

Service Manual

**CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS**



**ORDER NO.
ARP-719-0**

FM/MW/LW DIGITAL SYNTHESIZER TUNER

F-X20ZL

F-X21ZL

(Black Version of F-X20ZL)

- This service manual is applicable to the ZEB type.
- This service manual is applicable to the F-X20ZL/ZEB and F-X21ZL/ZEB.
- F-X21ZL is the same as the F-X20ZL except for the design (color) only.
- F-X20ZL is Silver model and F-X21ZL is Black model.
- Ce manuel d'instruction se réfère au mode de réglage, en français.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

1. SAFETY INFORMATION	2	8. P.C.BOARDS CONNECTION DIAGRAM	11
2. SPECIFICATIONS	3	9. SCHEMATIC DIAGRAM	13
3. FRONT PANEL FACILITIES	3	10. ELECTRICAL PARTS LIST	15
4. PARTS LOCATION	4	11. ADJUSTMENTS	17
5. BLOCK DIAGRAM	5	11. RÉGLAGE	19
6. EXPLODED VIEW	8	11. AJUSTE	21
7. PACKING	9		

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
 TEL: (800) 421-1404, (800) 237-0424
PIONEER ELECTRONIC (EUROPE) N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
 TEL: (03) 580-9911

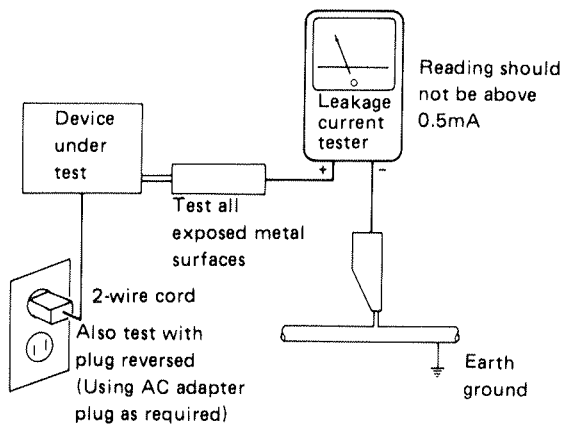
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. SPECIFICATIONS

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	11.2 dBf, IHF (1.0 V/75 ohms)
Sensitivity (DIN)	Mono: 0.75 mV/75 ohms Stereo: 31.5 mV/75 ohms
Signal-to-Noise Ratio (IHF, 85 dBf Input)	Mono: 77 dB Stereo: 73 dB
Signal-to-Noise Ratio (DIN)	Mono: 66 dB Stereo: 60 dB
Distortion	Stereo: 0.4% (1 kHz)
Alternate Channel Selectivity	67 dB (400 kHz)
Stereo Separation	40 dB (1 kHz)
Antenna Input	300 ohm balanced 75 ohm unbalanced

MW Tuner Section

Frequency range	530 kHz to 1600 kHz when 10 kHz step 531 kHz to 1602 kHz when 9 kHz step
Sensitivity (IHF, Loop antenna)	300 μ V/m
Signal-to-Noise Ratio	50 dB
Antenna	Loop Antenna

LW Tuner Section (For LW-equipped models only)

Frequency range	153 kHz to 281 kHz
-----------------	--------------------

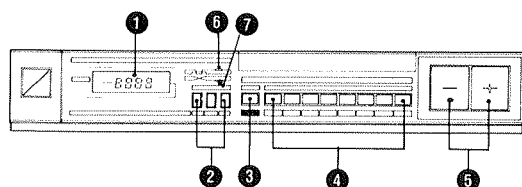
Miscellaneous

Dimensions	360(W) x 58(H) x 215(D) mm 14-3/16(W) x 2-5/16(H) x 8-7/16(D) in
Weight (without package)	1.8 kg (3 lb 16 oz)

Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Connection Cord	1

3. FRONT PANEL FACILITIES



NOTE:
The illustration is of the F-X20ZL/F-X21ZL.

1 FREQUENCY display

Permits reading the received frequency at a glance from the displayed figure. The FM band is indicated by MHz, and the AM or MW/LW band by kHz.

2 FUNCTION switch

MW: Push to receive MW band broadcasts.
LW: Push to receive LW band broadcasts.
FM: Push to receive FM band broadcasts.

Only AM/FM switching is available for the F-X20Z/F-X21Z models.

3 MEMORY switch

Push to operate the memory circuit. After the switch is pressed, the memory circuit will function for about ten seconds. During this time, press one of the STATION CALL switches to memorize the station being currently received. If more than ten seconds elapses after the MEMORY switch is pressed, no stations can be memorized. In this case, press the MEMORY switch again if you wish to memorize a station.

4 STATION CALL switches

These are used to preset and recall broadcasting stations. A total of 16 stations can be preset (FM: 8, AM (MW or LW): 8).

- To tune in to a prememorized station, push the appropriate STATION CALL switch.
- Once the stations have been preset, all you have to do to recall them is push the STATION CALL switch.

5 TUNING switches

These are used to locate the stations. Push either of these two switches; the left switch “-” to go to a lower, and the right switch “+” to go to a higher frequency.

6 TUNED indicator

This lights to indicate when the finest tuning of a station has been achieved.

7 STEREO indicator

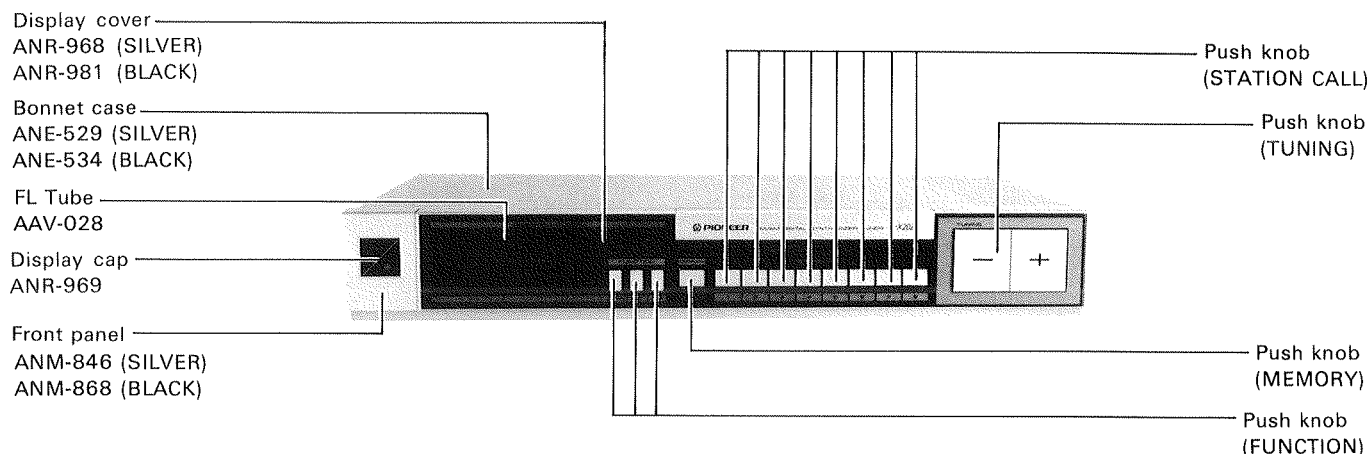
This lights when a stereo program has been picked up during an FM broadcast.

4. PARTS LOCATION

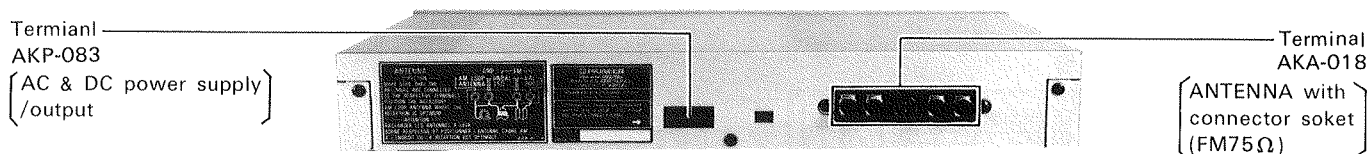
NOTES:

- The $\triangle$ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks **★★** and **★**.
★★ GENERALLY MOVES FASTER THAN ★
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

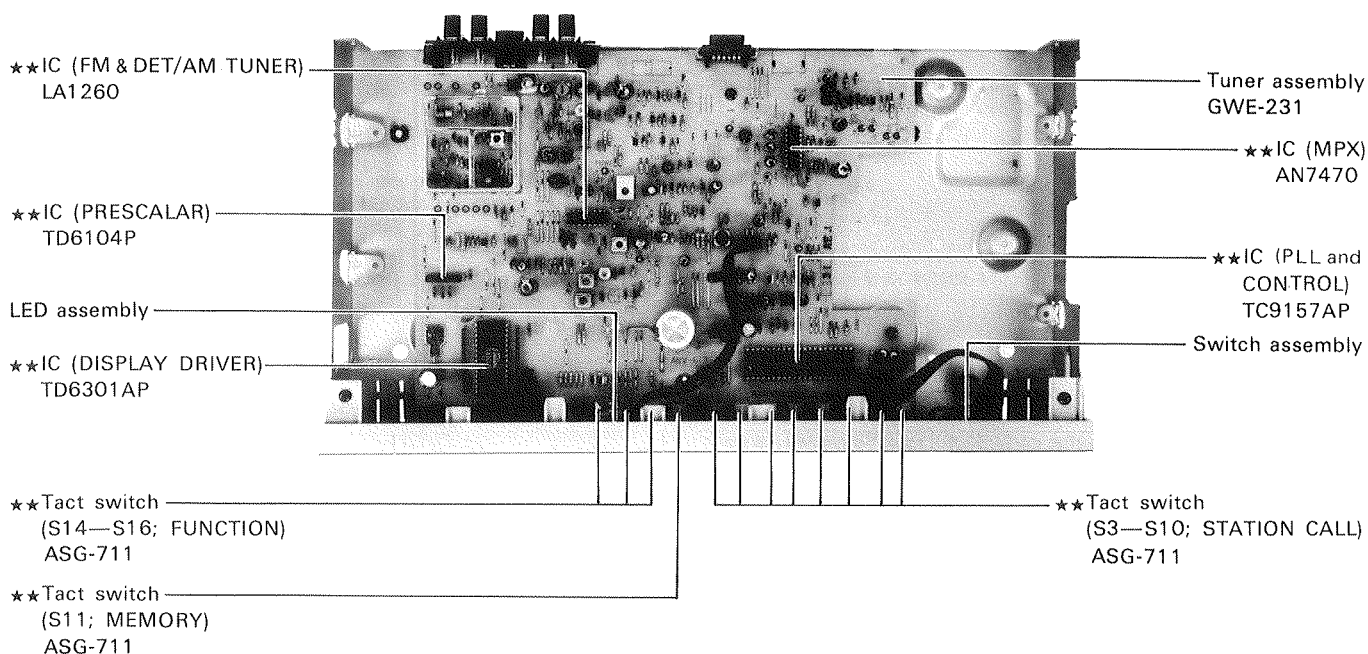
Front Panel View



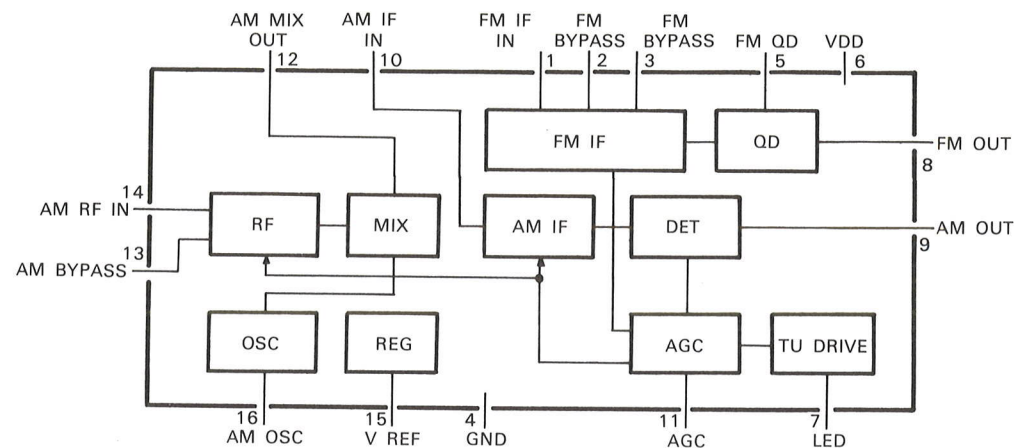
Rear Panel View



Top View



■ IC (LA1260) PIN DESCRIPTION

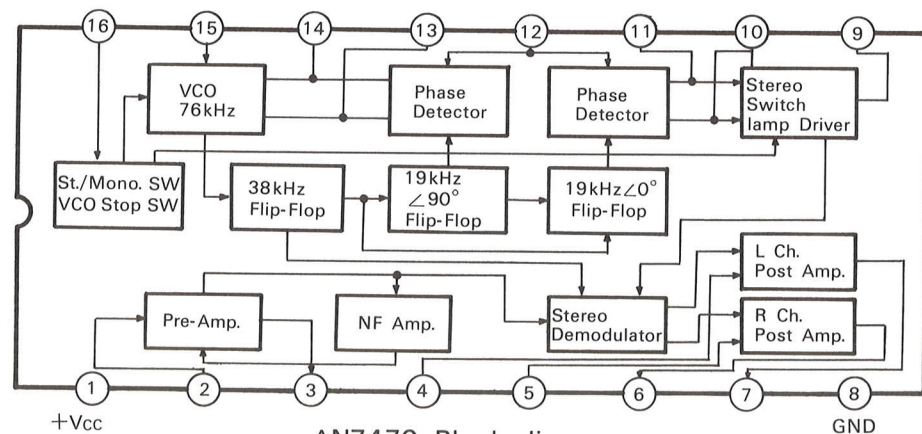


LA1260 Block diagram

Pin No.	Pin Name	Pin No.	Pin Name
1	FM-IF input	9	AMDET output
2	FM bypass capacitor connection	10	AM-IF input
3		11 ^{*2}	AGC capacitor connection
4	GND	12 ^{*3}	AM mix output
5	FM DET coil connection	13 ^{*4}	AM bypass capacitor connection
6	VCC	14	AM RF input
7 ^{*1}	LED drive terminal (TUNED)	15	Regulator output
8	FM DET output	16	AM OSC connection

- *1: Active low.
 *2: TUNED IND cannot be driven when the voltage of this pin becomes less than 0.9V. Accordingly, LED does not light up.
 *3: Pin ⑫ is turned to FM when it is opened. When the electric potential of pin ⑫ is made the same as pin ⑥ by direct current, the AM circuit is switched ON by the internal switch.
 *4: Pin ⑬ is turned to AM when it is opened. When pin ⑬ is grounded, the FM circuit is switched ON by the internal switch and AM circuit is switched OFF. At this time, pin ⑫ is connected in the same electric potential with pin ⑥.

■ IC (AN7470) PIN DESCRIPTION



AN7470 Block diagram

Pin No.	Pin Name	Pin No.	Pin Name
1	Vcc	9 ^{*1}	Stereo Indicator and VCO Freq. Monitor
2	Composite Sig. Input	10, 11	Pilot Det. Low-pass Filter
3	Buffer Amp. Output	12	Pilot Signal Input
4	L Ch. Amp. Feedback	13	PLL Low-pass Filter
5	R Ch. Amp. Feedback	14	PLL Low-pass Filter
6	R Ch. Amp. Output	15	VCO RC Time Const
7	L Ch. Amp. Output	16 ^{*2}	Forced Mono. VCO Killer
8	GND		

- *1: Active low.
 *2: VMO: ST-MONO switching voltage
 VVCO: VCO stop voltage
 ① STEREO-MONO automatic switching
 ② Compulsory MONO
 ③ VCO stop

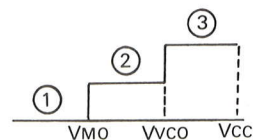


Fig. (a) Input applied to pin ⑫ of AN7470

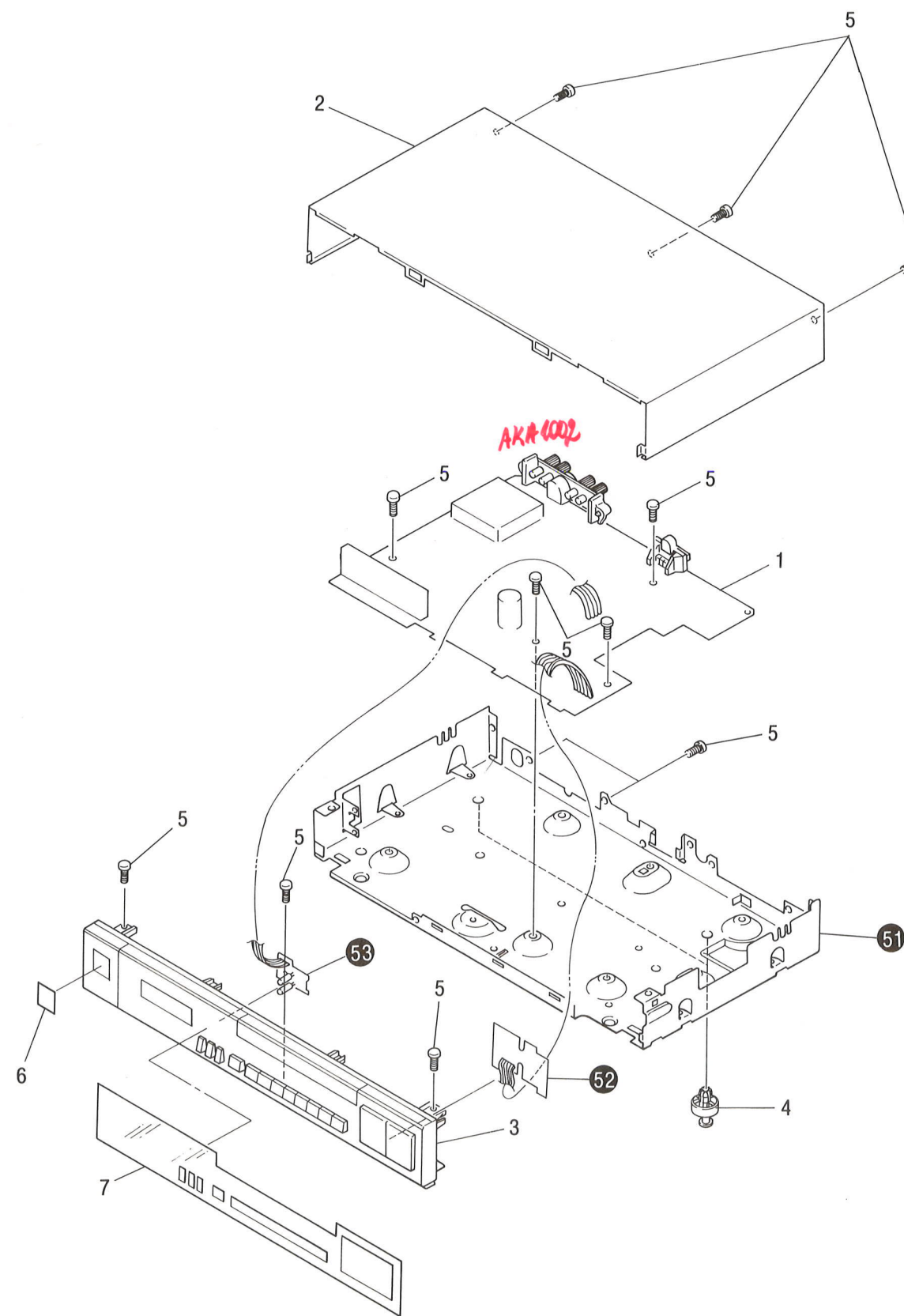
6. EXPLODED VIEW

A

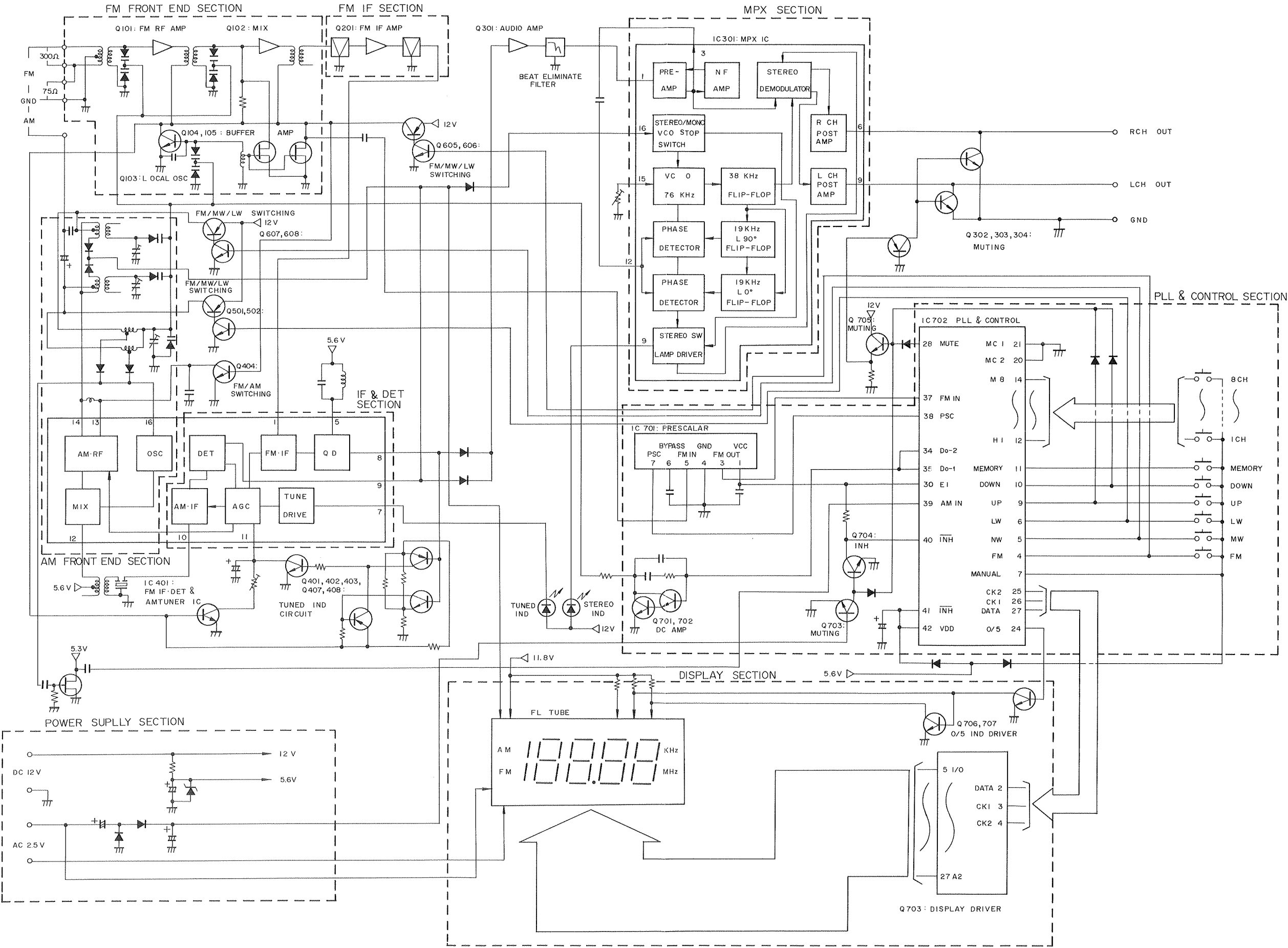
B

C

D



5. BLOCK DIAGRAM

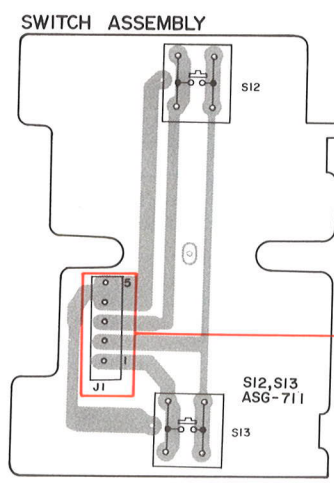
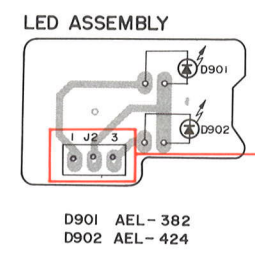


8. P.C.BOARDS CONNECTION DIAGRAM

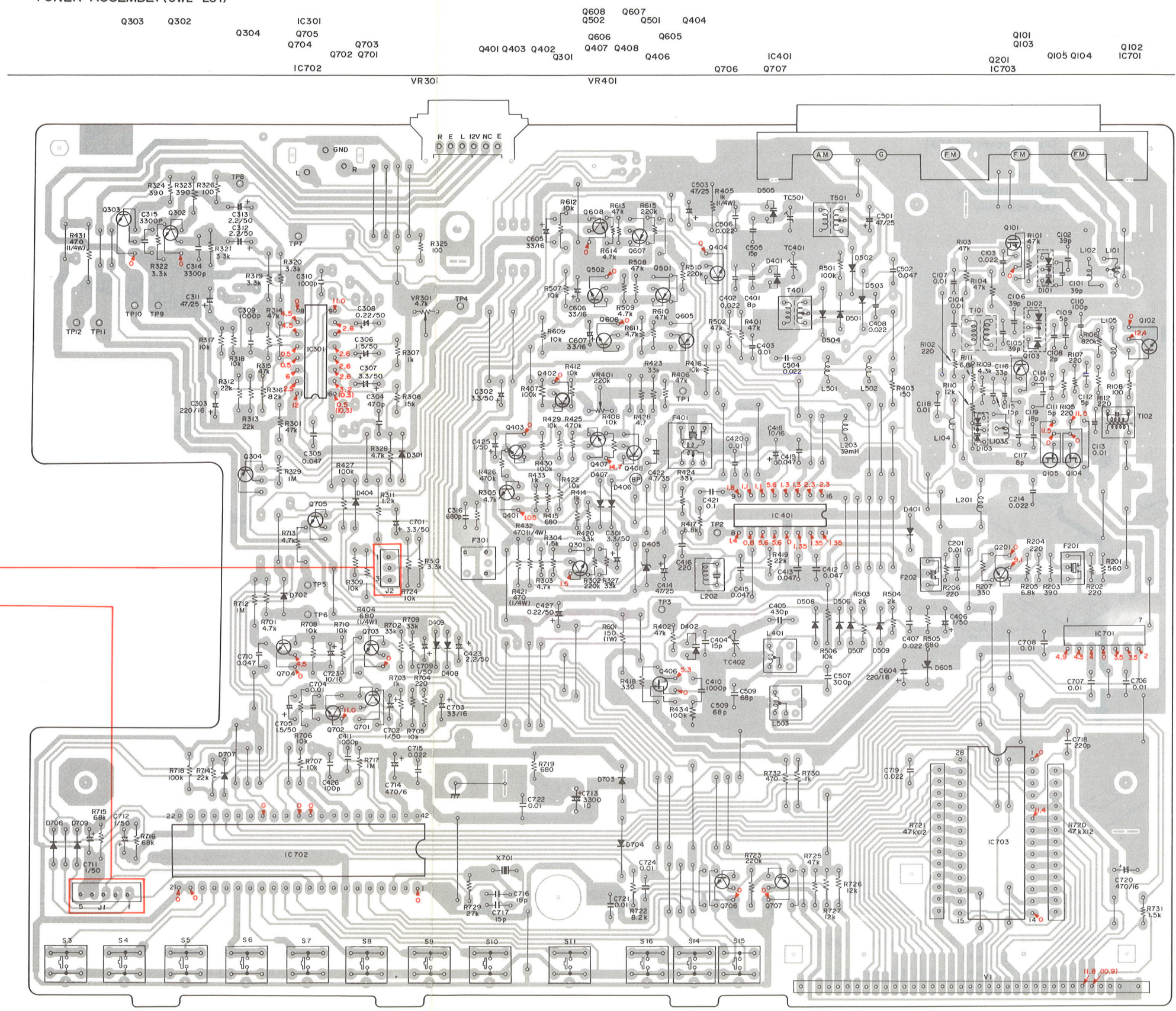
TUNER ASSEMBLY(GWE-231)

A
B
C
D

A
B
C
D

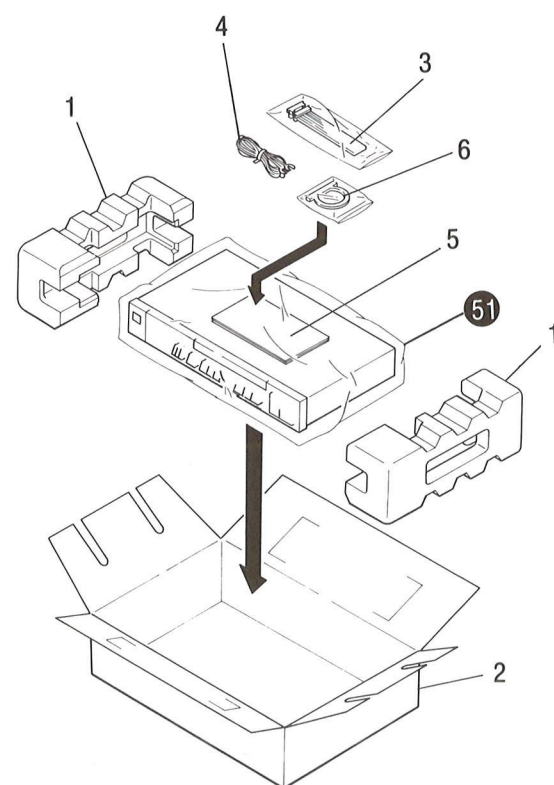


- IC 301: AN7470
- IC 401: LA1260
- IC 701: TD6104P
- IC 702: TC9157AP
- IC 703: TD6301AP
- D101, 102, 103: ISV147
- D301, 404, 406-410: RD5.6EB (HZ5.6EB)
- D401, 402, 505: SVC321C3/D3
- D503, 504, 506, 508: ISS85
- Q101: 2SK241-Y
- Q102: 2SC2786-L
- Q103, 201: 2SC2668
- Q104, 105, 406: 2SK161-Y (2SK241-Y)
- Q301, 302, 303, 502: 2SC1740S
- Q304, 407, 408, 501: 2SA933S



Mark	No.	Part No.	Description
	1	GWE-231	Tuner assembly
	2	ANE-529	Bonnet case (SILVER)
		ANE-534	Bonnet case (BLACK)
	3	ANM-846	Front panel (SILVER)
		ANM-868	Front panel (BLACK)
	4	AEC-847	Leg assembly
	5	BBZ30P080FZK	Screw
	6	ANR-969	Display cap
	7	ANR-968	Display cover (SILVER)
		ANR-981	Display cover (BLACK)
	51		Chassis
	52		Switch assembly
	53		LED assembly

7. PACKING

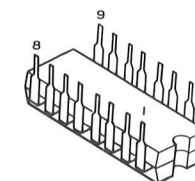


Mark	No.	Part No.	Description
	1	AHA-376	Side pad
	2	AHE-463	Packing case (SILVER)
		AHE-473	Packing case (BLACK)
	3	ADE-088	Connection flat ribbon cable
	4	ADH-005	FM antenna
	5	ARH-051	Note sheet (English, French, German, Italian)
	6	ATB-102	Loop antenna assembly
	51		Vinyl sheet

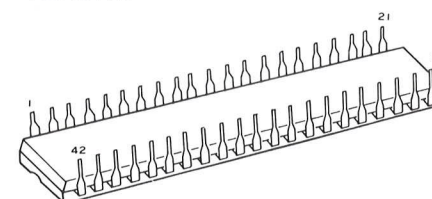
AKA100L 4P TERMINAL (SI-A40079)

External Appearance of Transistor and ICs

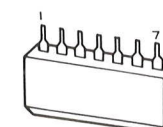
AN7470
LA1260



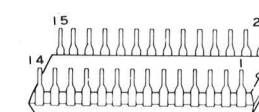
TC9157AP



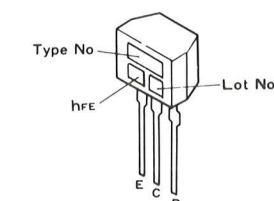
TD6104P



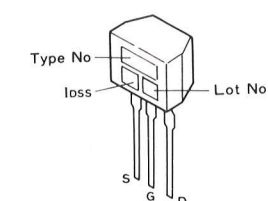
TD6301AP



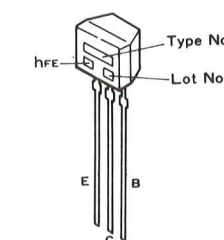
2SA933S
2SC1740S
2SC2668



2SK161-Y
2SK241-Y



2SC2786-L



*NOTE:

Since the unit may be sold as a component in combination system including model DC-X20Z/DC-X21Z and PL-X20Z/PL-X21Z or DC-X10Z/DC-X11Z and PL-X10Z/PL-X11Z, the instruction manual covers those models in combined form. The manual is packaged with models DC-X20Z/DC-X21Z or DC-X10Z/DC-X11Z.

ARE-126 DC-X20Z/DC-X21Z (English, French, German, Italian)
ARB-644 DC-X20Z/DC-X21Z (English)
ARE-127 DC-X10Z/DC-X11Z (English, French, German, Italian)
ARB-645 DC-X10Z/DC-X11Z (English)

10. ELECTRICAL PARTS LIST

- NOTES:
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
560Ω 56 × 10¹ 561.....RD¼PS 560 J
47kΩ 47 × 10³ 473.....RD¼PS 470 J
0.5Ω 0R5RN2H 050 K
1Ω 010RS1P 010 K
Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62kΩ 562 × 10¹ 5621RN¼SR 562 F
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
★★ GENERALLY MOVES FASTER THAN ★
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Tuner assembly	GWE-231
	Switch assembly	Non supply
	LED assembly	Non supply

Tuner Assembly (GWE-231) SI-A390PF

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC301	AN7470
★★	IC401	LA1260
★★	IC702	TC9157AP
★★	IC701	TD6104P
★★	IC703	TD6301AP
★	D405, D605	RD5.6EB (HZ5.6EB)
★	D401, D402, D505	SVC321C3/D3
★	D503, D504, D506, D508	1SS85
★	D101, D102, D103	1SV147
★	D301, D404, D406—D410, D501, D502, D507, D509, D702—D704, D707—D709 (1SS131)	1S1555 (US1035)
★★	Q304, Q407, Q408, Q501, Q605, Q607	2SA933S
★★	Q301—Q303, Q401—Q404, Q502, Q606, Q701—Q707, Q608	2SC1740S
★★	Q103, Q201	2SC2668
★★	Q102	2SC2786-L
★★	Q104, Q105, Q406	2SK161-Y (2SK241-Y)
★★	Q101	2SK241-Y

SWITCHES

Mark	Symbol & Description	Part No.
★★	S3—S11, S14—S16 Tact switch	ASG-711 (ASG-703)
	STATION CALL MEMORY FUNCTION	

COILS, FILTERS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	T401 AM antenna transformer	ATB-099
	L401 AM OSC coil	ATB-100
	L101 FM antenna coil	ATC-192
	L102 FM antenna coil	ATC-193
	T101 FM RF transformer	ATC-194
	L103 FM OSC coil	ATC-214
	L503 LW OSC coil	ATD-023
	T501 LW antenna transformer	ATD-027
	T102 FM coupling transformer	ATE-063
	L202 FM DET coil	ATE-072
	F202 FM ceramic filter	ATF-107
	F201 FM ceramic filter	ATF-119
	F401 AM ceramic filter	ATF-133
	F301 Beat eliminate filter	ATF-146
	L501, L502 Inductor	ATH-108
	L203 Inductor	ATH-116
	L104, L105, L201 Inductor	ATH-049

CAPACITORS

Mark	Symbol & Description	Part No.
	C713	ACH-389
	TC401, TC402 Trimmer	ACM-015
	TC501 Trimmer	ACM-020
	C716	CCCCH180J50 (CCDCH180J50)
	C509	CCCCH680J50 (CCDCH680J50)
	C416, C718	CCCSL221J50 (CCDSL221J50)
	C117, C401	CCDCH080D50
	C115, C404, C505, C717	CCDCH150J50
	C116	CCDCH330J50
	C101, C102, C105, C106	CCDRH390J50
	C108	CCDSL020C50
	C109, C111, C112	CCDSL050C50
	C110, C426	CCDSL101J50
	C119	CCDTH108J50
	C422	CEANP4R7M35
	C308, C427	CEAR22M50L
	C406, C425, C702, C709, C711, C712	CEA010M50L
	C306, C705	CEA1R5M50L
	C418, C723	CEA100M16L
	C312, C313, C423	CEA2R2M50L
	C303, C503, C604	CEA221M16L
	C301, C302, C307, C701	CEA3R3M50L
	C605, C606, C607, C703	CEA330M16L
	C311, C414, C501	CEA470M25L
	C720	CEA471M16L
	C714	CEA471M6L
	C309, C310, C410, C411	CKCYB102K50 (CKDYB102K50)
	C314, C315	CKCYB332K50 (CKDYB332K50)
	C316	CKCYB681K50 (CKDYB681K50)
	C305, C412, C413, C419, C502, C710	CKCYF473Z50 (CKDYF473Z50)
	C415	CKCYX473M25 (CKDYX473M25)
	C104, C107, C113, C114, C118, C201, C403, C420, C704, C706—C708, C721, C722, C724	CKDYF103Z50
	C103, C214, C402, C407, C408, C504, C506, C715, C719	CKDYF223Z50
	C421	CQMA104J50
	C507	CQSA301J50
	C405	CQSA431J50
	C304	CQSA471J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR401 Semi-fixed (220K)	VRTB6VS224
★	VR301 Semi-fixed (4.7K)	VRTB6VS472
⚠	R601	RS1LMF151J
	R720, R721 Resistor array	RA12S473J
	R405, R421, R431, R432, R404	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Termiani (ANTENNA with connector socket (FM75Ω))	AKA-018
	Terminal (AC and DC power supply/output)	AKP-083
★	V1 FL tube	AAV-028
	X701 Crystal resonator	ASS-025

Switch Assembly

SWITCHES

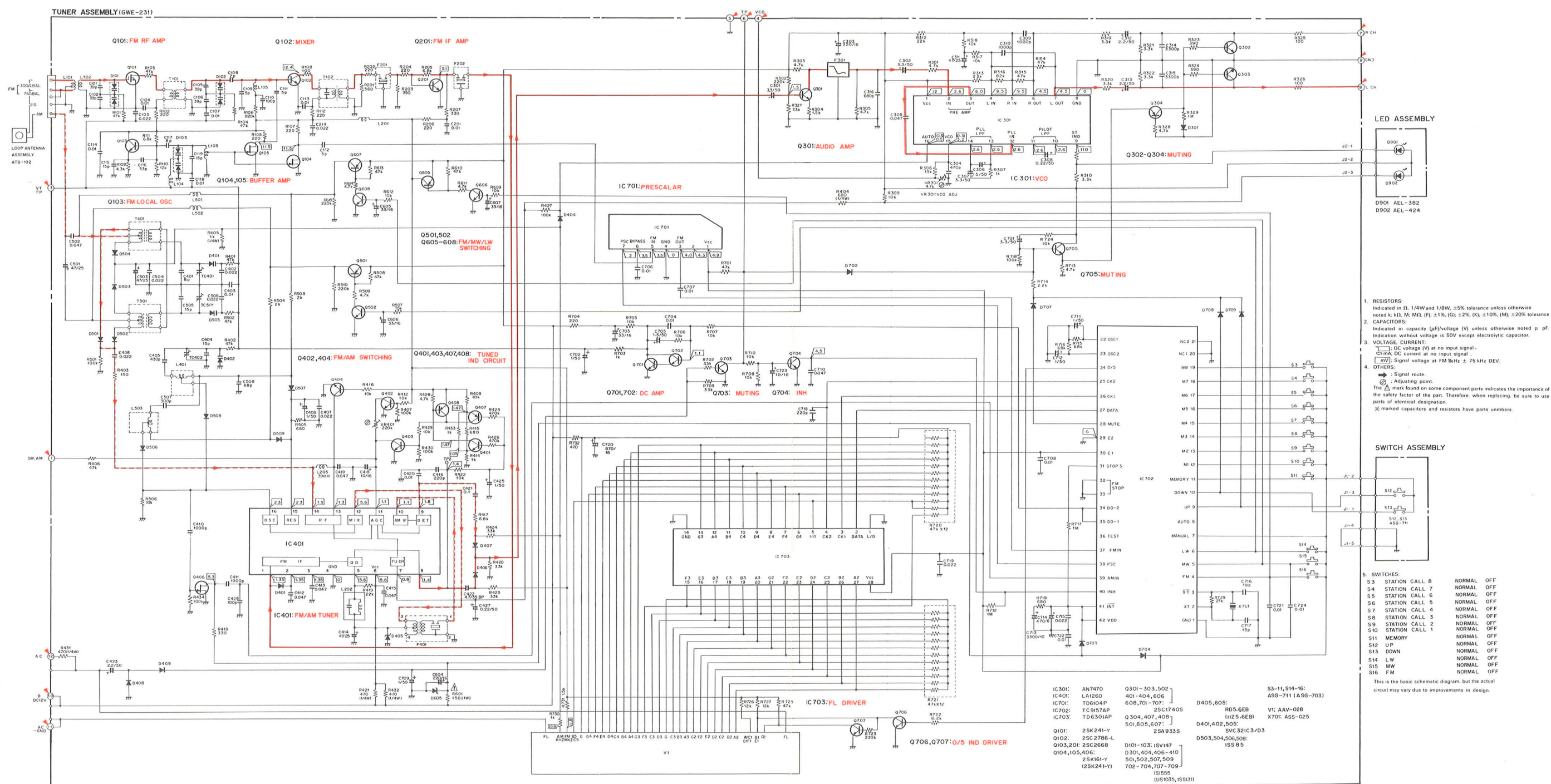
Mark	Symbol & Description	Part No.
★★	S12, S13 Tact switch (TUNING)	ASG-711 (ASG-703)

LED Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D902 LED	AEL-424
★	D901 LED	AEL-382

9. SCHEMATIC DIAGRAM



11. ADJUSTMENTS

FM Tuner Section Adjustment

- Connect up as indicated in Fig. 11-1.
- Press the FM key to set FM mode.

Note: Stereo modulation: Main 1 kHz $L+R \pm 68.25$ Hz dev.
Pilot 19 kHz ± 6.75 kHz dev.

Step No.	FM SG (1 kHz $\pm$ 75 kHz dev.)		F-X20ZL(F-X21ZL) tuned frequency display	Adjustment	
	Frequency(MHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		87.5 MHz	—	Check pin 3 (3.4V $\pm$ 1.5V) of tuner assembly.
2			108.0 MHz	—	Check pin 3 (8.7V $^{+2.5}_{-2.0}$) of tuner assembly.
3	98.0	20—30	98.0 MHz	T101, T102	Set the output from pin 1 of the tuner assembly to maximum level. (Before performing the adjustment of Step 3, turn VR401 fully counterclockwise.)
4	98.0	60	98.0 MHz	L202	Set pin 2 of tuner assembly to 1.4V (± 0.01 V)
5	98.0	80	98.0 MHz	VR401	Set pin 1 of tuner assembly to 1.1V (± 0.01 V).
		0		—	Check pin 1 of tuner assembly below 0.8V.
6	98.0	80 No modulation	98.0 MHz	VR301	Adjust the frequency at pin 4 of tuner assembly to 76kHz (± 150 Hz).
7	98.0 Stereo modulation (note)	60	98.0 MHz	T102	Minimize distortion in both left and right channel outputs (adjust T102 to within $\pm 90^\circ$).
8	98.0 Stereo modulation (note)	Variable	98.0 MHz	Confirm that the TUNED IND and STEREO IND light up when the level of FM SG is turned to high, and that the TUNED IND and STEREO IND light off when the level of the FM SG is turned to low.	

AM (MW) Tuner Section Adjustment

- Connect up as indicated in Fig. 11-2.
- Press the AM (MW) key to set AM (MW) mode.
- Set the AM CHANNEL STEP switch to the 9 kHz position. (F-X20Z/ZUC, Z model only)

Step No.	AM SG (400 Hz, 30% modulation)		F-X20ZL (F-X21ZL) tuned frequency display	Adjustment	
	Frequency (kHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		531 kHz	L401	Set pin 3 of tuner assembly to 1.3V (± 0.1 V).
2			1602 kHz	TC402	Set pin 3 of tuner assembly to 10.0V (± 0.3 V).
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	603	40	603 kHz	T401	Set the output from pin 1 of the tuner assembly to maximum level.
5	1395	40	1395 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	1395	Variable	1395 kHz	Check that the TUNING indicator comes on when the AM SG level is gradually increased.	

AM (LW) Tuner Section Adjustment

- Connect up as indicated in Fig. 11-2.
- Press the AM (LW) key to set AM (LW) mode.

Step No.	AM SG (400 Hz, 30% modulation)		F-X20ZL (F-X21ZL) tuned frequency display	Adjustment	
	Frequency(kHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		281 kHz	L503	Set pin 3 of tuner assembly to 5.2V (± 0.1 V).
2	164	40	164 kHz	T501	Set the output from pin 1 of the tuner assembly to maximum level.
3	254	40	254 kHz	TC501	
4	Repeat steps 2 and 3 until both specification ratings are satisfied.				

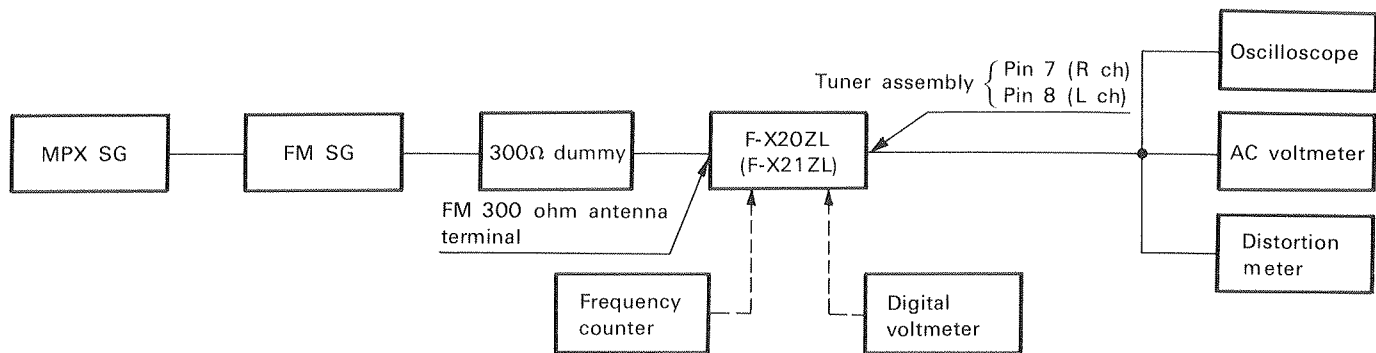


Fig. 11-1. FM adjustment connection diagram

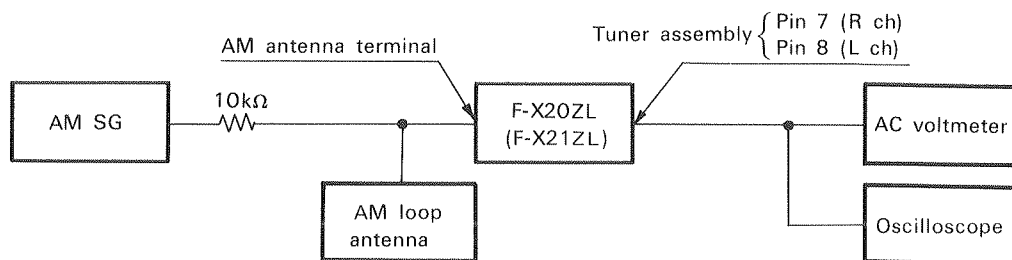


Fig. 11-2. AM adjustments connection diagram

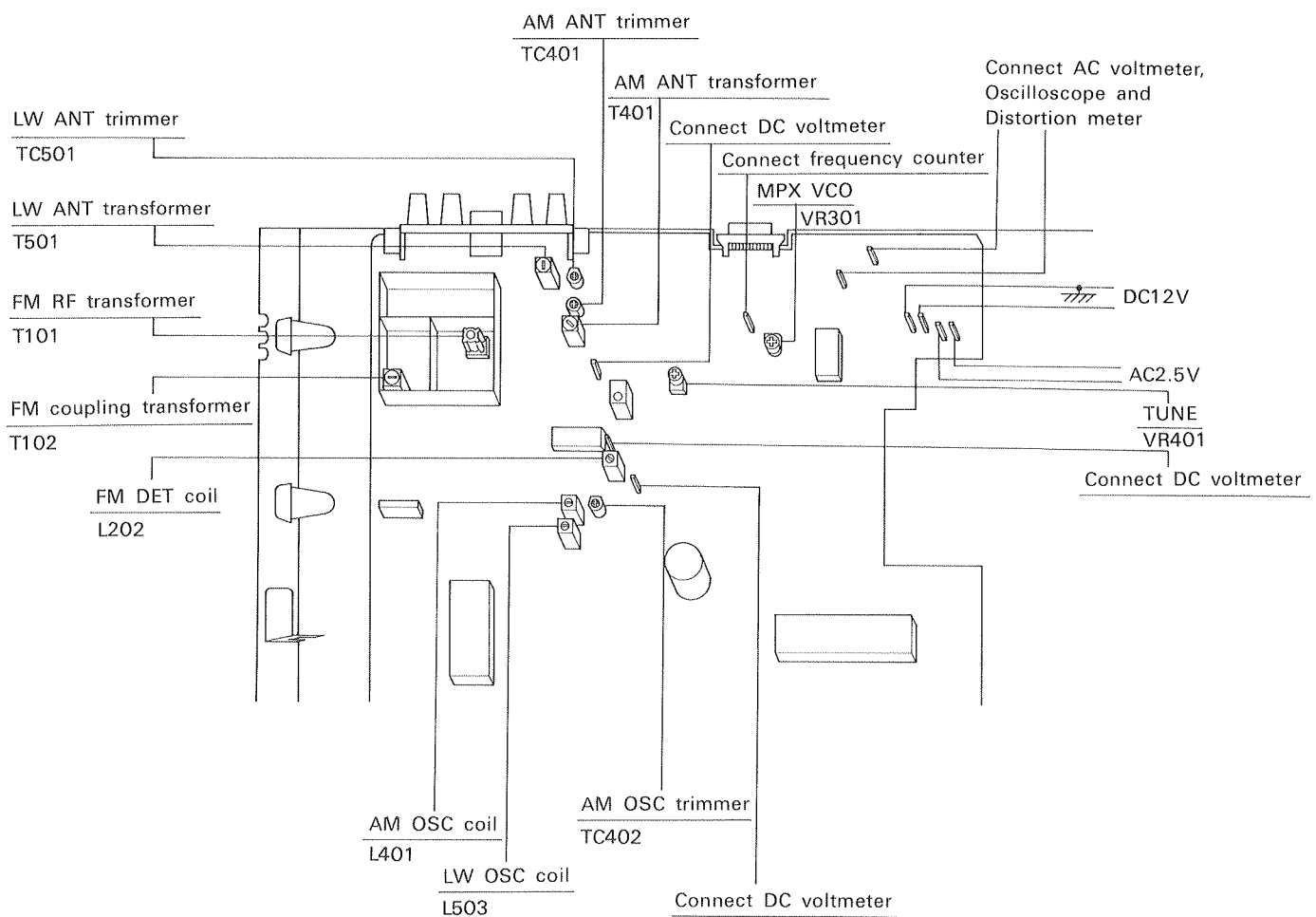


Fig. 11-3. Adjustment positions

11. RÉGLAGE

Réglage de la partie syntoniseur MF

- Faire les raccordements comme indiqué en Fig. 11-1.
- Enfoncer la touche MF pour régler en mode MF.

Note: Modulation stéréo: Principal 1 kHz L+R $\pm$ 68,25 kHz dév.
Pilote 19 kHz $\pm$ 6,75 kHz dév.

Etape N°	FM SG (1kHz, $\pm$ 75kHz dév.)		Affichage de fréquence syntonisée F-X20ZL (F-X21ZL)	Réglage	
	Fréquence (MHz)	Niveau (dB)		Lieu de réglage	Caractéristiques
1	Pas de signal d'entrée		87,5 MHz	—	Vérifier la fiche 3 (3,4V $\pm$ 1,5V) de l'ensemble syntoniseur.
2			108,0 MHz	—	Vérifier la fiche 3 (8,7V $\pm$ 2,5V / -2,0V) de l'ensemble syntoniseur.
3	98,0	20 à 30	98,0 MHz	T101, T102	Régler la puissance de la fiche 1 de l'ensemble syntoniseur au niveau maximal. (Avant d'effectuer le réglage de l'Etape 3, tourner VR401 à fond dans le sens horaire inversé.)
4	98,0	60	98,0 MHz	L202	Régler la fiche 2 de l'ensemble syntoniseur à 1,4V ($\pm$ 0,01V).
5	98,0	80	98,0 MHz	VR401	Régler la fiche 1 de l'ensemble syntoniseur à 1,1V ($\pm$ 0,01V).
		0		—	Vérifier si la fiche 1 de l'ensemble syntoniseur est en dessous de 0,8V.
6	98,0	80	98,0 MHz	VR301	Régler la fréquence de la fiche 4 de l'ensemble syntoniseur à 76 kHz ($\pm$ 150Hz).
7	98,0	60	98,0 MHz	T102	Réduire la distorsion dans les sorties des deux canaux droit et gauche (régler T102 à $\pm$ 90°).
8	98,0	Variable	98,0 MHz	Confirmer que le TUNED IND et le STEREOIND s'allument lorsque le niveau de FM SG est syntonisé trop haut, et que le TUNED IND et STEREOIND sont éteints lorsque le niveau de FM SG est syntonisé trop bas.	

Réglage de la partie syntoniseur MA (MW)

- Faire les raccordements comme indiqué en Fig. 11-2.
- Enfoncer la touche MA (MW) pour régler en mode MA (MW).
- Régler le commutateur MA CHANNEL STEP en 9ème position. (F-X20Z/ZUC, seulement modèle Z)

Etape N°	AM SG (400Hz, 30% modulation)		Affichage de fré- quence syntonisée F-X20ZL (F-X21ZL)	Réglage	
	Fréquence (kHz)	Niveau (dB)		Lieu de réglage	Caractéristiques
1	Pas de signal d'entrée		531 kHz	L401	Régler la fiche 3 de l'ensemble syntoniseur à 1,3V (±0,1 V).
2			1602 kHz	TC402	Régler la fiche 3 de l'ensemble syntoniseur à 10,0V (±0,3V).
3	Répéter les Etapes 1 et 2 jusqu' à ce que les taux nominaux préconisés soient atteints.				
4	603	40	603 kHz	T401	Régler la puissance de la fiche 1 de l'ensemble syntoniseur au niveau maximal.
5	1395	40	1395 kHz	TC401	
6	Répéter les Etapes 4 et 5 jusqu' à ce que les taux nominaux préconisés soient atteints.				
7	1395	Variable	1395 kHz	Vérifier si l'indicateur TUNING s'allume lorsque le niveau de AM SG augmente graduellement.	

Réglage de la partie syntoniseur MA (LW)

- Faire les raccordements comme indiqué en Fig. 11-2.
- Enfoncer la touche MA (LW) pour régler en mode MA (LW).

Etape N°	AM SG (400Hz, 30% modulation)		Affichage de fré- quence syntonisée F-X20ZL (F-X21ZL)	Réglage	
	Fréquence (kHz)	Niveau (dB)		Lieu de réglage	Caractéristiques
1	Pas de signal d'entrée		281 kHz	L503	Régler la fiche 3 de l'ensemble syntoniseur à 5,2V (±0,1V).
2	164	40	164 kHz	T501	Régler la puissance de la fiche 1 de l'ensemble syntoniseur au niveau saximal.
3	254	40	254 kHz	TC501	
4	Répéter les Etapes 2 et 3 jusqu' à ce que les taux nominaux préconisés soient atteints.				

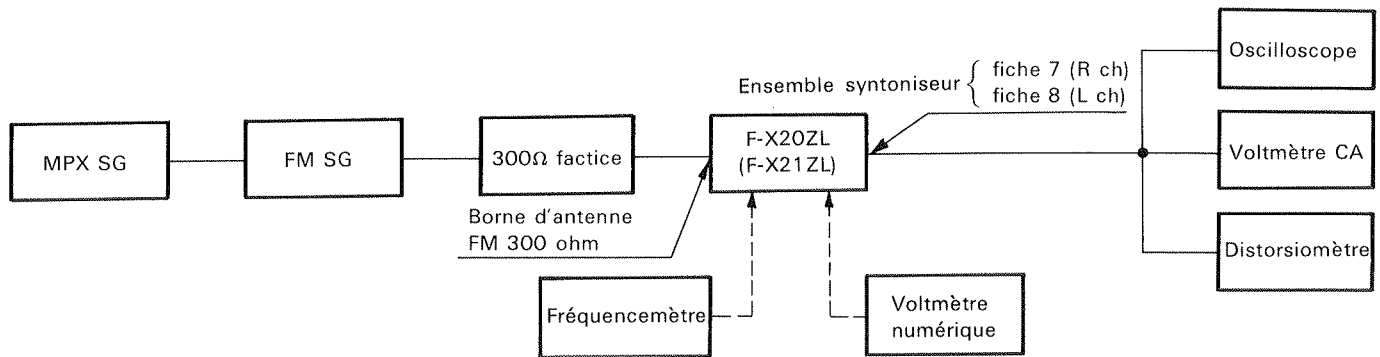


Fig. 11-1 Diagramme de raccordement de réglage MF

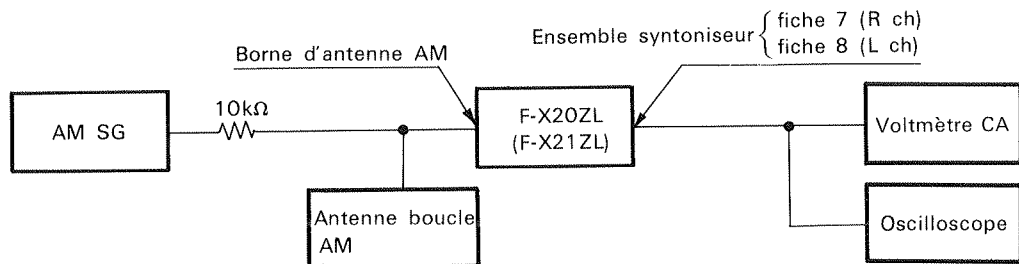


Fig. 11-2 Diagramme de raccordement de réglage MA

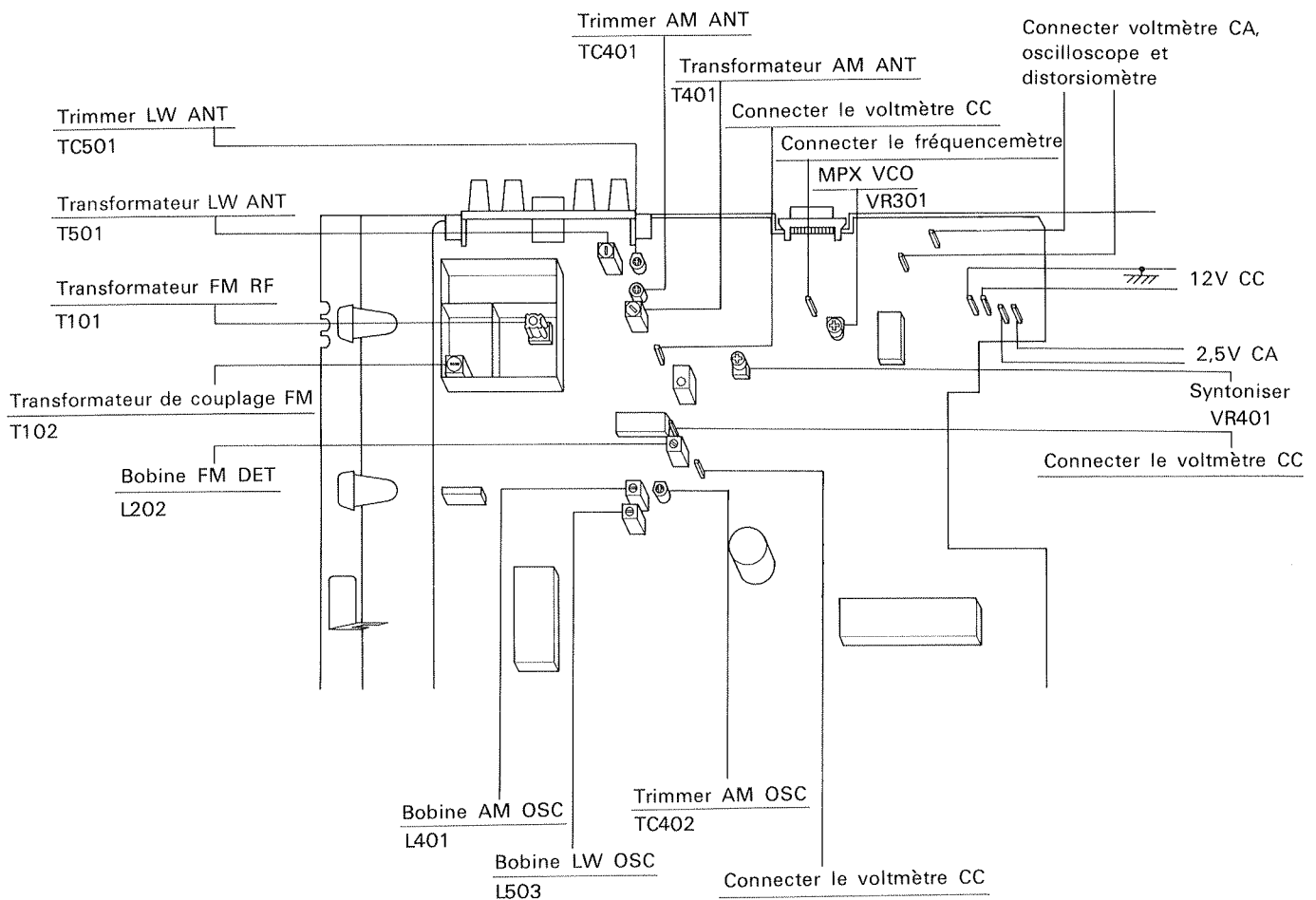


Fig. 11-3 Positions de réglage

11. AJUSTE

Ajuste de la sección del sintonizador de FM

- Conecte como es indicado en la Fig. 11-1.
- Oprima la tecla de FM para fijar el mode de FM.

Nota: Modulación estero: Principal 1 kHz L+R $\pm$ 68,25 kHz dev.
Piloto 19kHz $\pm$ 6,75 kHz dev.

No. de paso	FM SG (1 kHz, $\pm$ 75 kHz dev.)		Visualización de frecuencia sintonizada F-X20ZL (F-X21ZL)	Ajuste	
	Frecuencia (MHz)	Nivel (dB)		Lugar de ajuste	Especificaciones
1	No hay señal de entrada		87,5 MHz	—	Inspeccione la patilla 3 del conjunto del sintonizador (3,4 $\pm$ 1,5V).
2			108,0 MHz	—	Inspeccione la patilla 3 del conjunto del sintonizador (8,7V $\pm$ 2,5V _{-2,0}).
3	98,0	20 a 30	98,0 MHz	T101, T102	Fije la salida de la patilla 1 del conjunto del sintonizador al máximo nivel. (Antes de efectuar ajuste del paso 3, gire VR401 completamente en contra del sentido de las manecillas del reloj).
4	98,0	60	98,0 MHz	L202	Fije la patilla 2 del conjunto del sintonizador a 1,4V $\pm$ 0,01V).
5	98,0	80		VR401	Fije la patilla 1 del conjunto del sintonizador a 1,1V ($\pm$ 0,01V).
		0		—	Inspeccione la patilla 1 del conjunto del sintonizador que eata abajo de 0,8V.
6	98,0 Sin modulación	80	98,0 MHz	VR301	Ajuste la frecuencia en la patilla 4 del conjunto del sintonizador a 76kHz ($\pm$ 150Hz).
7	98,0 Modulación estero (Nota)	60	98,0 MHz	T102	Reduzca la distorsión tanto en la salida del canal izquierdo como en la del derecho (ajuste T102 a dentro de $\pm$ 90°).
8	98,0 Modulación estero (Nota)	Variable	98,0 MHz	Confirme que se enciendan el IND STEREO y el IND TUNED cuando el nivel de FM SG es girado a alto, y que los anteriores IND STEREO y IND TUNED se apaguen cuando el nivel de FM SG es girado a bajo.	

Ajuste de la sección del sintonizador de AM (MW)

- Conecte como es indicado en la Fig. 11-2.
- Oprima la tecla AM (MW) para fijar el mode AM (MW).
- Fije el interruptor de AM CHANNEL STEP (paso de canal de AM) a la posición de 9 kHz. (F-X20Z/ZUC, sole el modo Z)

No. de Paso	AM SG (400 Hz, 30% modulación)		Visualización de frecuencia sintonizada F-X20ZL (F-X21ZL)	Ajuste	
	Frecuencia (kHz)	Nivel (dB)		Lugar de ajuste	Especificaciones
1	No hay señal de entrada		531 kHz	L401	Fije la patilla 3 del conjunto del sintonizador a 1,3V ($\pm 0,1V$).
2			1602 kHz	TC402	Fije la patilla 3 del conjunto del sintonizador a 10,0V ($\pm 0,3V$).
3	Repita los pasos 1 y 2 hasta que ambos valores nominales especificados sean satisfechos.				
4	603	40	603 kHz	T401	Fije la salida de la patilla 1 del conjunto del sintonizador al máximo nivel.
5	1395	40	1395 kHz	TC401	
6	Repita los pasos 4 y 5 hasta que ambos valores nominales especificados sean satisfechos.				
7	1395	Variable	1395 kHz	Inspeccione que el indicador de TUNING (sintonización) se encienda cuando se aumenta gradualmente el nivel de AM SG.	

Ajuste de la sección del sintonizador de AM (LW).

- Conecte como es indicado en la Fig. 11-2.
- Oprima la tecla AM (LW) para fijar el mode AM (LW).

No. de paso	AM SG (400 Hz, 30% modulación)		Visualización de frecuencia sintonizada F-X20ZL (F-X21ZL)	Ajuste	
	Frecuencia (kHz)	Nivel (dB)		Lugar de ajuste	Especificaciones
1	No hay señal de entrada		281 kHz	L503	Fije la patilla 3 del conjunto del sintonizador a 5,2V ($\pm$ 0,1V).
2	164	40	164 kHz	T501	Fije la salida de la patilla 1 del conjunto del sintonizador al máximo nivel.
3	254	40	254 kHz	TC501	
4	Repita los pasos 2 y 3 hasta que ambos valores nominales especificados sean satisfechos.				

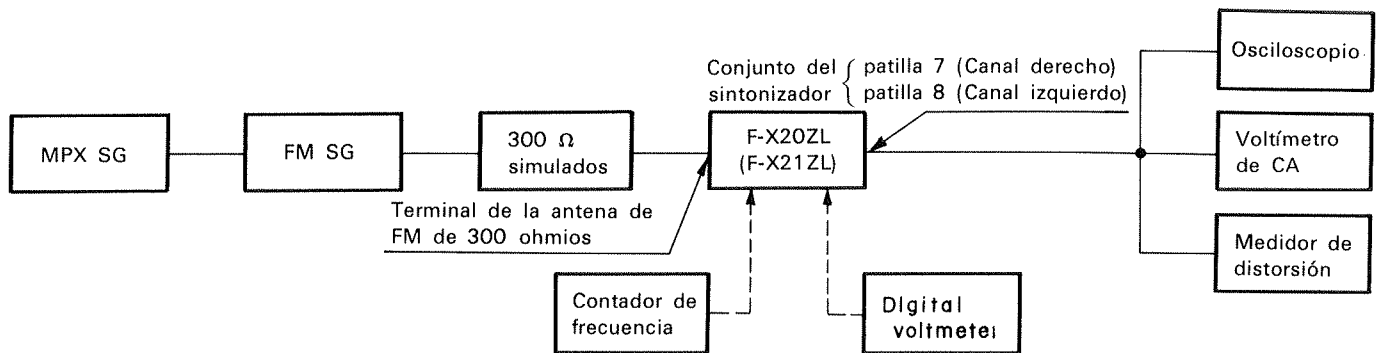


Fig. 11-1 Diagrama de conexión de ajuste de FM

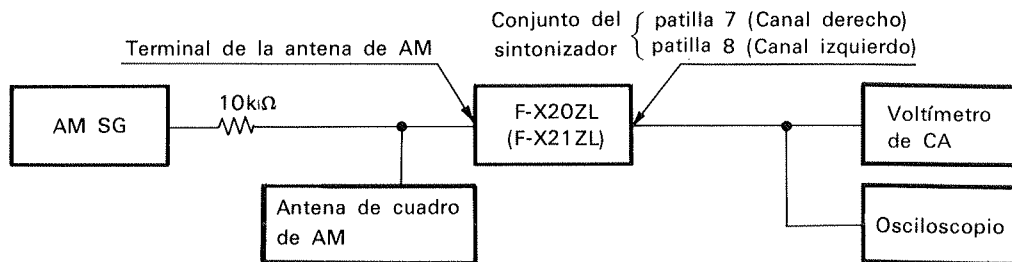


Fig. 11-2 Diagrama de conexión de ajuste de AM

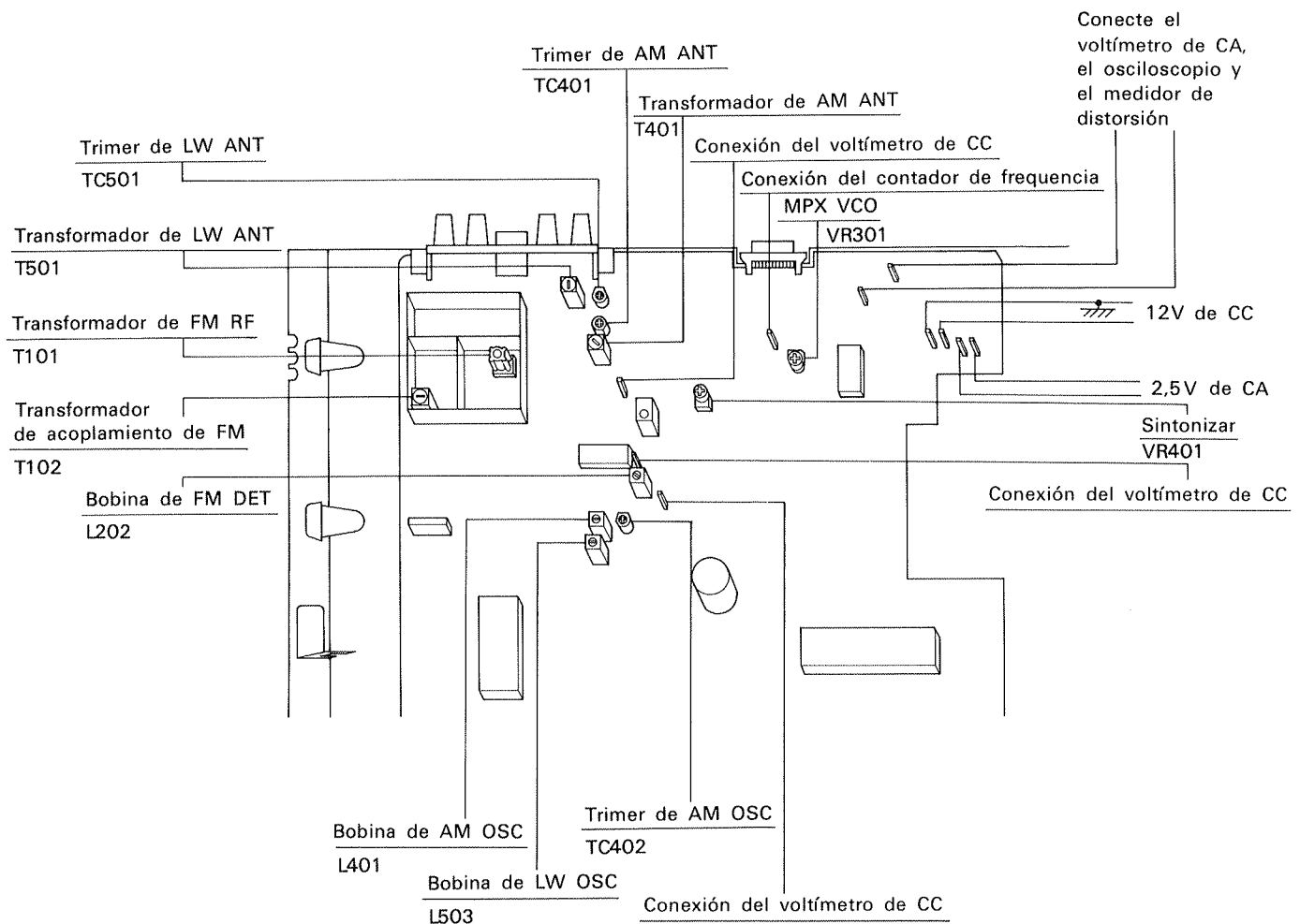


Fig. 11-3 Puntos de ajuste