.9
28					4.9	5.9
29					4.2	5.3
30					0.3	0.3

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHTNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 80 dBV
 CHANNEL SETTING : The Last Channel of UHF High
 SIGNAL PATTERN : Colour Bar

REMARK : IC202 FOR D/K USED.

PROGRAM ID : TVSTDCST
Print Date : 14/01/97
Page Number : 1

<< B.O.M. TV STANDARD PRICE LIST FOR CUSTOMER >> - CURRENCY (USD)

PRODUCT CODE : 892071-400002-AT
DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE STOCK ORDER}

ASSEMBLY NUMBER	DESCRIPTION
-----	-----
155-000000-01-00	COMMON PART FOR HANDSET ASS'Y
155-000000-01-15	NON-COM PART FOR HANDSET ASS'Y (30 PROG)
158-892071-40-A3	NON-COM PART FOR CHASSIS ASS'Y (PAL/BG)
159-892071-40-A0	COMMON PART FOR CASING ASS'Y (PAL-BG)
159-892071-40-A3	NON-COM PART FOR CASING ASS'Y (GREY)426U
163-892071-40-A3	NON-COM PART FOR PACKING ASS'Y (PAL/BG)

** THIS SPARE LIST IS MADE FOR TECHNICAL / MAINTENANCE REFERENCE ONLY **

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Print Date : 14/01/97 PRODUCT CODE : 892071-400002-AT
 Page Number : 2 DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE SI

Component Part	Description / Location	Unit	Subs	Quantity Required
*** ASSEMBLY : 155-000000-01-00 COMMON PART FOR HANDSET ASS'Y				
107-800455-46	455K HZ RESONATOR "WEI HAW" CF701	PC	0	1.00000
113-109005-17	CARBON FILM RESISTOR 1 OHM 1/16W +-5% R704	PC	0	1.00000
113-223005-17	CARBON FILM RESISTOR 22K OHM 1/16W +-5% R703	PC	0	1.00000
113-332005-17	CARBON FILM RESISTOR 3.3K OHM 1/16W +-5% R701	PC	0	1.00000
113-470005-17	CARBON FILM RESISTOR 47 OHM 1/16W +-5% R702	PC	0	1.00000
123-101350-60	CERAMIC CAP. 100 PF 50V +-10% (SL TYPE) "SMART GOOD" C701.702.703	PC	0	3.00000
127-106042-03	ELECT. CAP. 10 MFD 16V +-20% C704	PC	0	1.00000
130-134148-01	SILICON DIODE IN4148 D701.702.703.704.705.706.707	PC	0	7.00000
130-600101-00	INFRARED EMITTER EL-1L1 KODENSHI LED701	PC	0	1.00000
131-230945-00	TRANSISTOR 2SC945 NEC Q701	PC	0	1.00000
131-232001-00	TRANSISTOR 2SC2001L NEC Q702	PC	0	1.00000
133-350560-12	IC M50560 MITSUBISHI IC701	PC	0	1.00000
190-882000-02	REMOTE P.C.B.	PC	0	1.00000
773-000802-00	BATTERY CONTACT PLATE (B) (+VE.-VE) W/NICKEL PLATING	PC	0	1.00000
773-881301-00	BATTERY CONTACT PLATE (+)	PC	0	1.00000
773-881302-00	BATTERY CONTACT PLATE (-)	PC	0	1.00000
964-881300-00	SENSOR LENS	PC	0	1.00000

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Print Date : 14/01/97 PRODUCT CODE : 892071-400002-AT
 Page Number : 3 DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P(TAKE ST

Component Part	Description / Location	Unit	Subs	Quantity Required

*** ASSEMBLY :	155-000000-01-15 NON-COM PART FOR HANDSET ASS'Y (30 PROG)			
516-260408-10	SELF-TAPPING SCREW 2.6 X 8 P/T(HARDEN)	PC	0	1.00000
	CAB. MTG.			
849-881301-00	CONTACT RUBBER KEY PAD (24 KEYS)	PC	0	1.00000
892-881302-12	DIAL KEY PLATE - TEAC DESIGN {RC-644}	PC	0	1.00000
900-881310-01	HANDSET TOP CABINET - BLACK MOULDED	PC	1	1.00000
	(MATCH W/902-881310-01)			
900-881311-01	HANDSET TOP CABINET - BLACK MOULDED	PC	1	0.00000
902-881310-01	HANDSET BOTTOM CABINET - BLACKMOULDED	PC	2	1.00000
902-881311-01	HANDSET BOTTOM CABINET - BLACKMOULDED	PC	2	0.00000
910-881301-01	BATTERY DOOR	PC	0	1.00000

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 Page Number : 4 DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE ST

Component Part	Description / Location	Unit	Subs	Quantity Required
*** ASSEMBLY : 158-892071-40-A3 NON-COM PART FOR CHASSIS ASS'Y (PAL/BG)				
003-131424-02	TUNER OSCAR UVE33-W24/R16-3649MITSUMI (HIGH JACK) TUNER	PC	0	1.00000
113-102105-17	CARBON FILM RESISTOR 1K OHM 1/4W +-5% R344	PC	0	1.00000
113-104105-17	CARBON FILM RESISTOR 100K OHM 1/4W +-5% R357	PC	0	1.00000
113-183105-17	CARBON FILM RESISTOR 18K OHM 1/4W +-5% R307	PC	0	1.00000
113-184105-17	CARBON FILM RESISTOR 180K OHM 1/4W +-5% R369	PC	0	1.00000
113-223105-17	CARBON FILM RESISTOR 22K OHM 1/4W +-5% R326	PC	0	1.00000
113-273105-17	CARBON FILM RESISTOR 27K OHM 1/4W +-5% R302	PC	0	1.00000
113-393105-17	CARBON FILM RESISTOR 39K OHM 1/4W +-5% R353	PC	0	1.00000
113-473105-17	CARBON FILM RESISTOR 47K OHM 1/4W +-5% R383.148	PC	0	2.00000
113-683105-17	CARBON FILM RESISTOR 68K OHM 1/4W +-5% C632	PC	0	1.00000
113-823105-17	CARBON FILM RESISTOR 82K OHM 1/4W +-5% R303	PC	0	1.00000
127-106104-03	ELECT CAP. 10 MFD 100V +-20% 105 °C C910	PC	0	1.00000
127-476094-07	ELECT CAP. 47 MFD 63V +-20% 105 °C "NICHICON" C909	PC	0	1.00000
130-512044-00	LED 3MM RED 204HDC LED601	PC	0	1.00000
136-500001-00	REMOTE RECEIVER (KODENSHI HC-SZ01) OPT601	PC	0	1.00000
171-550084-02	84" AC LINE CORD (END-CUT)SAA APPW/7.5A PLUG.	PC	0	1.00000
179-105000-00	UL PVC TUBE 5MM DIA L=80MM. 80MM FOR AC LINE CORD	M	0	0.08000
190-892000-07	RECEIVER P.C. BOARD (130791) FOR LED601.OPT601	PC	0	1.00000
191-401002-07	4 PIN SOCKET ASSM'Y CN602 '1' TO REMOTE 'K','2'TO'L','3'TO'M','4'TO'N'	PC	0	1.00000
929-892001-00	LED HOLDER BKT FOR CIRCLE LED	PC	0	1.00000

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PRODUCT CODE : 892071-400002-AT

Page Number : 5

DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE ST

Component Part	Description / Location	Unit	Subs	Quantity Required
*** ASSEMBLY : 159-892071-40-A0 COMMON PART FOR CASING ASS'Y (PAL-BG)				
008-550201-05	DEGAUSSING COIL 60T 44MM X 34 MM (W/FIVE LAYERS OF TAPE) L902	PC	0	1.00000
166-463023-48	SPEAKER 2" X 3-1/2" 16 OHM 3W (FOR NEW 8920A)	PC	0	1.00000
179-105000-00	UL PVC TUBE 5MM DIA L=400MM.400MM FOR SPK.	M	0	0.40000
191-200044-09	2 PIN SOCKET ASSM'Y L=440MM CN201 '2' TO SPK.'-' . '1' TO SPK.'+'	PC	0	1.00000
509-305010-00	MACHINE SCREW 3 X 10 KM (BLACK) JACK PLATE MTG	PC	0	2.00000
514-400412-10	SELF-TAPPING SCREW 4 X 12 B/T (HARDEN) FOR STAND MTG.	PC	0	4.00000
514-400425-10	SELF-TAPPING SCREW 4 X 25 B/T (HARDEN) 12 FOR CRT MTG.. 3 FOR CAB. MTG.	PC	0	15.00000
514-400435-10	SELF-TAPPING SCREW 4 X 35 B/T (HARDEN) FOR CAB. MTG	PC	0	2.00000
515-303408-10	SELF-TAPPING SCREW 3 X 8 W/B/T (HARDEN) 4 FOR SPEAKER MTG..3 FOR CHANNEL BOARD	PC	0	7.00000
515-303410-10	SELF-TAPPING SCREW 3 X 10 W/B/T (HARDEN) 12 FOR MAIN PCB.4 FOR REMOTE BOARD.2 FOR POWER SW.	PC	0	18.00000
622-882802-00	FELT L240 X W17 X T0.5MM W/TAPE FOR REAR CAB.	PC	0	5.00000
723-882101-00	MTG BRACKET FOR POWER SW. MTG.	PC	0	1.00000
728-882001-00	CRT MTG. BRACKET W/NUT CRT MTG.	PC	0	4.00000
744-881301-00	SPRING FOR C.R.T. MOUNTING 5.2 X 42 X 0.6MM	PC	0	1.00000
777-892001-00	SPRING IN ø7.0 X L22 FOR POWER KNOB	PC	0	1.00000
834-230801-00	RUBBER WASHER OD=23 . ID=8 . T=1.0 FOR CRT MTG	PC	0	4.00000
834-230805-00	RUBBER WASHER OD=23 ID=8 T=0.5 CRT MTG (LOWER)	PC	0	2.00000
840-011024-21	PAD CORD L240 X W10 X T1 MM W/TAPE FOR BETWEEN CRT AND FRONT CAB.	PC	0	6.00000
902-892002-U1	BACK CABINET HIPS UL94V0	PC	0	1.00000
920-892001-U1	MTG. BRACKET HIPS UL94V0	PC	0	1.00000
948-882001-01	DEGAUSSING COIL MTG. CLIP	PC	0	4.00000
948-882003-00	DOOR LOCKER FRONT CAB	PC	0	1.00000
954-882100-00	AC LINE CORD CLIP FRONT CAB.	PC	0	1.00000
954-892001-00	HIGH VOLTAGE SPACER FOR CRT	PC	0	1.00000
980-882015-01	JACK PLATE W/AV/BRASS INSERT (521-882001-00 2PCS./SET)	PC	0	1.00000

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DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE SI

Component Part	Description / Location	Unit	Subs	Quantity Required
*** ASSEMBLY : 159-892071-40-A3 NON-COM PART FOR CASING ASS'Y (GREY)426U				
002-120000-16	CRT20" A48KRD82X01/A48KRD89X01SAMSUNG	PC	0	1.00000
186-227503-14	BATTERY 3A	PC	0	2.00000
669-882001-00	RATING LABEL - TEAC DESIGN (CT-M4897) 240V	PC	0	1.00000
703-892001-00	SPEAKER GRILLE (LEFT) - MATT BLK DOUBLE SIDE W/SPRAY {NEW}	PC	0	1.00000
884-882010-01	JACK COVER - W/ WHITE SS W/AV IN HOLE FOR JACK PLATE	PC	0	1.00000
884-892001-01	PRESET PLATE (A)-BLK W/L.GREY SS.ENG STD (12 HOLES) W/V.HOLD	PC	0	1.00000
900-892005-02	FRONT CABINET (A) -GREY (426U)	PC	0	1.00000
917-892001-01	REMOTE LENS (A) - MOULDED T.RED W/GOLD S.S. & ENG STD	PC	0	1.00000
919-892001-19	PRESET DOOR - TEAC DESIGN W/CABLE READY (CT-M4897)	PC	0	1.00000
959-998802-01	STAND BLACK MOULDED W/GOLD HOT-STAMP	PC	0	2.00000
991-892001-01	POWER KNOB (A) - BLACK MOULDED	PC	0	1.00000

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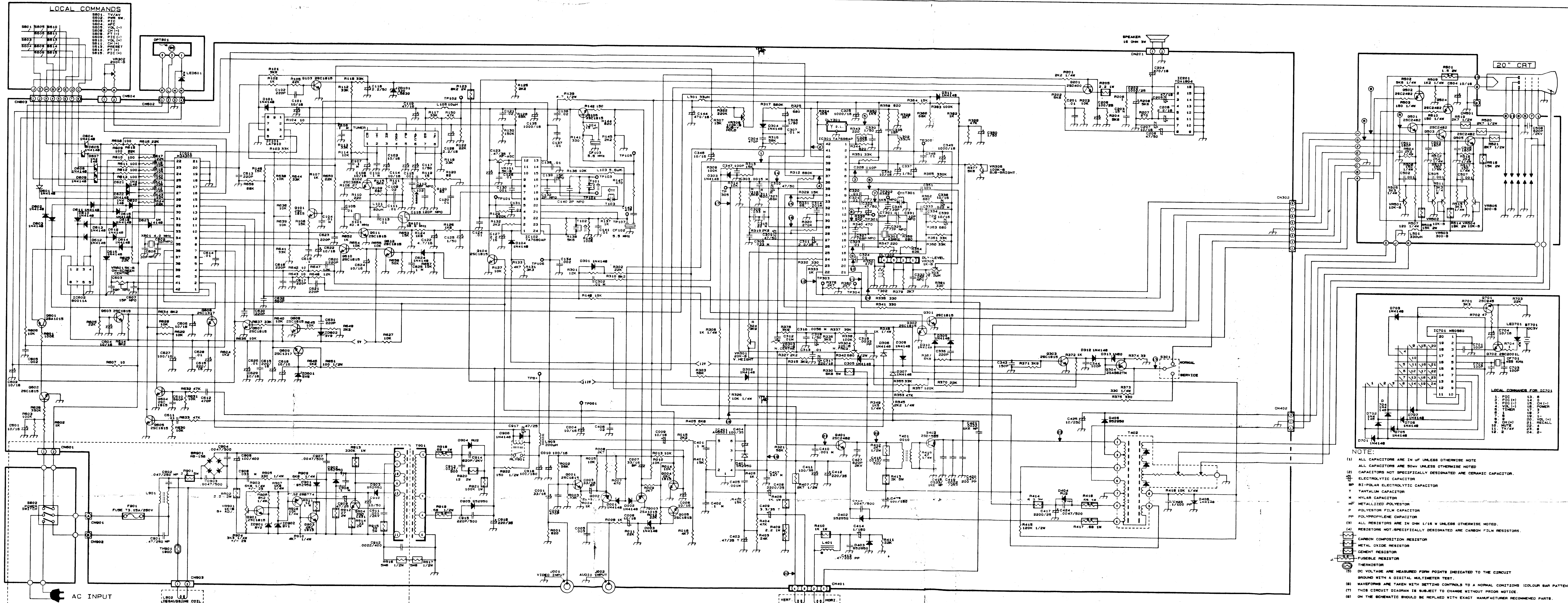
Print Date : 14/01/97 PRODUCT CODE : 892071-400002-AT
 Page Number : 7 DESCRIPTION : 8920A TEAC PAL/BG W/AV IN GREY240V SAA 30P{TAKE S

Component Part	Description / Location	Unit	Subs	Quantity Required
*** ASSEMBLY : 163-892071-40-A3 NON-COM PART FOR PACKING ASS'Y (PAL/BG)				
610-892001-80	GIFT BOX - TEAC DESIGN {CT-M4897}	PC	0	1.00000
663-230585-96	SERIAL NO.LABEL - OC:GT-585/96 1PC STUCK ON CTN. 1PC STUCK ON RATING LABEL	PC	0	2.00000
670-892000-79	INSTRUCTION MANUAL-TEAC DESIGN(CT-M4897) {30 PROG.}	PC	0	1.00000
678-881306-01	EASY TUNE CARD (D) - TEAC (A) DESIGN	PC	0	1.00000
678-892000-07	SCREEN STICKER - TEAC DESIGN (CT-M4897) TO TOP RIGHT OF SCREEN	PC	0	1.00000
678-931315-02	TOTAL CARE LABEL - TEAC DESIGN(BLK & WHITE)	PC	0	1.00000
690-922139-01	WARRANTY CARD- TEAC (A) DESIGN	PC	0	1.00000
693-892001-25	EAN CODE LABEL - 9313060007577	PC	0	1.00000
800-892001-00	POLYFOAM - TOP LEFT	PC	0	1.00000
800-892002-00	POLYFOAM - TOP RIGHT	PC	0	1.00000
800-892003-00	POLYFOAM - BOTTOM LEFT	PC	0	1.00000
800-892004-00	POLYFOAM - BOTTOM RIGHT	PC	0	1.00000
810-041104-13	POLYBAG 4" X 11" X 0.04MM W/RE-CYCLING MARK FOR HANDSET	PC	0	1.00000
810-052204-14	POLYBAG 5" X 22" X 0.04MM PO MAT W/RE-CYCLING MARK FOR AC LINE CORD	PC	0	1.00000
810-091504-13	POLYBAG 9" X 15" X 0.04MM W/ RE-CYCLING MARK FOR INSTRUCTION MANUAL	PC	0	1.00000
810-373704-14	POLYBAG 37"X37"X0.04MM W/PUNCHHOLE & RE-CYCLING MARK P/O MAT FOR UNIT	PC	0	1.00000
826-301605-00	FOAM SHEET 30" X 16" X 0.5MM THK. FOT UNIT TOP	PC	0	1.00000
826-342005-00	FOAM SHEET - 34" X 20" X 0.5MM FOT TOP BOTTOM	PC	0	1.00000

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TOTAL

NO PRICE ITEM : 10
 *** END OF REPORT ***



- NOTE:**
- (1) ALL CAPACITORS ARE IN OHM UNLESS OTHERWISE NOTED.
 - (2) ALL CAPACITORS ARE 50V UNLESS OTHERWISE NOTED.
 - (3) CAPACITORS NOT SPECIFICALLY DESIGNATED ARE CERAMIC CAPACITOR.
 - (4) ELECTROLYTIC CAPACITOR
 - (5) BI-POLAR ELECTROLYTIC CAPACITOR
 - (6) TANTALUM CAPACITOR
 - (7) NYLON CAPACITOR
 - (8) METALLIZED POLYMER
 - (9) POLYESTER FILM CAPACITOR
 - (10) POLYPROPYLENE CAPACITOR
 - (11) ALL RESISTORS ARE IN OHM 1/16 W UNLESS OTHERWISE NOTED.
 - (12) RESISTORS NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS.
 - (13) CARBON COMPOSITION RESISTOR
 - (14) METAL OXIDE RESISTOR
 - (15) CEMENT RESISTOR
 - (16) FUSIBLE RESISTOR
 - (17) THERMISTOR
 - (18) DC VOLTAGE ARE MEASURED FROM POINTS INDICATED TO THE CIRCUIT.
 - (19) SIGNALS WITH A DIGITAL WAVEFORM TEST.
 - (20) WAVEFORMS ARE TAKEN WITH SETTINGS CONTROLS TO A NORMAL CONDITION (COLOR BAR PATTERN).
 - (21) THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
 - (22) ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT MANUFACTURER RECOMMENDED PARTS.

