CARVER

Model TX-12

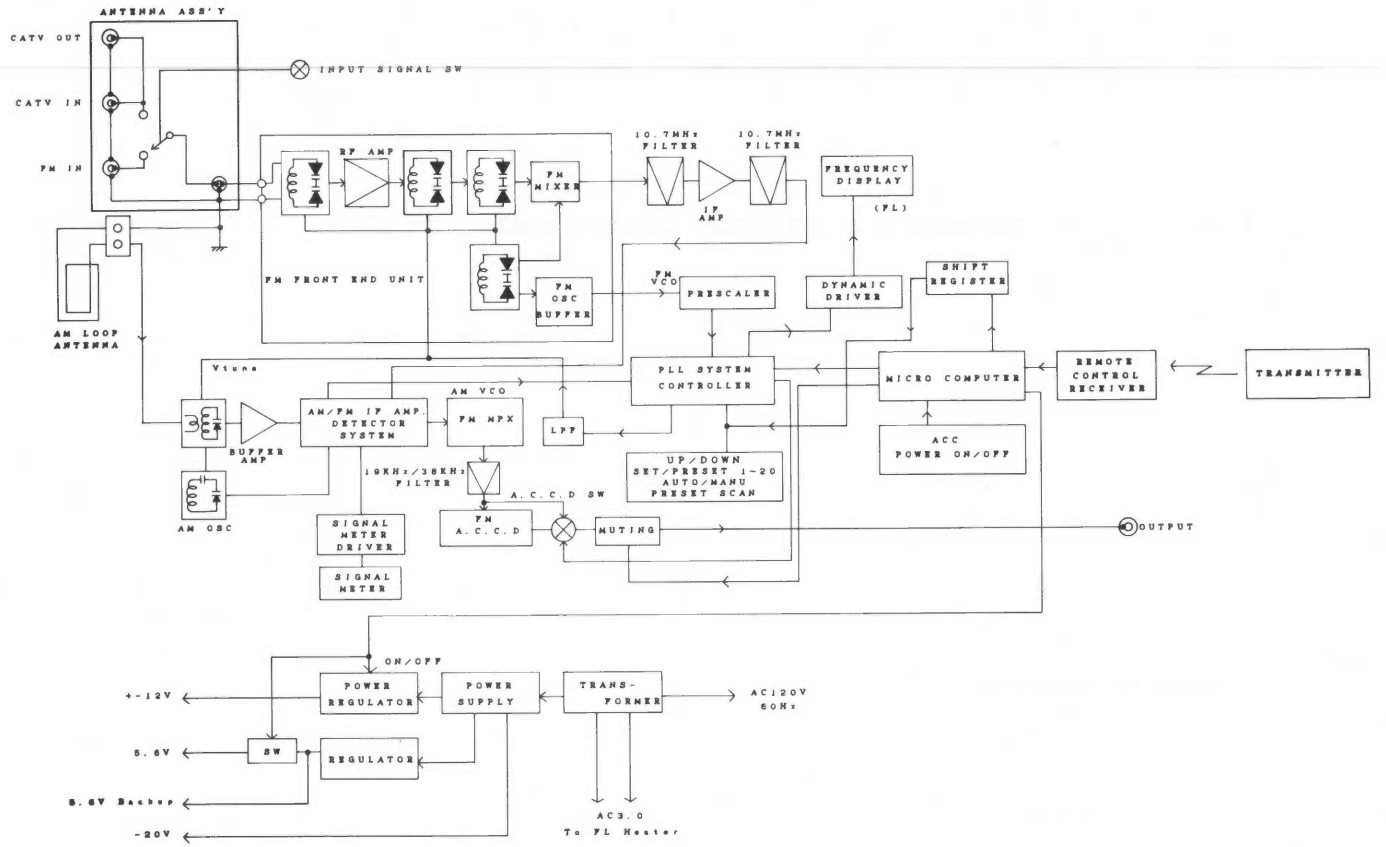
SERVICE MANUAL

CONTENTS

SPECIFICATIONS

FM IHF Usable Sensitivity	: 10.3 dBf (1.8 μV)
FM Sensitivity for 50 dB quieting (mono)	: 4.0 μV
FM Signal-to-Noise Ratio	: 74 dB
FM IF Rejection	: 85 dB
FM Capture Ratio	: 1.5 dB
FM Harmonic Distortion	: 0.1%
AM Suppression	: 62 dB
Stereo Separation	: 62 dB
AM THD (2 mV) 30% Modulation	: 0.4%
AM Selectivity	: 20 dB
AM Image Reject	: 46 dB
AM IF Rejection	: 60 dB

BLOCK DIAGRAM



ALIGNMENT PROCEDURES

Tuner (AM)

Condition

1. Tuning method: Same frequency signal generator and tuner
2. Modulation: 400 Hz, 30%
3. Output load: A 100 kΩ resistor shunted by a 1000 pF capacitor
4. Input level: 74 dB/m (5 mV/m) unless otherwise noted
5. Generator output: IRE loop antenna 24″ (60cm) spacing or through IHF dummy (200 pF capacitor).
6. CH.STEP switch (SW191): US position
7. AUTO SCAN switch: OFF position
8. Preheat: More than 1 minute

TUNING VOLTAGE

1. Set the tuner frequency to 520 kHz.
2. No input.
3. Connect the DC digital volt meter to the test point TP101.
4. The voltage of AM Low end changes for the color of D21. (See Fig.1)
5. Adjust L23 until the voltage is 1.00±0.05 V or 0.95±0.05 V, depending on the color of D21.
6. Change the tuner frequency to 1710 kHz.
7. Adjust TC21 until the voltage is 8.00±0.05 V.

IF

1. Set the tuner frequency to the point of non-interference.
2. Connect the output of IF sweep generator to AM antenna terminal through IHF dummy and set the frequency to 450±0.5 kHz.
3. Connect the input of IF sweep generator to the test point TP42 through a 1 μF capacitor.
4. Adjust T42 until the output waveform is flat and maximum.

TRACKING

1. Set the tuner frequency to 600 kHz.
2. Connect the output of signal generator to AM antenna terminal through IHF dummy and set the frequency to 600 kHz.
3. Connect the ACVM to output jacks.
4. Adjust L22 until the ACVM is maximum.
5. Change the tuner frequency from 600 kHz to 1400 kHz.
6. Change the frequency from 600 kHz to 1400 kHz.
7. Adjust TC21 until the ACVM is maximum.

MUTING LEVEL

1. Set the tuner frequency to 1000 kHz.
2. Set the input level to 54 dB/m.
3. Connect the output of signal generator to IRE loop antenna and set the frequency to 1000 kHz.
4. Connect the DC digital volt meter or oscilloscope to the test point TP43.
5. Adjust SVR42 the moment the voltage at TP43 change from 0V to 5 V.

Tuner (FM)

Condition

1. Tuning method: Same frequency signal generator and tuner
   Reception frequency, 98.00 MHz
2. Generator: Mono.....Mod. 1 kHz, 75 kHz dev.
   Stereo...Mod. 1 kHz, 68.25 kHz +6.75 kHz dev.
3. Output load: A 100 kΩ resistor shunted by a 1000 pF capacitor
4. Input level: 65.2 dBf (500 μV) unless otherwise noted
5. CH.STEP switch (SW191): US position
6. De-Emphasis switch (SW71): US (75 μs) position
7. AUTO SCAN switch: OFF position
8. Preheat: More than 1 minute

TUNING VOLTAGE

1. Set the tuner frequency to 87.50 MHz.
2. No input.
3. Connect the DC digital volt meter to the test point TP101.
4. Adjust OSC-L (Front-end) until the voltage is 1.6±0.3 V.
5. Change the tuner frequency from 87.50 MHz to 108.00 MHz.
6. Check that the voltage is between 8.0+2.1 V and 8.0−1.0 V.

IF/PLL REFERENCE FREQUENCY

1. Set the input level to 12.2~14.2 dBf (1.12~1.41 μV).
2. Connect the output of signal generator to 75 ohm antenna terminal through a matching dummy and the frequency to 98.00 MHz.
3. Connect the ACVM and the distortion meter to output jacks.
4. Connect the DC digital volt meter to the test point TP41.
5. Adjust IFT (Front-end) until the ACVM is maximum or the distortion meter is minimum.
6. Change the input level from 12.2~14.2 dBf (1.12~1.41 μV) to 65.2 dBf (500 μV).
7. Adjust T41a (PRI) until the voltage is less than 1 mV.
8. Adjust T41b (SEC) until the distortion meter is less than 0.3%.

TRACKING

1. Set the input level to 12.2~1.42 dBf (1.12~1.41 μV).
2. Connect the output of signal generator to 75 ohm antenna terminal through a matching dummy and set the frequency to 98.00 MHz.
3. Connect the ACVM to output jacks.
4. Adjust ANT-L, RF1-L and RF2-L (Front-end) until the ACVM is maximum.

MUTING LEVEL

1. Connect the output of signal generator to 75 ohm antenna terminal through a matching dummy and set the frequency to 98.00 MHz. Set the AUTO SCAN switch to ON position.
2. Set the input level to 33.2 dBf (12.6 μV).
3. Connect the oscilloscope to output jacks.
4. Adjust SVR41 until the output is developed.

SIGNAL LEVEL

1. Set the input level to 71.3 dBf (1000 μV).
2. Connect the output of signal generator to 75 ohm antenna terminal through a matching dummy and set the frequency to 98.00 MHz.
3. Adjust SVR43 until the SIGNAL indicators fully light up.

SEPARATION

1. Connect the output of signal generator to 75 ohm antenna terminal through a matching dummy and set the frequency to 98.00 MHz in separate R ch or L ch.
2. Connect the ACVM to output jacks.
3. Adjust SVR71 until both channels have maximum but equal separation.

A.C.C.D condition

1. A.C.C.D switch: ON position
2. Input signal selector switch: DIPOLE position

SWITCHING THRESHOLD

1. Set the input level to 30 dBf (8.9 μV).
2. Set generator Mod. 1 kHz, 100% (stereo) both CH driven.
3. Connect the DC digital volt meter to the test point TP305.
4. Adjust SVR305 the moment the voltage at TP305 change from +8 V to −8 V.
5. This is easier to observe with an oscilloscope.

MULTIPATH DETECTOR THRESHOLD

1. Set the input level to 21 dBf (3.2 μV).
2. Set generator Mod. 1 kHz, 100% (stereo) both CH driven.
3. Connect the DC digital volt meter to the test point TP304.
4. Adjust SVR306 until the voltage is 5 V DC.

DELAY IC

1. Set the input level to 40 dBf (28.2 μV).
2. Set generator Mod. 400 Hz, 150% both CH driven.
3. Connect the oscilloscope to Q303 emitter.
4. Adjust SVR301 for symmetrical signal.

LEADING EDGE DETECTOR

1. Connect IC326 pin 6 and pin 14 by using the cable.
2. Set the input level to 40 dBf (28.2 μV).
3. Set generator Mod. 800 Hz, 100% left or right CH only driven.
4. Connect the DC digital volt meter to IC315 pin 1.
5. Adjust SVR303 for 0 V DC offset.
6. Change generator Mod. 1 kHz, 100% (stereo). Set for 3 dB separation from left to right channel.
7. Connect the ACVM to IC315 pin 7 (TP302).
8. Adjust SVR302 until the voltage is 38 mV (AC rms).
9. Connect the ACVM to junction of R385 and R402 (TP301).
10. Adjust SVR304 until the voltage is 64 mV (AC rms).

ALIGNMENT POINTS

TIM-803B Tuner P.C.Board

Fig.1

FL-803B Display P.C.Board

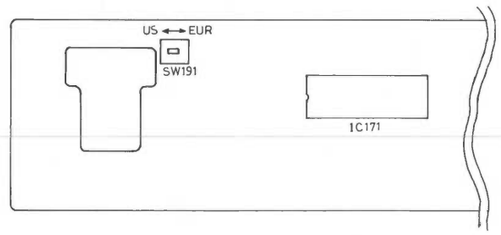


Fig.3

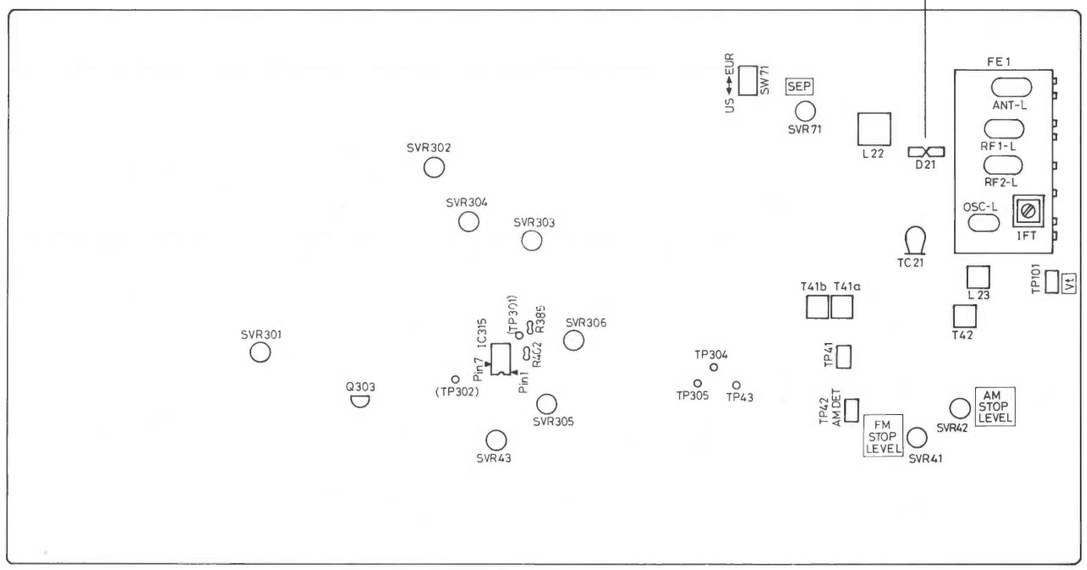


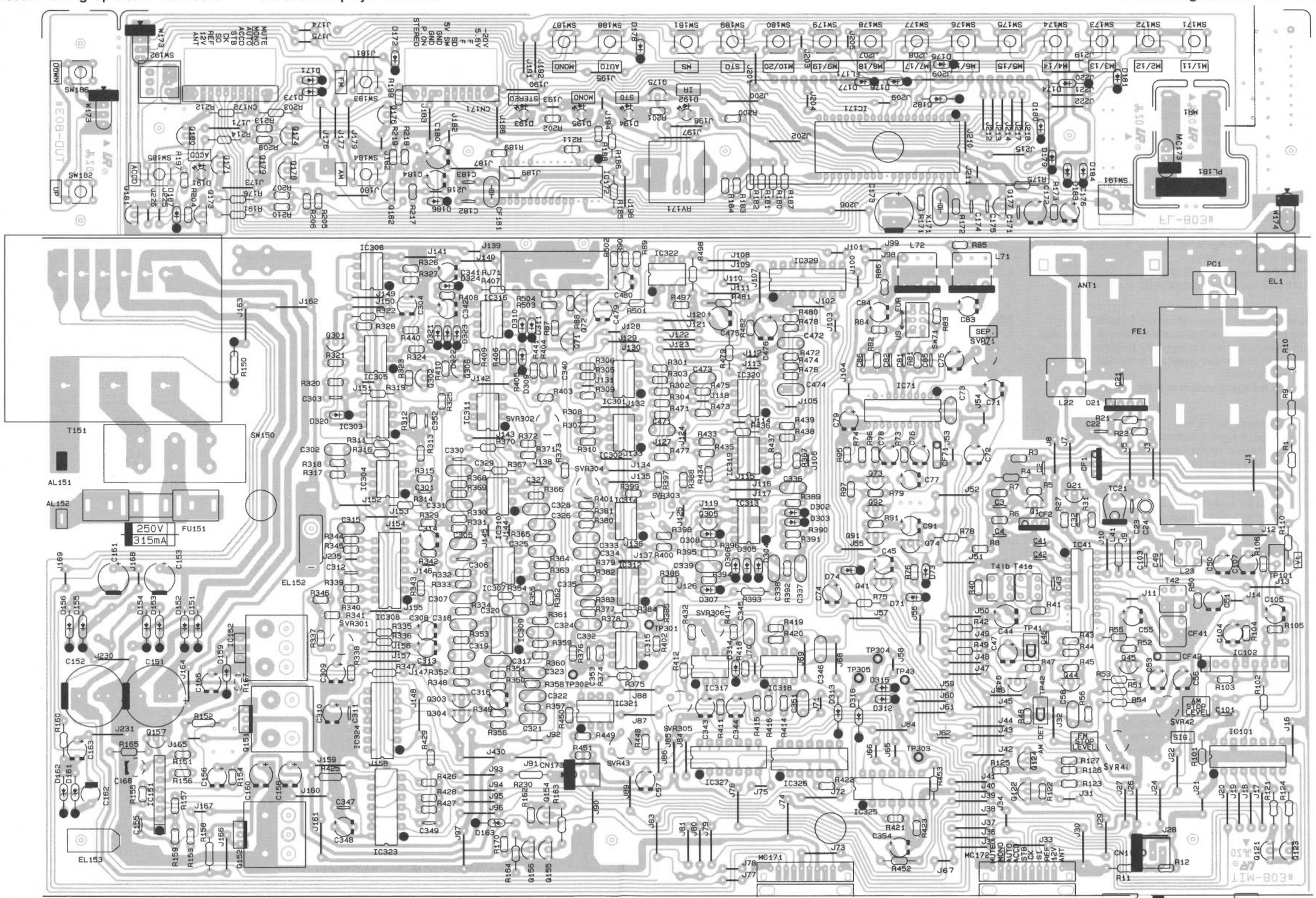
Fig.2

PCB COMPONENT SIDE VIEWS

TUD-803B Tuning Up Down P.C.Board

FL-803B Display P.C.Board

M-803B Signal Meter P.C.Board

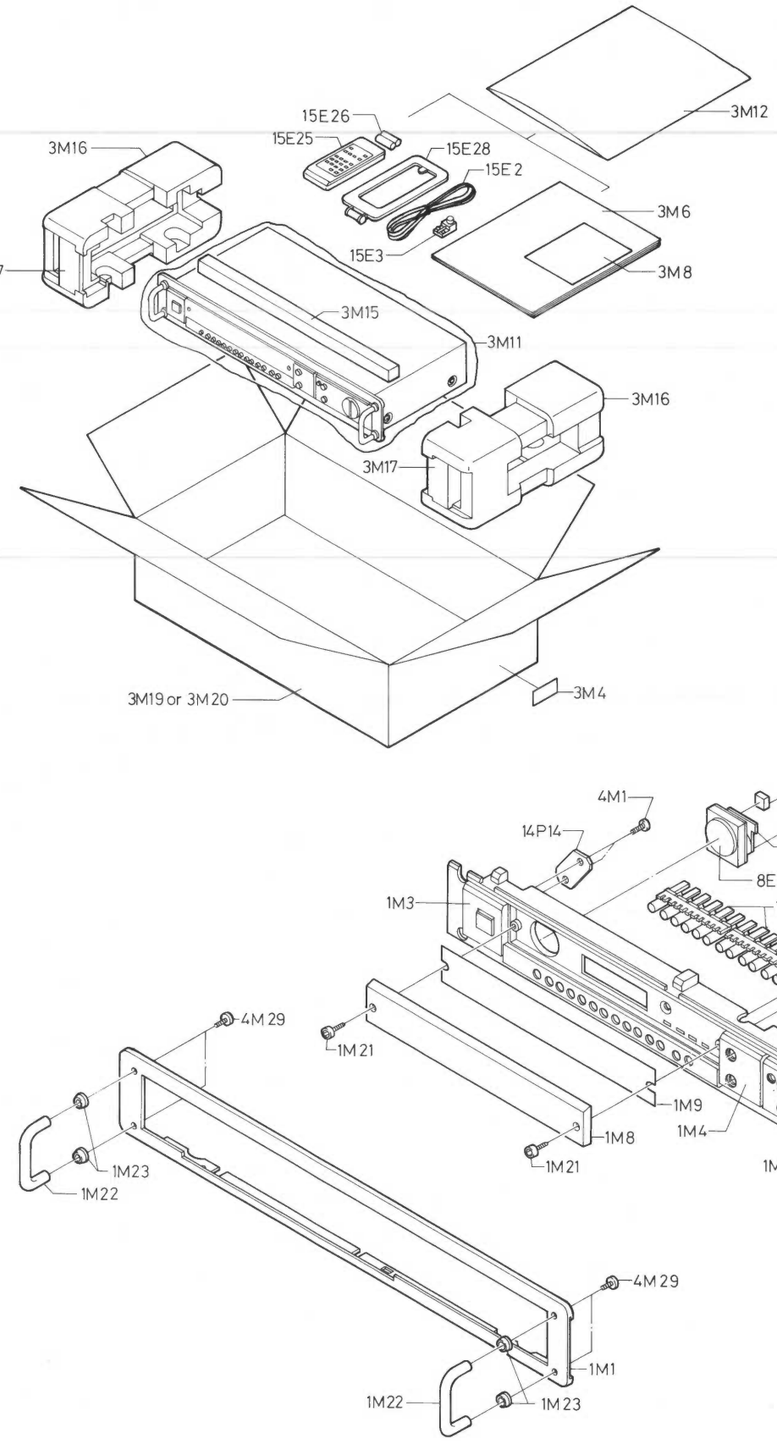


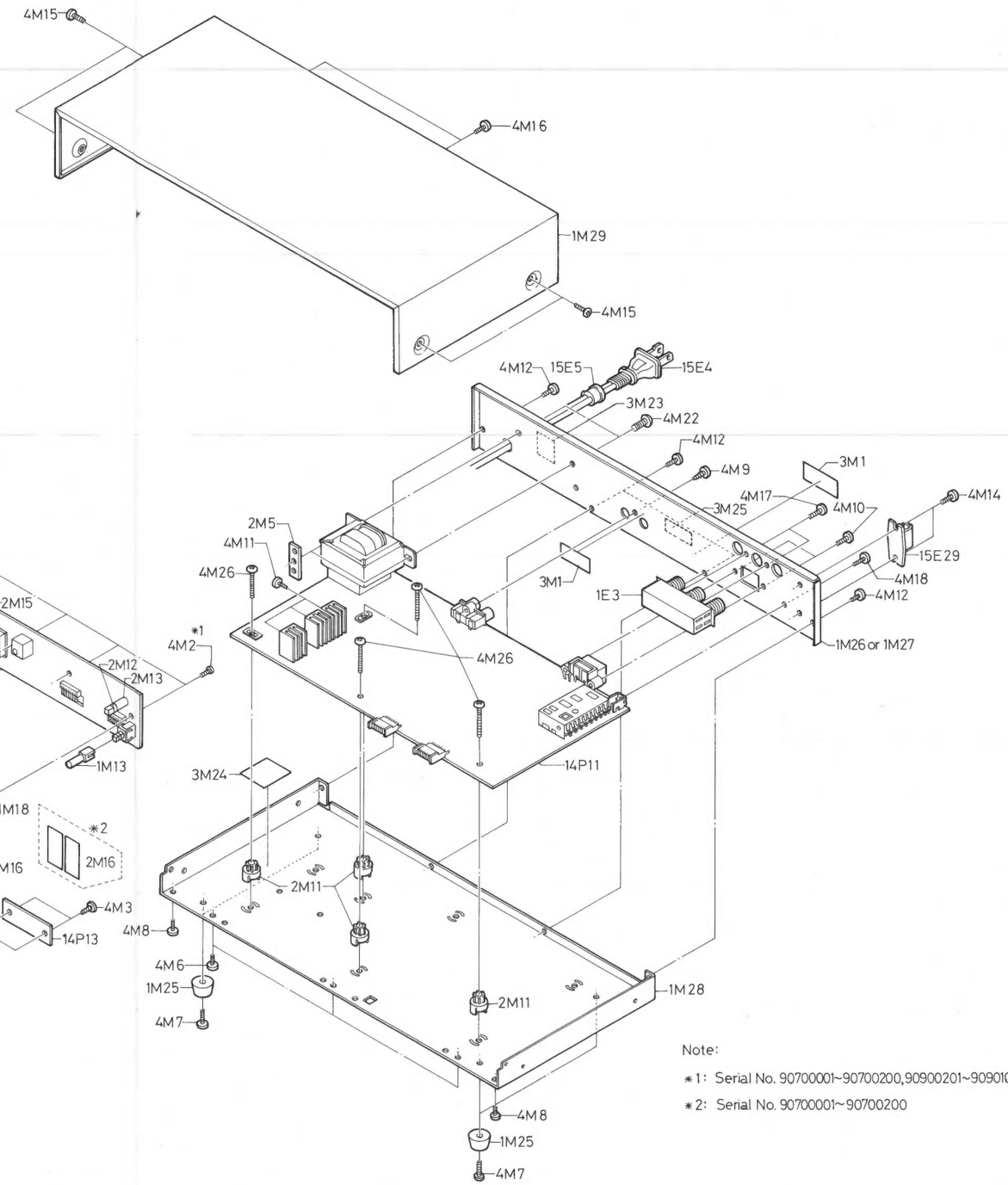
TIM-803B Tuner P.C.Board

S-803B Power Switch P.C.Board

EXPLODED VIEWS

Main Unit and Packing





Note:

*1: Serial No. 90700001~90700200, 90900201~90901000 ; 4 pieces

*2: Serial No. 90700001~90700200

PARTS LIST

TUNER PCB ASS'Y

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
P.C.BOARD			
14E11	1	TIM-803B	PRINTED CIRCUIT BOARD
SEMICONDUCTORS			
D021,022	2	KV1236Z-Z1	DIODE
D071~073, 074	3	GMA01	DIODE
D151~156	6	1N4002	DIODE
D159	1	GMA01	DIODE
D161	1	ZD50-200	ZENER DIODE,1/2W,20.0V
D162	1	ZD50-033	ZENER DIODE,1/2W,3.3V
D163	1	ZD50-090	ZENER DIODE, 1/2W, 9.0V
D302~316, 320~324	20	GMA01	DIODE
Q001	1	2SC2668-O,Y	TRANSISTOR
Q021	1	2SK161-Y,GR	TRANSISTOR
Q041	1	RN-2204	TRANSISTOR
Q043	1	2SC1815-GRBL	TRANSISTOR
Q044	1	2SK381-D,E	TRANSISTOR
Q045,071~ 074	5	2SC1815-GRBL	TRANSISTOR
Q091	1	RN-2204	TRANSISTOR
Q092,121	2	2SC1815-GRBL	TRANSISTOR
Q122	1	2SB621NC-R,S	TRANSISTOR
Q123	1	2SC1815-GRBL	TRANSISTOR
Q124	1	2SA1015-Y,GR	TRANSISTOR
Q151	1	2SB1274-R,S	TRANSISTOR
Q152	1	2SD1913-R,S	TRANSISTOR
Q154	1	2SB621NC-R,S	TRANSISTOR
Q155~157	3	2SC1815-Y,GR	TRANSISTOR
Q301,302	2	2SA1015-GR	TRANSISTOR
Q303,304	2	2SC1815-GR	TRANSISTOR
Q305,306	2	2SA1015-GR	TRANSISTOR
IC041	1	LA1266	IC
IC071	1	LA3401	IC
IC101	1	TC9172AP	IC
IC102	1	NJM2904S	IC
IC151	1	M5230L	IC
IC152	1	NJM78M05	IC
IC301~305	5	UPC4570C	IC
IC306	1	RCA3080E	IC
IC307	1	UPC4570C	IC
IC308	1	MN3010	IC
IC309,310	2	UPC4570C	IC
IC311	1	RCA3080E	IC
IC312,313	2	UPC4570C	IC
IC314	1	RCA3080E	IC
IC315~322	8	UPC4570C	IC
IC323	1	TC4011BP	IC
IC324	1	TC4013	IC
IC325	1	TC4011BP	IC
IC326	1	TC4013	IC
IC327	1	TC4071BP	IC
IC329	1	TC9215P	IC
CAPACITORS			
C002,003	2	HE70SJYF103Z	CERAMIC CAPACITOR
C004	1	HE90SJYF223Z	CERAMIC CAPACITOR
C021	1	HE40SJSL110K	CERAMIC CAPACITOR
C022	1	HE90SJYF223Z	CERAMIC CAPACITOR
C023	1	HE40SJSL100D	CERAMIC CAPACITOR
C024	1	ST-50VS451J	STYROL CAPACITOR
C032	1	HE70SJYF103Z	CERAMIC CAPACITOR
C041~043	3	HE90SJYF223Z	CERAMIC CAPACITOR
C044	1	NS-16TW221M	ELECTROLYTIC CAPACITOR
C045	1	NS-50TWR10M	ELECTROLYTIC CAPACITOR
C046	1	HE50SJCH330J	CERAMIC CAPACITOR
C047	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C049	1	HE90SJYF223Z	CERAMIC CAPACITOR
C050,051	2	NS-25TW100M	ELECTROLYTIC CAPACITOR
C053	1	NS-25TW4R7M	ELECTROLYTIC CAPACITOR
C055	1	NS-25TW100M	ELECTROLYTIC CAPACITOR
C056	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C057	1	NS-10TW221M	ELECTROLYTIC CAPACITOR
C058	1	MY-50VU102K	MYLAR CAPACITOR
C071	1	NS-16TW470M	ELECTROLYTIC CAPACITOR
C072	1	NS-50TWR22M	ELECTROLYTIC CAPACITOR
C073	1	MY-50VU473K	MYLAR CAPACITOR
C074,075	2	NS-25TW100M	ELECTROLYTIC CAPACITOR
C076	1	NS-50TWR22M	ELECTROLYTIC CAPACITOR
C077	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C078	1	NS-25TW4R7M	ELECTROLYTIC CAPACITOR
C079	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C081,082	2	HE11SJSL751J	CERAMIC CAPACITOR
C083,084	2	NS-25TW100M	ELECTROLYTIC CAPACITOR
C085,086	2	HE90SJSL511J	CERAMIC CAPACITOR
C091	1	NS-50TW3R3M	ELECTROLYTIC CAPACITOR
C101	1	HE90SJYF223Z	CERAMIC CAPACITOR
C103	1	HE70SJYF103Z	CERAMIC CAPACITOR
C104	1	NS-25TW100M	ELECTROLYTIC CAPACITOR
C105	1	LL-50TWR47M	LOW LEAK. ELECTROLYTIC CAP.
C107	1	LL-50TW1R0M	LOW LEAK. ELECTROLYTIC CAP.
C151,152	2	NS-35TW222M-KF	ELECTROLYTIC CAPACITOR!
C153	1	NS-25TW470M	ELECTROLYTIC CAPACITOR
C155	1	HE40SJSL100D	CERAMIC CAPACITOR
C156	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C158,160	2	NS-16TW470M	ELECTROLYTIC CAPACITOR
C161	1	NS-50TW100M	ELECTROLYTIC CAPACITOR
C162,163	2	NS-25TW100M	ELECTROLYTIC CAPACITOR
C165	1	NS-10TW470M	ELECTROLYTIC CAPACITOR
C301	1	HE40SJYB821K	CERAMIC CAPACITOR
C302	1	MY-50VU152J	MYLAR CAPACITOR
C303	1	HE40SJSL220K	CERAMIC CAPACITOR
C304	1	LL-50TW2R2M	LOW LEAK. ELECTROLYTIC CAP.
C305	1	MY-50VU392J	MYLAR CAPACITOR
C306	1	HE40SJYB561K	CERAMIC CAPACITOR
C307	1	MY-50VU103J	MYLAR CAPACITOR
C308	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C309	1	NS-25TW100M	ELECTROLYTIC CAPACITOR
C310	1	NS-16TW470M	ELECTROLYTIC CAPACITOR
C311	1	HE70SJYF103Z	CERAMIC CAPACITOR
C312	1	HE11SJSL681K	CERAMIC CAPACITOR
C313,314	2	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C315	1	MY-50VU122J	MYLAR CAPACITOR
C316	1	LL-25TW4R7M	LOW LEAK. ELECTROLYTIC CAP.
C317	1	MY-50VU123J	MYLAR CAPACITOR
C318	1	MY-50VU182J	MYLAR CAPACITOR
C319	1	MY-50VU333J	MYLAR CAPACITOR
C320	1	MY-50VU223J	MYLAR CAPACITOR
C321	1	MY-50VU822J	MYLAR CAPACITOR
C322~324	3	MY-50VU332J	MYLAR CAPACITOR
C325	1	MY-50VU272J	MYLAR CAPACITOR
C326	1	MY-50VU182J	MYLAR CAPACITOR
C327	1	HE11SJSL681K	CERAMIC CAPACITOR
C328,329	2	MY-50VU472J	MYLAR CAPACITOR
C330	1	HE11SJSL681K	CERAMIC CAPACITOR
C331	1	MY-50VU123J	MYLAR CAPACITOR
C332	1	ECQV1H104JZ	METALLIZED FILM CAPACITOR
C333	1	MY-50VU473J	MYLAR CAPACITOR
C334	1	MY-50VU123J	MYLAR CAPACITOR
C335	1	MY-50VU682J	MYLAR CAPACITOR
C336	1	MY-50VU223J	MYLAR CAPACITOR
C337	1	ECQV1H224JZ	METALLIZED FILM CAPACITOR
C338,339	2	ECQV1H104JZ	METALLIZED FILM CAPACITOR
C340	1	HE40SJSL220K	CERAMIC CAPACITOR
C341	1	LL-25TW4R7M	LOW LEAK. ELECTROLYTIC CAP.
C342	1	NS-25TW100M	ELECTROLYTIC CAPACITOR
C343,344	2	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C345	1	MY-50VU103J	MYLAR CAPACITOR
C346	1	ECQV1H104JZ	METALLIZED FILM CAPACITOR
C347	1	HE70SJYF103Z	CERAMIC CAPACITOR
C348	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C349	1	HE125JSL911K	CERAMIC CAPACITOR
C351	1	MY-50VU103J	MYLAR CAPACITOR
C352,353	2	HE40SJYB821K	CERAMIC CAPACITOR
C354	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
C471,472	2	MY-50VU122J	MYLAR CAPACITOR
C473,474	2	MY-50VU123J	MYLAR CAPACITOR
C475,476	2	LL-16TW220M	LOW LEAK. ELECTROLYTIC CAP.
C479,480	2	LL-25TW4R7M	LOW LEAK. ELECTROLYTIC CAP.
TC021	1	CTZ51C135	TRIMMER CAPACITOR
RESISTORS			
R001	1	KA25ST470J	CARBON RESISTOR
R003	1	KA16ST361J	CARBON RESISTOR
R004	1	KA16ST133J	CARBON RESISTOR
R005	1	KA16ST103J	CARBON RESISTOR
R006	1	KA16ST331J	CARBON RESISTOR
R007	1	KA16ST102J	CARBON RESISTOR
R008	1	KA16ST221J	CARBON RESISTOR
R009	1	KA16ST912J	CARBON RESISTOR
R010	1	KA16ST682J	CARBON RESISTOR
R011	1	KA16ST222J	CARBON RESISTOR
R012	1	KA16ST682J	CARBON RESISTOR
R021	1	KA16ST104J	CARBON RESISTOR
R022	1	KA16ST103J	CARBON RESISTOR
R027	1	KA16ST102J	CARBON RESISTOR
R031	1	KA16ST221J	CARBON RESISTOR
R040	1	KA16ST332J	CARBON RESISTOR
R041	1	KA16ST103J	CARBON RESISTOR
R042	1	KA16ST472J	CARBON RESISTOR
R043	1	KA16ST331J	CARBON RESISTOR
R044	1	KA16ST273J	CARBON RESISTOR
R045	1	KA16ST103J	CARBON RESISTOR
R047	1	KA16ST105J	CARBON RESISTOR
R048	1	KA16ST104J	CARBON RESISTOR
R049	1	KA16ST103J	CARBON RESISTOR
R050	1	KA16ST683J	CARBON RESISTOR
R051	1	KA16ST203J	CARBON RESISTOR
R052	1	KA16ST512J	CARBON RESISTOR
R053	1	KA16ST102J	CARBON RESISTOR
R054	1	KA16ST474J	CARBON RESISTOR
R055	1	KA16ST820J	CARBON RESISTOR
R056	1	KA16ST102J	CARBON RESISTOR
R073	1	KA16ST562J	CARBON RESISTOR
R074	1	KA16ST103J	CARBON RESISTOR
R075	1	KA16ST473J	CARBON RESISTOR
R076	1	KA16ST104J	CARBON RESISTOR
R078	1	KA16ST103J	CARBON RESISTOR
R079,081, 082	3	KA16ST104J	CARBON RESISTOR
R083,084	2	KA16ST332J	CARBON RESISTOR
R085,086	2	KA16ST133J	CARBON RESISTOR
R087,088	2	KA16ST101J	CARBON RESISTOR
R089,090	2	KA16ST103J	CARBON RESISTOR
R091	1	KA16ST102J	CARBON RESISTOR
R095~097	3	KA16ST104J	CARBON RESISTOR
R101	1	KA16ST101J	CARBON RESISTOR
R102	1	KA16ST473J	CARBON RESISTOR
R103	1	KA16ST104J	CARBON RESISTOR
R104	1	KA16ST223J	CARBON RESISTOR
R105	1	KA16ST822J	CARBON RESISTOR
R106	1	KA16ST331J	CARBON RESISTOR
R110	1	KA16ST332J	CARBON RESISTOR
R121,122	2	KA16ST104J	CARBON RESISTOR
R123	1	KA16ST103J	CARBON RESISTOR
R124	1	KA16ST104J	CARBON RESISTOR
R125	1	KA16ST151J	CARBON RESISTOR
R126	1	KA16ST103J	CARBON RESISTOR
R127	1	KA16ST104J	CARBON RESISTOR
R150	1	KA50XT335J	CARBON RESISTOR
R151	1	KA16ST105J	CARBON RESISTOR
R152	1	KA16ST101J	CARBON RESISTOR
R153	1	KA16ST561J	CARBON RESISTOR
R154	1	MF16ST223F	METAL FILM RESISTOR
R155	1	MF16ST392F	METAL FILM RESISTOR
R156	1	KA16ST561J	CARBON RESISTOR
R157	1	KA16ST153J	CARBON RESISTOR
R158	1	KA16ST101J	CARBON RESISTOR
R159	1	KA16ST153J	CARBON RESISTOR
R160	1	KA16ST102J	CARBON RESISTOR
R162	1	KA16ST104J	CARBON RESISTOR
R163	1	KA16ST103J	CARBON RESISTOR
R164,165, 170	3	KA16ST104J	CARBON RESISTOR
R230	1	KA16ST330J	CARBON RESISTOR
R301,302	2	KA16ST513J	CARBON RESISTOR
R303,304	2	KA16ST222J	CARBON RESISTOR
R305,306	2	KA16ST103J	CARBON RESISTOR
R307	1	KA16ST472J	CARBON RESISTOR
R308,309	2	KA16ST103J	CARBON RESISTOR
R310	1	KA16ST472J	CARBON RESISTOR
R311,312	2	KA16ST272J	CARBON RESISTOR
R313	1	KA16ST103J	CARBON RESISTOR
R314	1	KA16ST621J	CARBON RESISTOR
R315	1	KA16ST273J	CARBON RESISTOR
R316	1	KA16ST103J	CARBON RESISTOR
R317	1	KA16ST621J	CARBON RESISTOR
R318	1	KA16ST273J	CARBON RESISTOR
R319	1	KA16ST223J	CARBON RESISTOR
R320	1	KA16ST194J	CARBON RESISTOR
R321	1	KA16ST102J	CARBON RESISTOR
R322	1	KA16ST131J	CARBON RESISTOR
R323	1	KA16ST102J	CARBON RESISTOR
R324	1	KA16ST912J	CARBON RESISTOR
R325	1	KA16ST243J	CARBON RESISTOR
R326,327	2	KA16ST470J	CARBON RESISTOR
R328	1	KA16ST103J	CARBON RESISTOR
R329	1	KA16ST122J	CARBON RESISTOR
R330	1	KA16ST161J	CARBON RESISTOR
R331~333	3	KA16ST752J	CARBON RESISTOR
R334	1	KA16ST132J	CARBON RESISTOR
R335,336	2	KA16ST104J	CARBON RESISTOR
R337,338	2	KA16ST242J	CARBON RESISTOR
R339,340	2	KA16ST562J	CARBON RESISTOR
R341	1	KA16ST104J	CARBON RESISTOR
R342	1	KA16ST182J	CARBON RESISTOR
R343	1	KA16ST153J	CARBON RESISTOR
R344,345	2	KA16ST512J	CARBON RESISTOR
R346	1	KA16ST104J	CARBON RESISTOR
R347	1	KA25ST510J	CARBON RESISTOR
R348	1	KA16ST392J	CARBON RESISTOR
R349	1	KA16ST911J	CARBON RESISTOR
R350	1	KA16ST303J	CARBON RESISTOR
R351~353	3	KA16ST752J	CARBON RESISTOR
R354	1	KA16ST202J	CARBON RESISTOR
R355	1	KA16ST183J	CARBON RESISTOR
R356,357	2	KA16ST202J	CARBON RESISTOR
R358	1	KA16ST113J	CARBON RESISTOR
R359	1	KA16ST753J	CARBON RESISTOR
R360	1	KA16ST432J	CARBON RESISTOR
R361	1	KA16ST202J	CARBON RESISTOR
R362	1	KA16ST183J	CARBON RESISTOR
R363	1	KA16ST203J	CARBON RESISTOR
R364	1	KA16ST392J	CARBON RESISTOR
R365,366	2	KA16ST752J	CARBON RESISTOR
R367	1	KA16ST272J	CARBON RESISTOR
R368,369	2	KA16ST302J	CARBON RESISTOR
R370	1	KA16ST123J	CARBON RESISTOR
R371,372	2	KA16ST470J	CARBON RESISTOR
R373	1	KA16ST102J	CARBON RESISTOR
R374	1	KA16ST103J	CARBON RESISTOR
R375	1	KA16ST562J	CARBON RESISTOR
R376	1	KA16ST511J	CARBON RESISTOR
R377	1	KA16ST242J	CARBON RESISTOR
R378	1	KA16ST123J	CARBON RESISTOR
R379	1	KA16ST223J	CARBON RESISTOR
R380,381	2	KA16ST183J	CARBON RESISTOR
R382	1	KA16ST222J	CARBON RESISTOR
R383	1	KA16ST113J	CARBON RESISTOR
R384	1	KA16ST242J	CARBON RESISTOR
R385	1	KA16ST183J	CARBON RESISTOR
R386	1	KA16ST233J	CARBON RESISTOR
R387	1	KA16ST101J	CARBON RESISTOR
R388,389	2	KA16ST912J	CARBON RESISTOR
R390	1	KA16ST124J	CARBON RESISTOR
R391	1	KA16ST102J	CARBON RESISTOR
R392	1	KA16ST113J	CARBON RESISTOR
R393	1	KA25ST515J	CARBON RESISTOR
R394	1	KA16ST134J	CARBON RESISTOR
R395	1	KA16ST102J	CARBON RESISTOR
R396	1	KA16ST433J	CARBON RESISTOR
R397	1	KA16ST752J	CARBON RESISTOR
R398	1	KA16ST104J	CARBON RESISTOR
R399,400	2	KA16ST470J	CARBON RESISTOR
R401	1	KA16ST103J	CARBON RESISTOR
R402	1	KA16ST202J	CARBON RESISTOR
R403	1	KA16ST223J	CARBON RESISTOR
R404	1	KA16ST184J	CARBON RESISTOR
R405	1	KA16ST101J	CARBON RESISTOR
R406	1	KA16ST102J	CARBON RESISTOR
R407	1	KA16ST361J	CARBON RESISTOR
R408	1	KA16ST184J	CARBON RESISTOR
R409	1	KA16ST102J	CARBON RESISTOR
R410	1	KA16ST912J	CARBON RESISTOR
R411	1	KA16ST123J	CARBON RESISTOR
R412	1	KA16ST233J	CARBON RESISTOR
R414	1	KA16ST103J	CARBON RESISTOR
R415	1	KA16ST301J	CARBON RESISTOR
R416	1	KA16ST103J	CARBON RESISTOR
R417	1	KA16ST154J	CARBON RESISTOR
R418	1	KA16ST561J	CARBON RESISTOR
R419	1	KA16ST102J	CARBON RESISTOR
R420	1	KA16ST472J	CARBON RESISTOR
R421	1	KA16ST304J	CARBON RESISTOR
R422	1	KA16ST104J	CARBON RESISTOR
R423	1	KA16ST304J	CARBON RESISTOR
R425	1	KA16ST151J	CARBON RESISTOR
R426	1	KA16ST243J	CARBON RESISTOR
R427	1	KA16ST153J	CARBON RESISTOR
R428	1	KA16ST184J	CARBON RESISTOR
R429	1	KA16ST303J	CARBON RESISTOR
R432	1	KA16ST472J	CARBON RESISTOR
R433	1	KA16ST512J	CARBON RESISTOR
R434	1	KA16ST103J	CARBON RESISTOR
R435,436	2	KA16ST512J	CARBON RESISTOR
R437	1	KA16ST303J	CARBON RESISTOR
R438	1	KA16ST103J	CARBON RESISTOR
R439	1	KA16ST512J	CARBON RESISTOR
R440	1	KA16ST203J	CARBON RESISTOR
R441	1	KA16ST102J	CARBON RESISTOR
R448	1	KA16ST103J	CARBON RESISTOR
R449	1	KA16ST104J	CARBON RESISTOR
R450	1	KA16ST103J	CARBON RESISTOR
R451	1	KA16ST153J	CARBON RESISTOR
R452	1	KA16ST104J	CARBON RESISTOR
R453	1	KA16ST103J	CARBON RESISTOR
R471,472	2	KA16ST513J	CARBON RESISTOR
R473,474	2	KA16ST243J	CARBON RESISTOR
R475,476	2	KA16ST203J	CARBON RESISTOR
R477,478	2	KA16ST753J	CARBON RESISTOR
R479,480	2	KA16ST222J	CARBON RESISTOR
R481,482	2	KA16ST473J	CARBON RESISTOR
R497,498	2	KA16ST184J	CARBON RESISTOR
R501,502	2	KA16ST102J	CARBON RESISTOR
R503,504	2	KA16ST104J	CARBON RESISTOR
SVR041	1	SVR-06T3B503	SEMI-VARIABLE RESISTOR
SVR042	1	SVR-06T3B303	SEMI-VARIABLE RESISTOR
SVR043,071	2	SVR-06T3B104	SEMI-VARIABLE RESISTOR
SVR301	1	SVR-06T3B502	SEMI-VARIABLE RESISTOR
SVR302	1	SVR-06T3B203	SEMI-VARIABLE RESISTOR
SVR303	1	SVR-06T3B204	SEMI-VARIABLE RESISTOR
SVR304	1	SVR-06T3B104	SEMI-VARIABLE RESISTOR
SVR305,306	2	SVR-06T3B203	SEMI-VARIABLE RESISTOR
COILS			
L022	1	126044	MW ANT COIL
L023	1	135023	MW OSC COIL
L041	1	LAL03102K	INDUCTOR
L071,072	2	184018	FILTER BLOCK
T041	1	141039	FM DET COIL
T042	1	140058	MW IFT
T151	1	NPT-2734	POWER TRANSFORMER
SWITCHES			
SW071	1	SW-5220157	SLIDE SWITCH
SW150	1	SW-5220218	SWITCH
MISCELLANEOUS			
1E 3	1	YAA41-0039	ANTENNA SELECTOR ASS'Y
5E22	2	S-N5051	FUSE HOLDER
CF001,002	2	SFE10.7MZ1K-A	CERAMIC FILTER
CF041	1	SFP450F	CERAMIC FILTER
CF042	1	BFU450C4N	CERAMIC FILTER
CF071	1	CS8456F11	CERAMIC FILTER
CN001	1	52011-0310	CONNECTOR
CN173	1	B3B-EH-A	CONNECTOR
EL001	1	M1698	GND LUG
EL152,153	2	59BS1692	GND LUG
FE001	1	FE407-A18	FM FRONTEND
FU151	1	FU-623114-SM	FUSE
MC171,172	2	TKC-B10X-E1	PCB SOCKET
PC001	1	PC-035	RCA PIN CORD ASS'Y
RJ071	1	YKC21-2295	RCA JACK 2P
TP041,042	2	IMSA-1068-02A	MINI TERMINAL PLATE
TP043	1	RP-003	TERMINAL PIN
TP101	1	IMSA-1068-02A	MINI TERMINAL PLATE
TP304,305	2	RP-003	TERMINAL PIN
10E24	54	E050	JUMP WIRE
10E26	111	E100	JUMP WIRE
15E10	3	OSH-1625-MP	HEAT SINK
ANT001	1	YKD21-0173	ANT.TERMINAL

DISPLAY PCB ASS'Y

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
P.C.BOARD			
14E12	1	FL-803B	PRINTED CIRCUIT BOARD
SEMICONDUCTORS			
D171~184, 186,187	16	GMA01	DIODE
D191	1	SLB-55DU3F	LED
D192~195	4	SLB-55VR5F	LED
Q171,173	2	2SC1815-GRBL	TRANSISTOR
Q174	1	RN-1204	TRANSISTOR
Q175~178	4	2SC1815-GRBL	TRANSISTOR
Q179	1	RN-1204	TRANSISTOR
Q180	1	2SC1815-GRBL	TRANSISTOR
Q181	1	RN-1204	TRANSISTOR
Q182	1	2SC1815-GRBL	TRANSISTOR
IC171	1	TC9303AN-014	IC
IC172	1	LC6546C-4186	IC

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
CAPACITORS			
C171	1	HE90SJYF223Z	CERAMIC CAPACITOR
C172	1	NS-10TW221M	ELECTROLYTIC CAPACITOR
C173	1	J95R5TW222Y	ELECTROLYTIC CAPACITOR!
C174,175	2	HE50SJCH270K	CERAMIC CAPACITOR
C176	1	NS-25TW100M	ELECTROLYTIC CAPACITOR
C180	1	NS-10TW221M	ELECTROLYTIC CAPACITOR
C182,183	2	HE50SJCH300K	CERAMIC CAPACITOR
C184	1	NS-50TW1R0M	ELECTROLYTIC CAPACITOR
RESISTORS			
R171	1	KA16ST471J	CARBON RESISTOR
R172	1	KA16ST153J	CARBON RESISTOR
R173	1	KA16ST104J	CARBON RESISTOR
R175	1	KA16ST103J	CARBON RESISTOR
R176,180~189	11	KA16ST104J	CARBON RESISTOR
R191	1	KA16ST473J	CARBON RESISTOR
R197	1	KA16ST103J	CARBON RESISTOR
R199	1	KA16ST681J	CARBON RESISTOR
R200	1	KA16ST104J	CARBON RESISTOR
R201,202	2	KA16ST681J	CARBON RESISTOR
R203	1	KA16ST104J	CARBON RESISTOR
R204	1	KA16ST821J	CARBON RESISTOR
R205,206	2	KA16ST104J	CARBON RESISTOR
R207	1	KA16ST103J	CARBON RESISTOR
R209	1	KA16ST104J	CARBON RESISTOR
R210	1	KA16ST103J	CARBON RESISTOR
R211	1	KA16ST681J	CARBON RESISTOR
R212	1	KA16ST104J	CARBON RESISTOR
R213	1	KA16ST103J	CARBON RESISTOR
R214	1	KA16ST104J	CARBON RESISTOR
R217	1	KA16ST103J	CARBON RESISTOR
R218	1	KA16ST473J	CARBON RESISTOR
R219	1	KA16ST103J	CARBON RESISTOR
SWITCHES			
SW171~181, 183~185, 187~189	17	SOA-124HS	TACT SWITCH
SW191	1	ESD-11H120	SLIDE SWITCH
SW192	1	SW-1101278	PUSH SWITCH
MISCELLANEOUS			
W173	1	468S264810-J-J	4-LEAD, FLAT CABLE
W174	1	468S263908-J-J	3-LEAD, FLAT CABLE
X171	1	HC18/U7.200MHZ	QUARTZ OSCILLATOR UNIT
CF181	1	CSA3.68MG	CERAMIC OSILLATOR UNIT
CN171,172	2	TKC-B10P-E1	PCB PLUG
FL171	1	FG710F1	DISPLAY
PL181	1	80141-35853A	LAMP,12V,0.07A
RV171	1	S8X1610-51	REMOTE CONTROL RECEIVER
10E25	15	E050	JUMP WIRE
10E27	34	E100	JUMP WIRE

TUNING UP DOWN PCB ASS'Y

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
P.C.BOARD			
14E13	1	TUD-803B	PRINTED CIRCUIT BOARD
SWITCHES			
SW192,196	2	SOA-124HS	TACT SWITCH

POWER SWITCH PCB ASS'Y

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
P.C.BOARD			
14E14	1	S-803B	PRINTED CIRCUIT BOARD
SWITCHES			
SW151	1	SOA-124HS	TACT SWITCH

SIGNAL METER PCB ASS'Y

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
P.C.BOARD			
14E15	1	M-803B	PRINTED CIRCUIT BOARD
MISCELLANEOUS			
MC173	1	MZ03-771	MICRO SOCKET ASS'Y

OTHER PARTS

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
MISCELLANEOUS			
W001	1	468S263820-Z-Z	3-LEAD, FLAT CABLE
15E21	1	NO.5167	CORD CLAMP
15E22	2	BK-1	CORD CLAMP

MAIN UNIT

REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
COILS			
15E29	1	LA-75	ANT. HOLDER
MISCELLANEOUS			
1M 1	1	N21761-3	FRONT PANEL
1M 3	1	N45644-1	SUB PANEL, L
1M 4	1	N45645-1	SUB PANEL, C
1M 5	1	N31101-1	SUB PANEL, R
1M 8	1	N31095A	FRONT GLASS
1M 9	1	N31096-3	DISPLAY GLASS
1M11	1	N10543-2	FRONT BASE
1M13	1	N45646	PUSH BUTTON
1M15	2	N45668	TACT BUTTON
1M16	1	N45668-2	TACT BUTTON
1M17	1	N45668-32	TACT BUTTON
1M18	1	N45669-21	TACT BUTTON
1M19	1	N45650-1	TACT BUTTON, 33
1M21	2	N42797-BK1	DECORATION SCREW
1M22	2	BK4006A-BK1	HANDLE
1M23	4	N44092-BK1	HANDLE SPACER
1M25	4	NO.7104	FOOT
1M26	1	N21771-2	REAR PANEL
1M27	1	N21771-1	REAR PANEL
1M28	1	N10544	BOTTOM CHASSIS
1M29	1	N31102	CABINET
2M 5	2	N42722	FITTINGS (P.T.)
2M 8	2	N45652	CUSHION
2M11	4	N45651	STUD
2M12	1	BPS-304	LED SPACER
2M13	1	BPS-313	SPACER
2M15	1	N45697	CUSHION TAPE
2M16	1	N45723	KNOB CLOTH
2M18	4	N45697	CUSHION TAPE
3M 1	2	N45330	SERIAL LABEL
3M23	1	N44934A	LABEL, UL
3M24	1	N44525	LABEL, FUSE
3M25	1	N45482	LABEL, CSA FILE NO.
4M 1~M 3	9	TBB+26X08-Y	TAP SCREW B, BIND HEAD, Y
4M 6~M10	12	TBB+30X10-B	TAP SCREW B, BIND HEAD, B
4M11,M12, M14~M18	18	TSB+30X08-B	TAP SCREW S, BIND HEAD, B
4M22	2	TST+40X08-B	TAP SCREW S, TRUSS, B
4M26	4	TSC08+30X18-Y	TAP SCREW S,08WASHER FACED, Y
4M29	4	SSPS2+40X10-B	SCREW-SP ASSY, PAN HEAD,B
BE 3	1	KL216S-36	METER
15E 4	1	ACC-041E5-6GG1	LINE CORD
15E 5	1	SR-4N-4	CORD STUPPER

PACKING

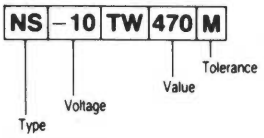
REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
COILS			
L021	1	171003	LOOP ANT
MISCELLANEOUS			
3M 4	1	N42235	SHEET, SERIAL NUMBER
3M 6	1	OM-943	INSTRUCTION MANUAL
3M 8	1	CARVER-WC	CARD,WARRANTY REGISTRATION
3M11	1	N41313-1	POLYETHYLENE BAG
3M12	1	N40487	POLYETHYLENE BAG (ACCESSORIES)
3M15	1	N45561-OS	PACKING PAD (CABI)
3M16	2	N21763-M	PACKING PAD(MAIN)
3M17	2	N21763-S	PACKING PAD(SUB)
3M19	1	N21764-3	INNER CARTON
3M20	1	N21764-6	INNER CARTON
15E 2	1	TANT-064	FM ANTENNA (CORD)
15E 3	1	YAE21-0001C	MATCHING ADAPTOR
15E25	1	RC-TX12	REMOTE CONTROL TRANSMITTER
15E26	1	UM-4-2	BATTERY

P.C.BOARD ASS'Y

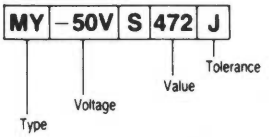
REF. NO.	Q'TY	CARVER PART NO.	DESCRIPTION
14P11	1		TUNER PCB ASS'Y
14P12	1		DISPLAY PCB ASS'Y
14P13	1		TUNING UP DOWN PCB ASS'Y
14P14	1		POWER SWITCH PCB ASS'Y
14P15	1		SIGNAL METER PCB ASS'Y

Capacitors Description

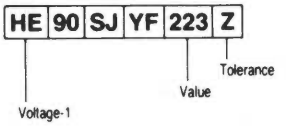
• **Electrolytic**

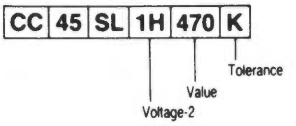


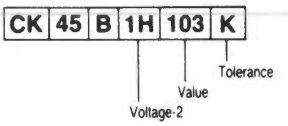
• **Mylar · Styrol**



• **Ceramic**







• **Electrolytic**

Type		Voltage		Value		Tolerance	
LL:	Low Leak	−10:	10V	R47:	0.47μF	K:	±10%
NP:	Non-Pole	−50:	50V	4R7:	4.7μF	M:	±20%
NS:	Standard	6R3:	6.3V	470:	47μF		
				471:	470μF		
				472:	4700μF		

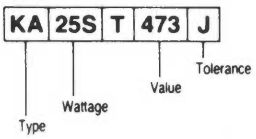
• **Mylar · Styrol**

Type		Voltage		Value		Tolerance	
MY:	Mylar	−25V:	25V	4R7:	4.7pF	G:	±2%
ST:	Styrol	125V:	125V	470:	47pF	J:	±5%
		−63T:	63V	471:	470pF	K:	±10%
				472:	4700pF	M:	±20%
				473:	0.047μF		
				474:	0.47μF		
				(1000pF=0.001μF)			

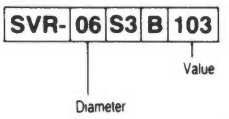
Voltage-1		Voltage-2		Value		Tolerance	
HC:	25V	1E:	25V	4R7:	4.7pF	C:	±0.25pF
HE:	50V	1H:	50V	470:	47pF	D:	±0.5pF
H:	100V	2H:	500V	471:	470pF	F:	±1pF
HK:	250V			472:	4700pF	J:	±5%
HM:	500V			473:	0.047μF	K:	±10%
				474:	0.47μF	M:	±20%
				(1000pF=0.001μF)		Z:	+80~−20%

Resistors Description

• **Fixed**



• **Semi-Variable**



Type		Wattage		Value		Tolerance		Diameter	
CE:	Cement Case	−2W:	2W	R47:	0.47Ω	M:	±20%	08:	8φ
FR:	Flame Proof	10W:	10W	4R7:	4.7Ω	K:	±10%	10:	10φ
KA:	Carbon	16S:	1/6W	470:	47Ω	J:	±5%	06:	6φ
MF:	Metal Film	20S:	1/5W	471:	470Ω	G:	±2%		
RF:	Fusible	25S:	1/4W	472:	4.7kΩ	F:	±1%		
SA:	Metal Oxide	50S:	1/2W	473:	47kΩ	D:	±0.5%		
		50X:	1/2W	474:	470kΩ				
		S3W:	3W	475:	4.7MΩ				

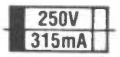
VOLTAGE CONVERSION

220 V/50 Hz Version

Bill of Materials

Q'ty	Part No.	Description
1	609-00621-01A	TX-12 FINISHED GOODS
1	315-15000-00	FUSE 250 V 150 mA
1	530-10100-00	FUSE LABEL 250 V 150 mA
1	530-10088-00	LABEL 220 V AC 50 HZ
1	530-10127-00	LABEL VOLTAGE CONVERSION
1	530-10013-00	LABEL MILITARY CONVERSION

Direction for Change

1. Locate Tuner P.C.Board. (See Fig.4 and 5)
   A. Set slide switch SW150 to 220 V.
   B. Change fuse FU151 from 250 V 315 mA to 315-15000-00 (250 V 150 mA).
   C. Put the label 530-10100-00 (250 V 150 mA) on printed in 

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TIM-803B Tuner P.C.Board

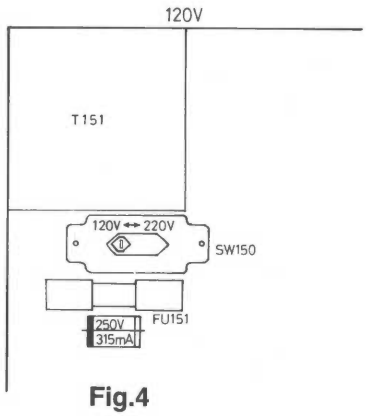


Fig.4

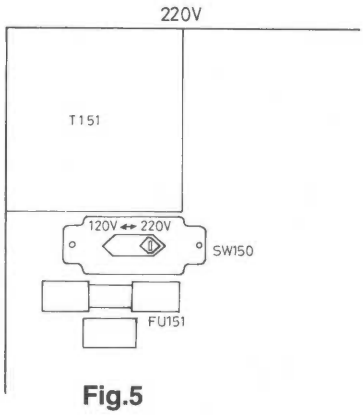


Fig.5

2. Locate CH.STEP SW191 on Display P.C.Board and set it to "EUR" for 220 V Europe frequency stepping. (See Fig.6)

3. Locate de-emphasis switch SW71 on Tuner P.C.Board and set it to "EUR" for 220 V Europe de-emphasis. (See Fig.7)

4. Apply label 530-10088-00 (220 V AC 50 HZ) in place of existing label 120 V AC 60 HZ.

5. Using spray adhesive, mount label 530-10127-00 (VOLTAGE CONVERSION) to inside top cover.

6. Apply label 530-10013-00 (MILITARY CONVERSION) to bottom of unit.

FL-803B Display P.C.Board (Foil side)

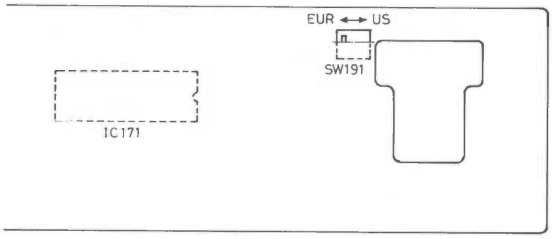


Fig.6

TIM-803B Tuner P.C.Board

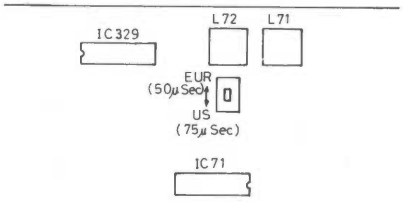
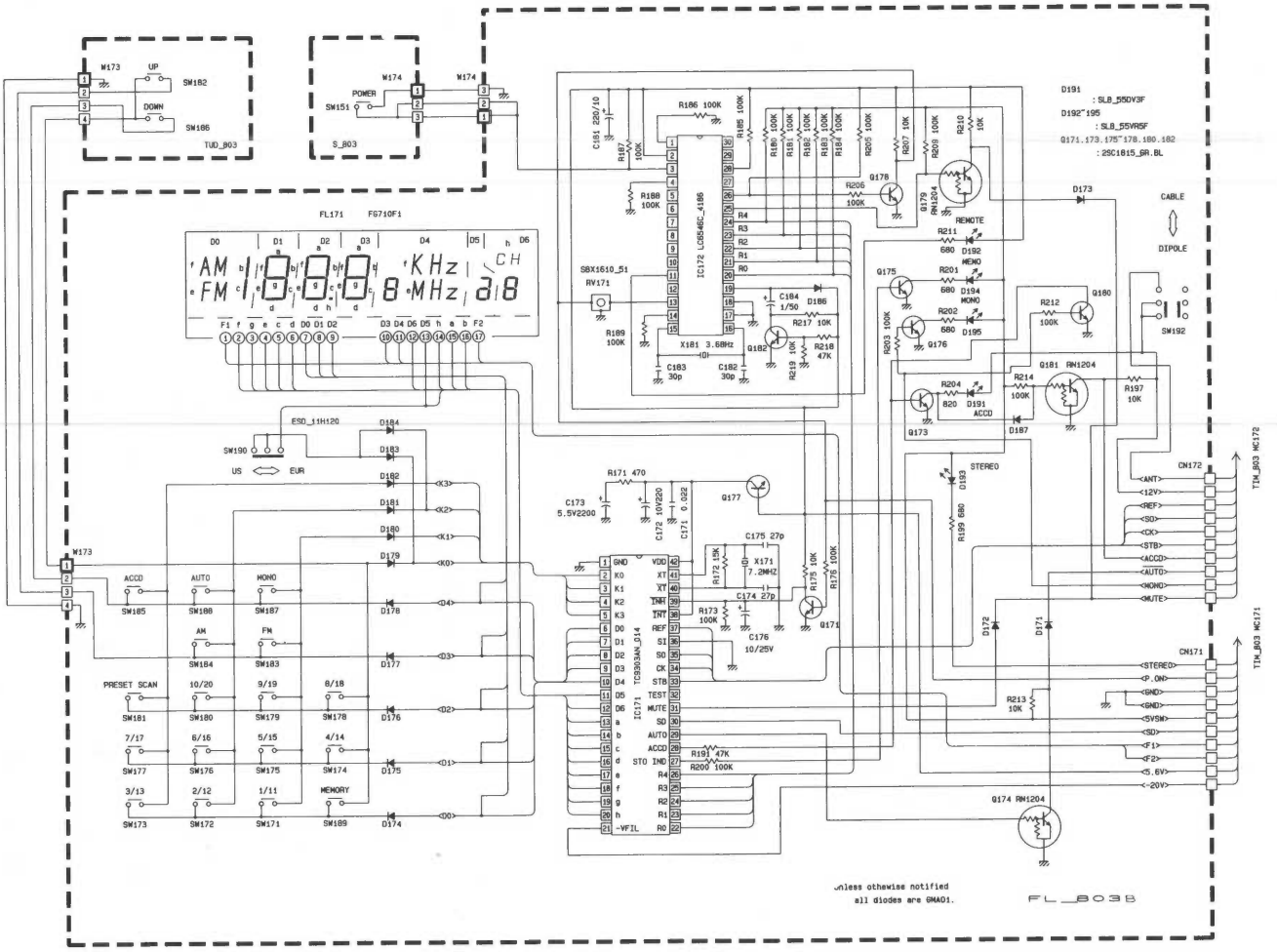
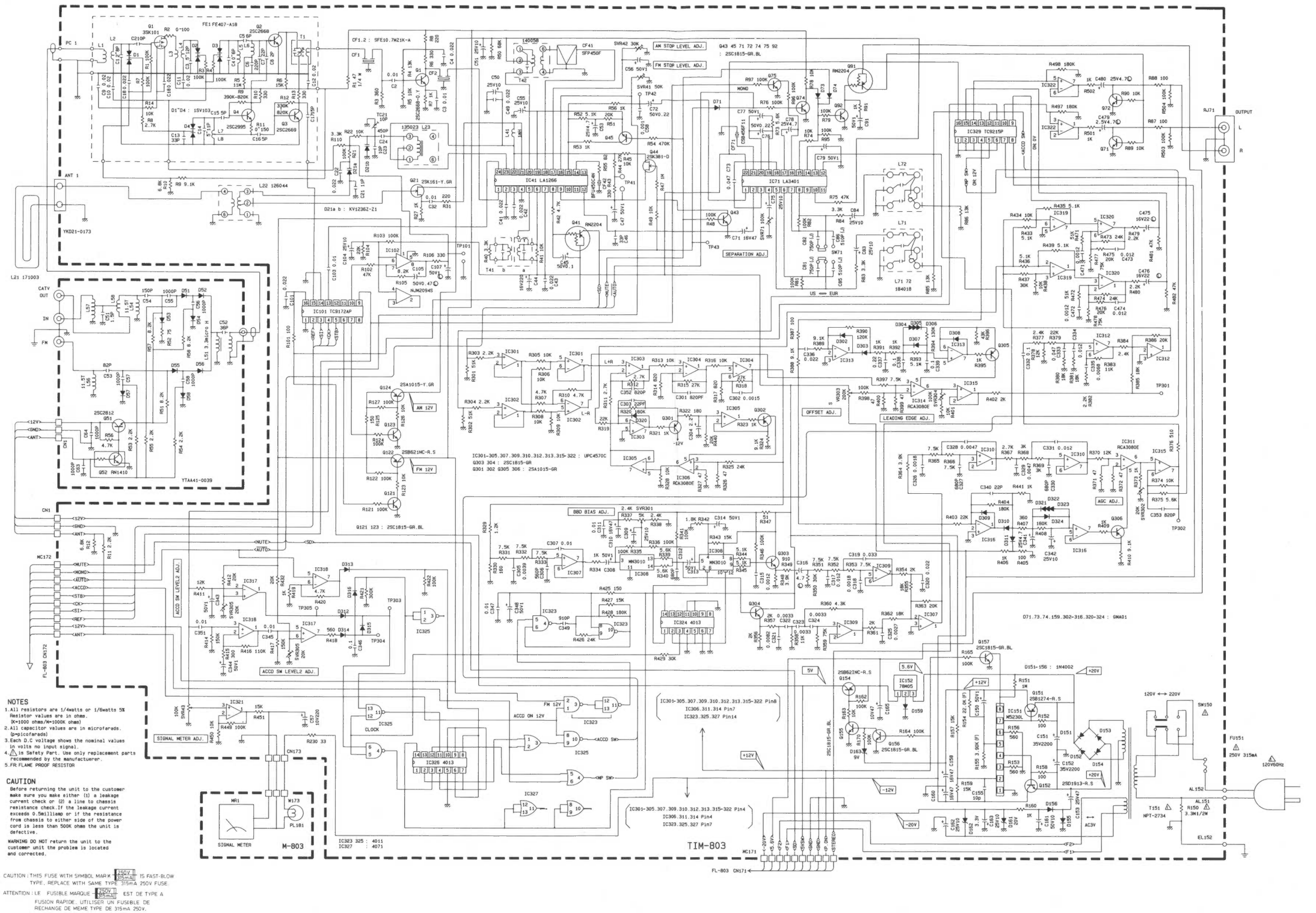


Fig.7

SCHEMATIC DIAGRAMS





NOTES

1. All resistors are 1/4watts or 1/6watts 5% Resistor values are in ohms. (K=1000 ohms/M=1000K ohms)
2. All capacitor values are in microfarads. (p=picofarads)
3. Each D.C voltage shows the nominal values in volts no input signal).
4. ⚠ is Safety Part. Use only replacement parts recommended by the manufactuerer.
5. FR: FLAME PROOF RESISTOR

CAUTION

Before returning the unit to the customer make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5milliamp or if the resistance from chassis to either side of the power cord is less than 500K ohms the unit is defective.

WARNING DO NOT return the unit to the customer unit the problem is located and corrected.

CAUTION : THIS FUSE WITH SYMBOL MARK ⚠ [250V 315mA] IS FAST-BLOW TYPE. REPLACE WITH SAME TYPE 315mA 250V FUSE.

ATTENTION : LE FUSIBLE MARQUE ⚠ [250V 315mA] EST DE TYPE A FUSION RAPIDE. UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 315mA 250V.

Note:

Printed in Japan

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