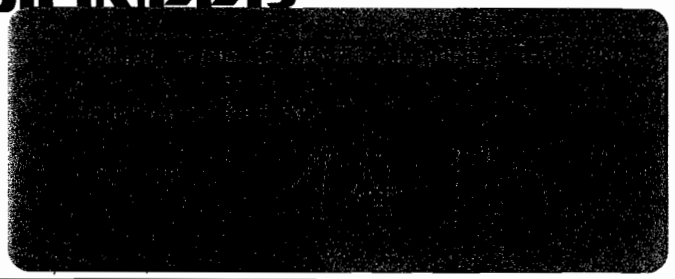
297

XP 297

Service Manual

PIONEER



The photo shows the model GEX-T5/EW.

ORDER NO.
CRT1058

CENTRATE COMPONENT CAR STEREO FM/MW/LW HIDE-AWAY TUNER

GEX-T5 EW

GEX-T5SDK WG

CENTRATE COMPONENT CAR STEREO FM/AM HIDE-AWAY TUNER

GEX-T5 ES

SPECIFICATIONS

General

Power source ..... DC 14.4 V (10.8 – 15.6 V allowable)
Grounding system ..... Negative type
Dimensions ..... 178(W) x 25(H) x 150(D) mm
Output level rating ..... 100 mV
Output impedance ..... 1 kΩ
Weight ..... 0.7 kg

FM tuner

Frequency range ..... 87.5 – 108 MHz
Usable sensitivity ..... 12 dBf (1.1 μV/75Ω, mono)
50 dB quieting sensitivity ..... 17 dBf (1.9 μV/75Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW (AM) tuner

Frequency range ..... 531 – 1,602 kHz
Usable sensitivity ..... 20 μV (26 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner (EW model)

Frequency range ..... 153 – 281 kHz
Usable sensitivity ..... 30 μV (30 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

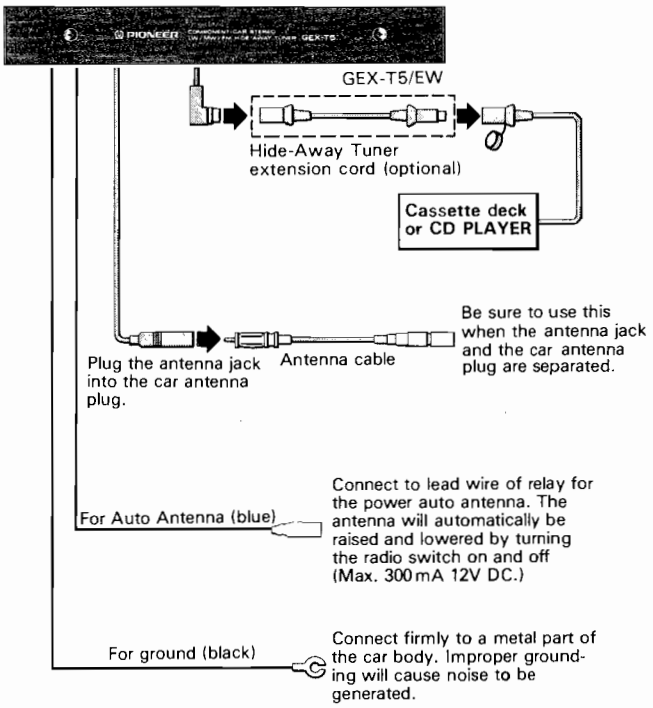
Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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
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

CONTENTS

1. CONNECTION

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the instruction manual for details on connecting the various cords of the deck or CD player and main amp then make connections correctly.
- If distance between the tuner and deck or CD player is too far to make proper connections, please buy the optional exclusive extension cord for the Hide-Away Tuner.



2. CIRCUIT DESCRIPTION

• **Block Diagram (GEX-T5/EW, SDK/WG)**

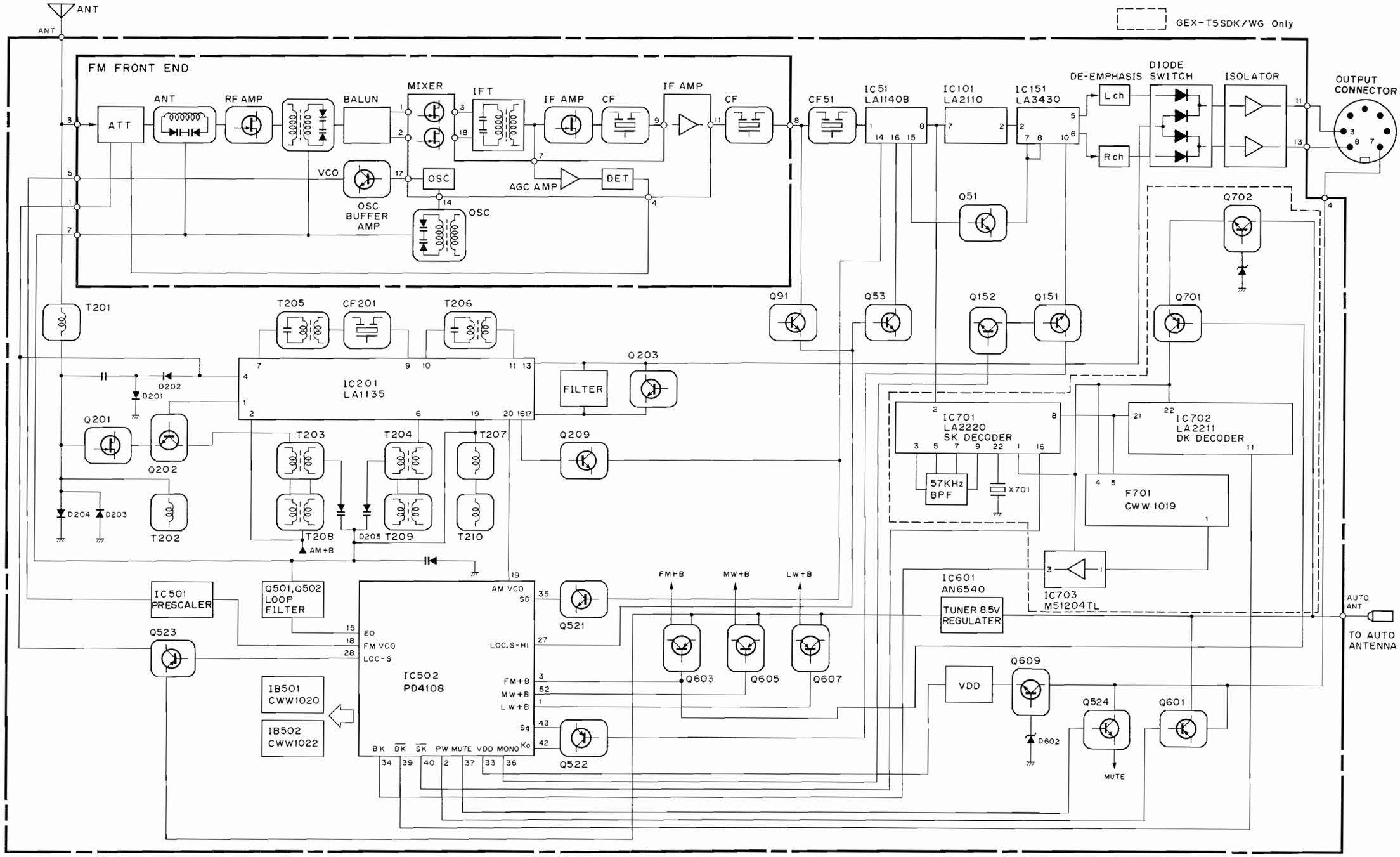


Fig. 1

- **Block Diagram (GEX-T5/ES)**

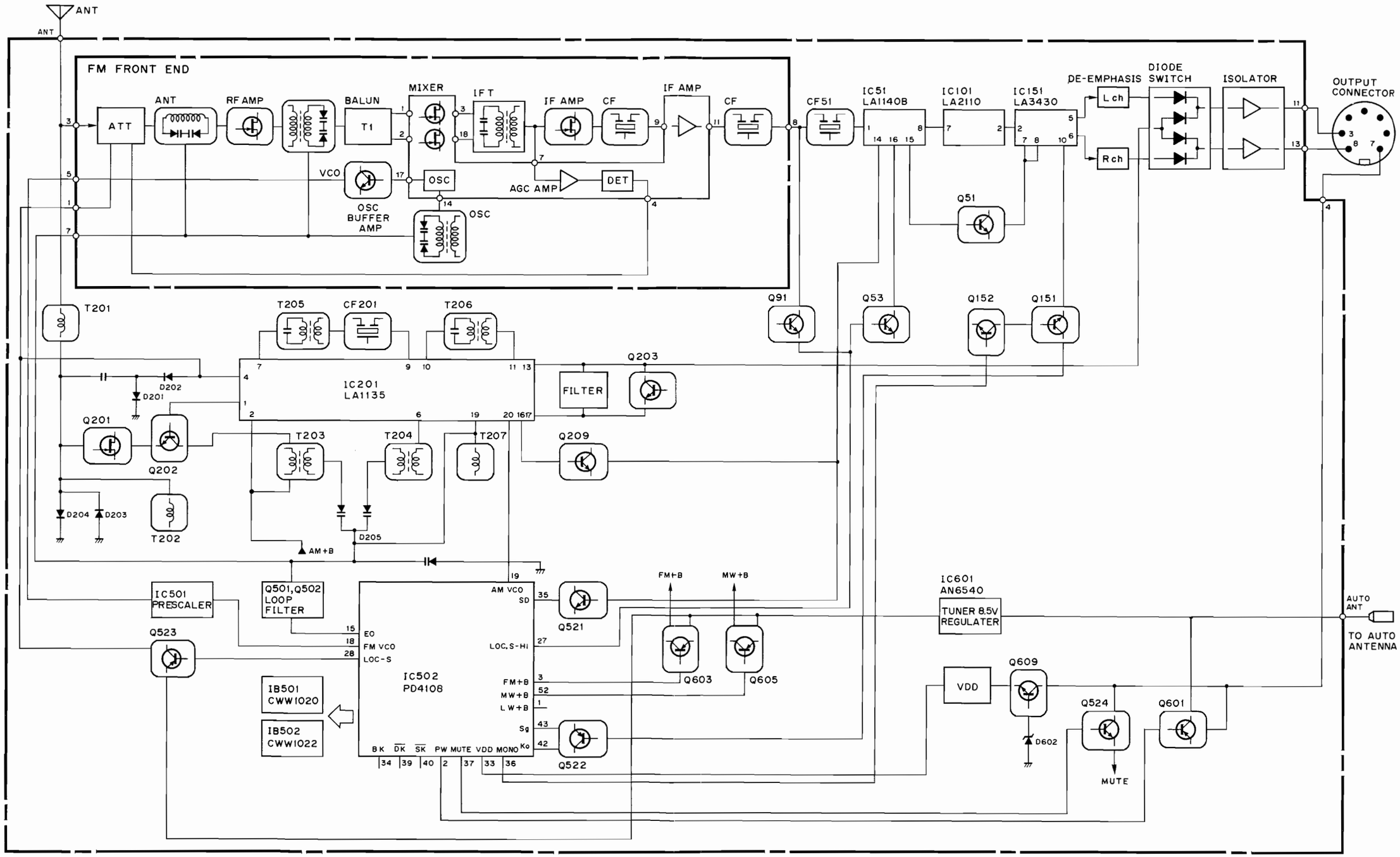


Fig. 2

• FM Tuner

1. FM FRONT END

The FM front end employs a low noise dynamic range wide MOS FET and performs high frequency amplification. An FM front end IC (PA4009) with built-in double balance FET mixer, local oscillator, IF amp and AGC circuit, along with a twin varicap diode used in the tuning circuit provide widely improved strong input characteristics.

2. IF AMP DETECTION CIRCUIT

The IF signal (10.7 MHz) output from the FM front end is input via ceramic filter (CF51) to IF amp detection IC (IC51: LA1140) pin 1.

During seek operations, 2 ~ 3 V is output IC51 pin 14 when no signal is present, so Q521 is ON. When Q521 is ON, control IC (IC502) pin 35 becomes 0 V and seek operations continue. When a signal is input, IC51 pin 14 becomes 0 V, IC502 pin 35 becomes "H", and seek operations are stopped.

DC voltage corresponding to the input signal level from IC51 pin 15 is output. This voltage is amplified by Q51, and applied at IC151 (LA3430) pin 7 (stereo demodulation output high cut control terminal) and pin 8 (separation terminal). The voltage from IC51 pin 15 is also applied to IC502 pin 9 (best stations memory input signal level detection terminal).

3. PNS CIRCUIT

IC101 (LA2110) is the FM noise canceler IC.

4. FM MPX CIRCUIT

IC151 (LA3430) is the non-adjustable type PLL FM multiplex stereo demodulator IC. With input of a stereo composite signal in accordance with a 19 kHz pilot signal, the IC-internal VCO locks at 19 kHz and the L/R channel are isolated by a 38 kHz switching signal.

• AM Tuner

LA1135 (IC201) is used as the AM tuner IC. The signal input from the antenna passes through FM/AM separation loading coil T201 and passes through the RF amp (Q201). Next, the signal is selected and amplified by coil T203 (and T208: EW, SDK/WG) and T204 (and T209: EW, SDK/WG) and the varicap diode (D205 — 1, — 2) and condensers C207 and C210 double tuned circuit. The signal is then input to the IC internal mixer input terminal pin 6. The local signal and antenna signal are frequency converted by the mixer, and output to output terminal pin 7. They are then input at pin 9 via IFT (T205) and the ceramic filter (CF201). Pin 9 is the IF amp input terminal, and the signal is amplified by the IC-internal IF amp and output from pin 10. This signal is input at the detector pin 11 via the IFT (T206). Next, the detected AF signal is output from pin 13, and lows to the signal switching diode switching circuit.

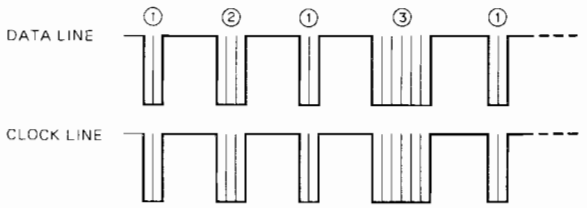
• SDK decoder (GEX-T5SDK/WG)

IC701 (LA2220) is the SK decoder IC. The FM detection output which is input at pin 2 passes through the internal buffer amp and is output from pin 3. The signal then passes through the middle frequency 57 kHz active band pass filter composed of an external CR. This signal is compared by an IC-internal phase comparator with an oscillated 456 kHz signal from pin 22 ceramic resonator (X701) which has been 1/8 demultiplied to 57 kHz. Pin 16 becomes "L" when 57 kHz (SK signal)is present. An AM detector is built into IC701, and the AM components of the SK signal are output from pin 8.

IC702 (LA2211) is the DK decoder IC, and the signal from IC701 pin 8 is input at pin 21, and pin 11 becomes "L" when 125 Hz (DK signal) is discriminated. The output from IC701 pin 8 is input to active band pass filter F701 (CWW1019). The BK signal (23.75 ~ 53.98 Hz) is filtered, waveform shaped by the comparator IC (IC703: M51204TL), and IC502 performs A ~ F discrimination.

• Tuner control IC (IC502: PD4108)

When connected to DEX-77, data communication is performed with the system control IC. Key input and display data output is performed via this data communication.



① System Controller command output.
② Tuner Controller return output.
③ Tuner Controller return output and display data.

Fig. 3

1. DATA COMMUNICATION

As illustrated in Fig. 3, data output is performed with the system controller outputting each command. The return data attached to these commands are output to the data line. When this happens, the system controller outputs commands again. Data interchange is always performed in the order outlined above when power is switched ON. The system controller outputs a command to the tuner controller to enter the low power consumption modes when ACC power is switched OFF, and data communications are terminated. After this, the system controller CE terminal becomes "L" level. At this time, IC502 pins 50 ~ 52 and 1 ~ 3 become "L" level, other ports become high impedance, and the low power consumption mode is entered.

Display data is output after the return data.

The serial data communications shift clock outputs data with 15 kHz for IC502 and 65.5 kHz for the system controller. The data output terminal is pin 30, the data input terminal is pin 32, and clock terminal pin 31 is the input/output terminal.

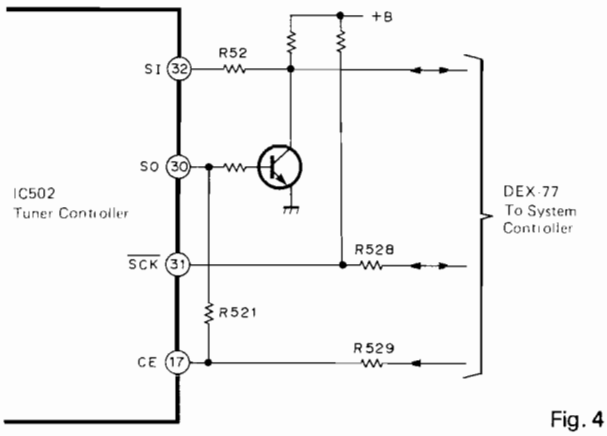


Fig. 4

2. MONO CONTROL OUTPUT (PIN 36)
When an FM signal is received, pin 36 is "H" when forced monaural "L" when AUTO.

3. TUNER ON
Pin 2 becomes "H" when a command is received from the system controller. At the same time, pin 3 become "H" for FM, pin 52 becomes "H" for AM, and pin 1 becomes "H" for LW. At this time, a divide ratio is set to the internal PLL, and pin 37 becomes "L" after approximately 650 ms. For FM, pin 36 becomes either "L" or "H" depending upon the AUTO/MONO status.

4. TUNER OFF
Pin 37 becomes "H", mute is applied, and pins 1, 2, 3 and 52 become "L".

5. BAND SWITCHING
Pin 37 becomes "H", mute is applied, and pins 1, 3, and 52 are switched. Next the PLL divide ratio is set, and pin 37 becomes "L" after approximately 650 ms. For FM, pin 36 becomes either "L" or "H" depending upon the AUTO/MONO status.

6. MANUAL TUNING
Pin 37 becomes "H", mute is applied, and a divide ratio is set to PLL. High speed operation begins when the button is pressed for more than approximately 0.5 seconds.

7. SEEK OPERATION
Pin 37 becomes "H" and mute is applied. Pins 27 and 28 respectively become "L" and "H" for DX, "L" and "L" for LOC.S, "H" and "L" for LOC.S-HI. Next, the divide ratio is sequentially set to PLL, and seek is terminated where pin 35 becomes H. Pin 37 becomes "L" after pin 27 becomes "L" and pin 28 becomes "H".

8. BEST STATION MEMORY
Pin 37 becomes "H", mute is applied, pin 27 becomes "H" and pin 28 becomes "L". Next, the divide ratio is set to PLL sequentially from the lower extreme of the band. When pin 35 becomes "H", the voltage impressed at pin 9 is read and stored in memory. The stored voltage of pin 9 is arranges from the lower end to the upper end of the band. At this time, pins 27 and 28 are "L" "L" respectively when the broadcasts for which pin 35 becomes "H" number 6 or less. The operation is repeated in the same way from the lower extreme of the band. When there are still 6 broadcasts or less, pins 27 and 28 are "L" "H", the operation is performed again, memory zero is called, and the operation is terminated. When there are 6 broadcasts or more at the upper limit of the band, memory 0 is immediately called and the operation is terminated.

9. PRESET SCAN OPERATION
Pin 37 becomes "H", and mute is applied. Next, if the present memory call is being performed and the next memory (if 6, next is 0) does not match, 0 memory call is performed and pin 37 becomes "L". The same operation is performed when approximately 8 seconds is approached.

• Frequency Synthesizer Section (FM) (Fig. 5)

During FM reception, IC502 controls the prescaler divide ratio to 1/16 and 1/17 to form a swallow counter.
The FM VCO is frequency-divided to a ratio of 1/16 or 1/17 by prescaler IC501.
An output of 4.5 MHz (X521) which becomes a clock pulse for IC502 is divided into 1/180 by the reference frequency divider to produce 25 kHz (all this is processed inside IC502). Since the reception frequency is 87.5 ~ 108 MHz, and the intermediate frequency (IF) is 10.7 MHz, the oscillator frequency of VCO will be 98.2 ~ 118.7 MHz. As the overall frequency division ratio is 3928 ~ 4748, the output of the programmable counter inside IC502 will be 25 kHz. This output is compared in phase with a reference frequency of 25 kHz by the phase detector in IC 502, and is output to pin 15 of IC502.
The loop filter consisting of Q501 and Q502 converts the signal into a DC voltage signal which in turn controls the tuning circuit in the front end section as a tuning voltage.

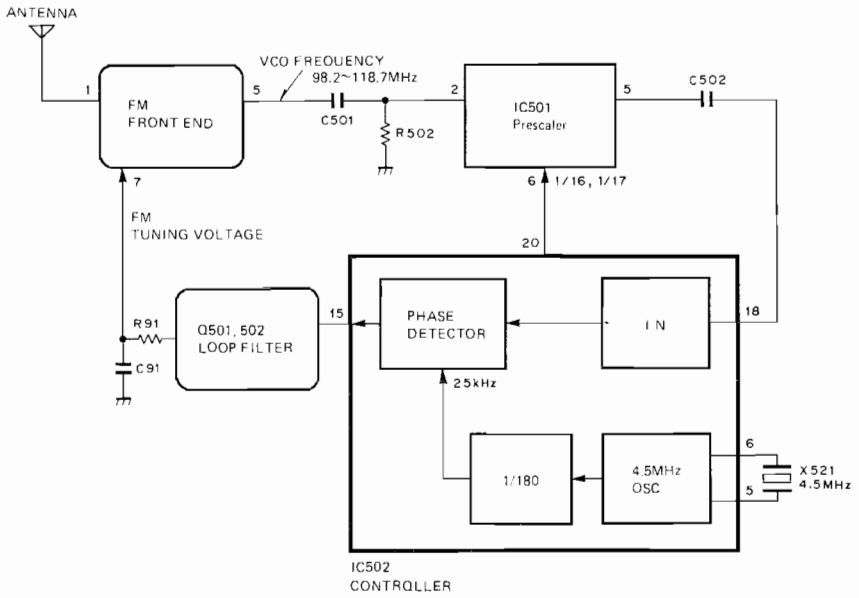


Fig. 5

• Frequency Synthesizer Section (AM) (ES)

The MW section employes a direct frequency dividing method. So that the reception frequency is incremented in 9 kHz, the frequency of the phase comparator is 9 kHz. This is produced by dividing 4.5 MHz (the output of X521), a clock frequency of IC502, to 1/500. Since the reception frequency range is 531 ~ 1,602 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) will be 981 ~ 2,052 kHz.

This output is output from pin 20 of IC201 and enters pin 19 of IC502.

If the frequency dividing ratio of the programmable counter in IC502 is set to 109 ~ 228, the output will be 9 kHz. This frequency is compared in phase with a reference frequency of 9 kHz by the phase comparator and is output from pin 15 of IC502.

The signal is converted into a DC voltage signal by the loop filter consisting of Q501 and Q502, which in turn controls the tuning circuit as a tuning voltage.

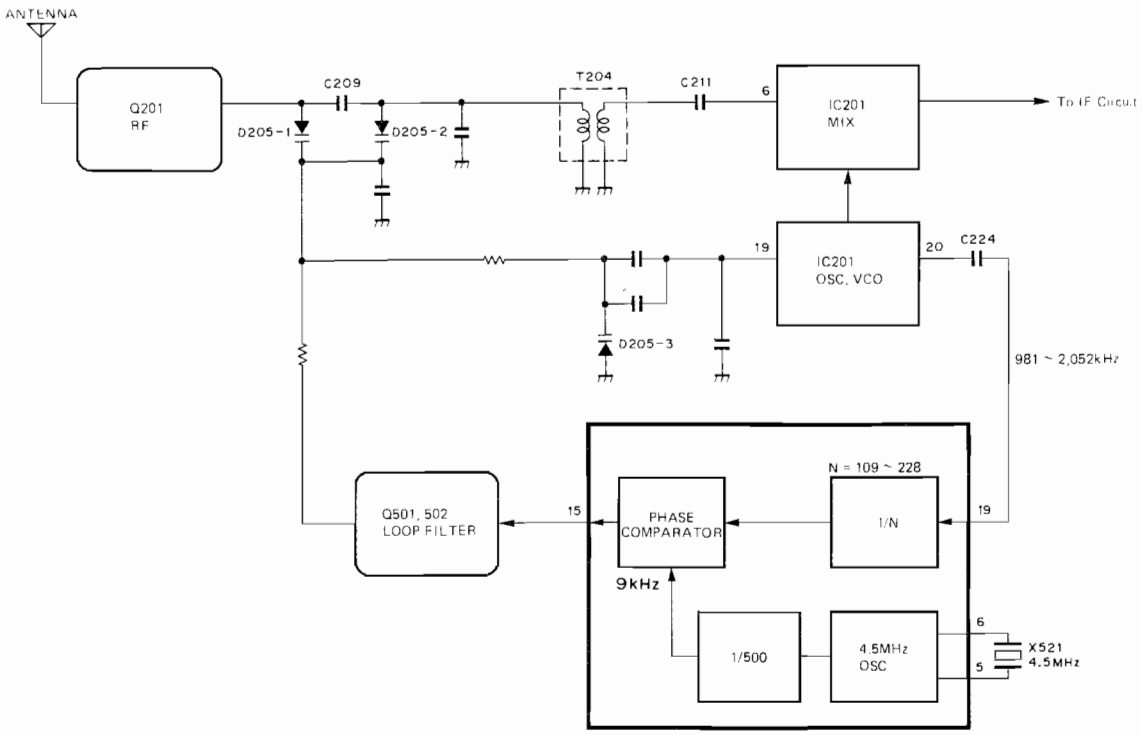


Fig. 6

Fig. 6 2 BANDS (ES)

• Frequency Synthesizer Section (LW)

The LW section employs a direct frequency dividing method. So that the reception frequency is incremented in 1 kHz, the frequency of the phase comparator is 1 kHz. This is produced by dividing 4.5 MHz (the output of × 521), which is a clock frequency of IC502, into 1/4500.
Since the reception frequency range is 153 ~ 281 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) is 603 ~ 731 kHz. This output is output from pin 20 of IC201 and enters pin 19 of IC502.

IF the frequency dividing ratio of the programmable counter in IC502 is set to 603 ~ 731, the output frequency is 1 kHz. This is compared in phase with a reference frequency of 1 kHz by the phase comparator and is output from pin 15 of IC502. The output signal is converted into a DC voltage signal by the loop filter consisting of Q501 and Q502, which in turn controls the tuning circuit as a tuning voltage.

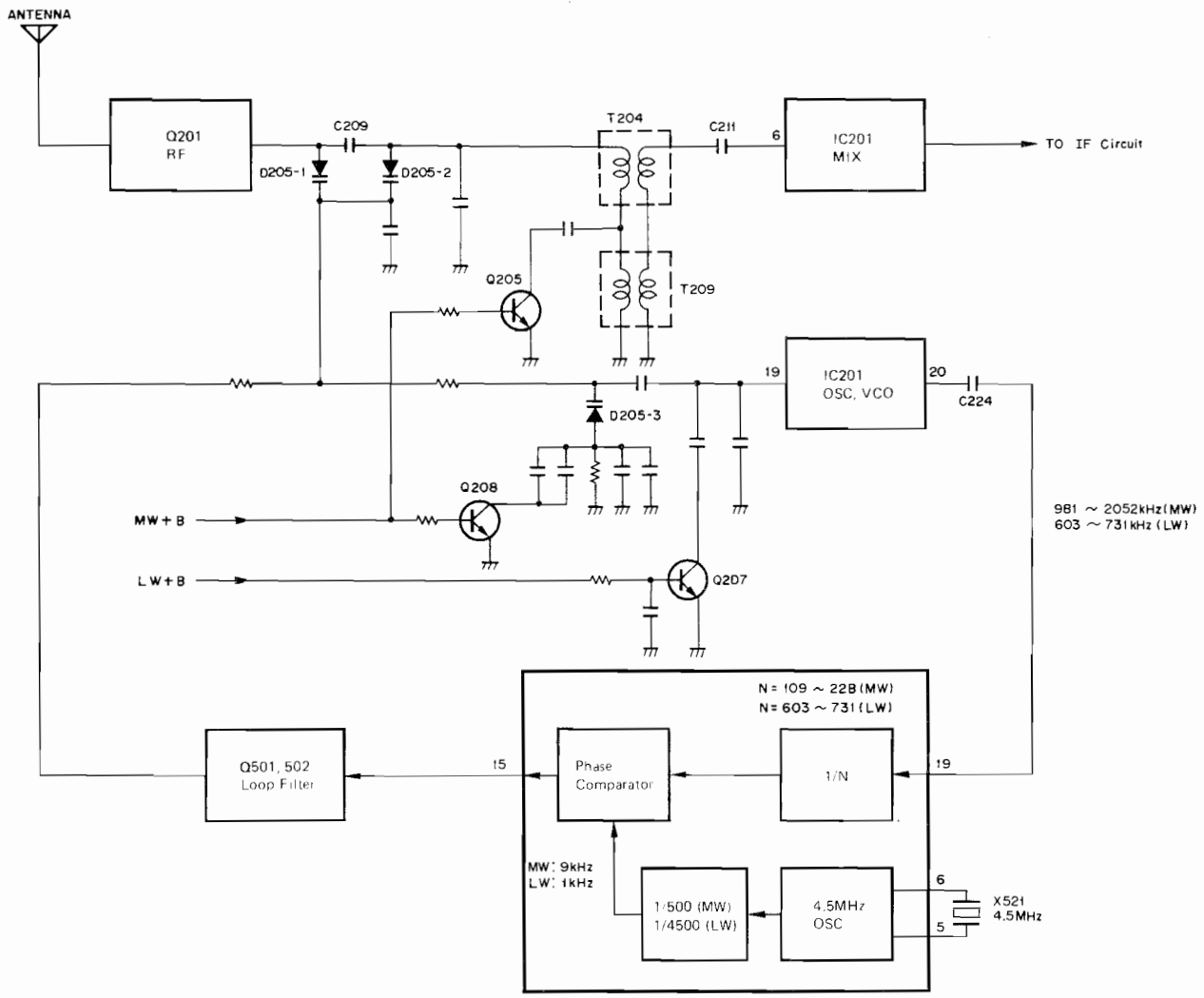


Fig. 7 3 BANDS (EW, SDK/WG)

Fig. 7

• Seek Circuit

When the seek button (+ or –) is pressed, IC 502 changes the divide ratio and the seek mode is entered. With each step change in the divide ratio, the status of IC502 pin 35 is detected and seek is terminated when pin 35 becomes "H". A mute signal is output from pin 37 during seek operations, and the mute circuit is in operation. IC 51 pin 14 mute driver terminal is used for FM seek stop. When the receive mode is entered, pin 14 changes from "H" to "L" in order to cancel the mute, Q521 switches OFF, IC502 pin 35 becomes "H", and seek operations are stopped. There is DX, LOC. S and LOC. S-HI stop sensitivity. With LOC. S, an attenuator operates inside the FM front end. There are three settings for LOC. S-HI: the attenuator in the front end and C95 attenuate front end output, and IC51 mute drive signal level is changed by VR52. A switch can be used to sequentially switch modes. During seek operations, IC502 pin 28 or 27 become "L" or "H", and stop sensitivity is controlled by Q91, Q53 or Q523 switching ON. AM seek stop uses IC201 pin 16 S meter output. When the receive mode is entered, IC201 pin 16 becomes "H", Q521 is switched OFF by Q209 switching ON, IC502 pin 35 becomes "H", and seek is stopped. There are DX, LOC.S and LOC.S-HI stop sensitivity. For LOC.S, IC502 pin 28 becomes "L" which switches Q523 ON. D201 and D202 also switch ON, the signal from the antenna is attenuated by C202, and the rise of IC201 pin 16 is delayed. For LOC.S-HI, the attenuation by C202, and IC502 pin 27 becomes "H" which switches Q210 ON, CF201 input side is resistor damped by R227 which attenuates the IF signal, and the rise of IC201 pin 16 is delayed.

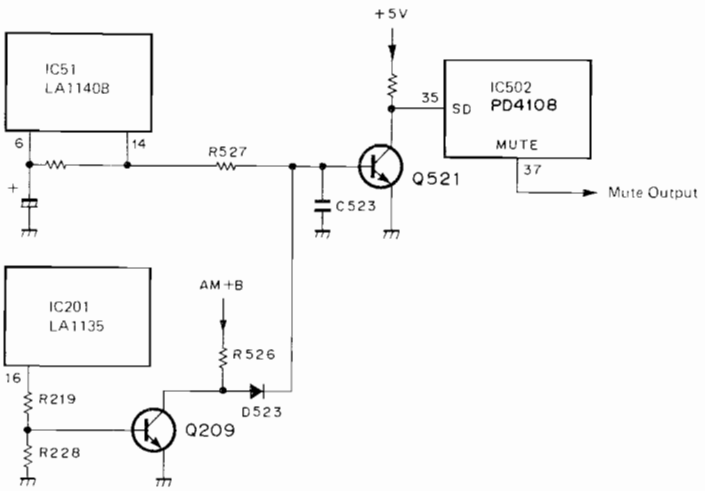


Fig. 8 SEEK STOP PERIPHERAL CIRCUIT

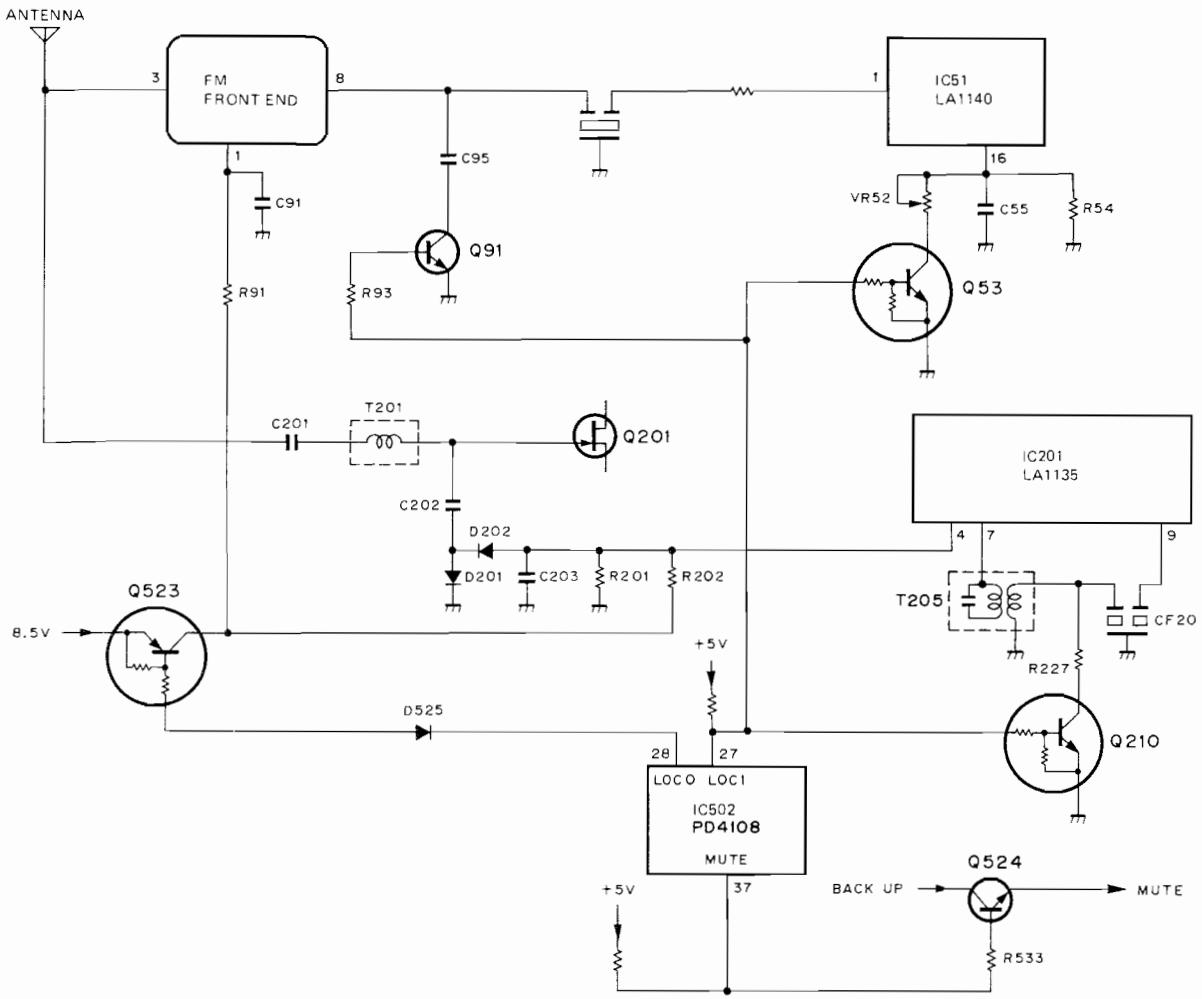
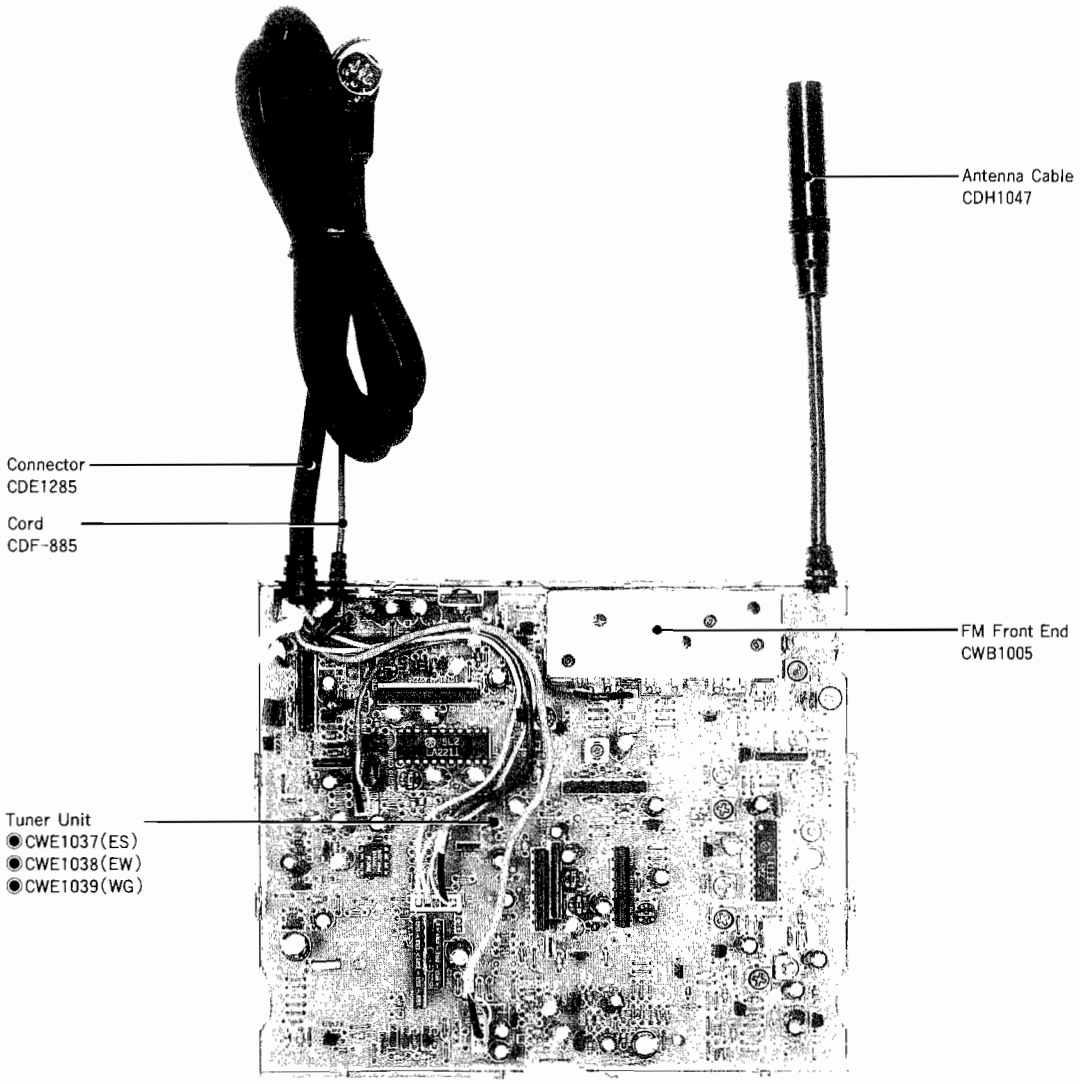


Fig. 9 SEEK SENSITIVITY PERIPHERAL CIRCUIT

3. PARTS LOCATION

NOTE:

- *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.
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*



The photo shows the model GEX-T5SDK/WG.

Fig. 10

4. ADJUSTMENT

NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

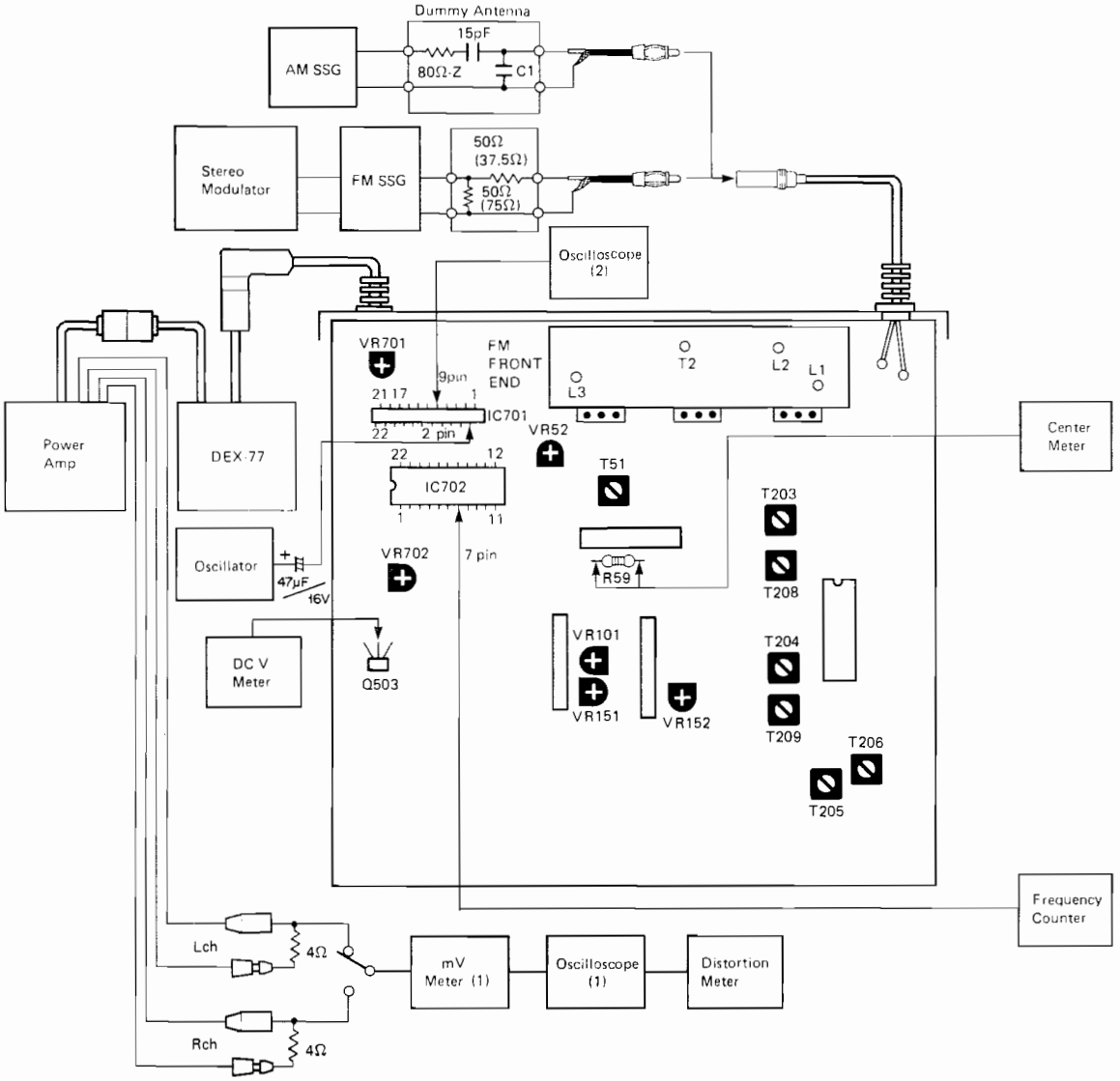


Fig. 11

4.1 MW ADJUSTMENT

	No.	AM SSG (400 Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB)			
Tracking	1			531	———	DC V Meter: More than 0.8 V
	2	603	25	603	T203, T204	mV Meter (1): Maximum
	3	999	25	999	T205, T206	mV Meter (1): Maximum
	4			1,602	———	mV Meter (1): Less than 7.4 V

4.2 LW ADJUSTMENT (EW, SDK/WG)

	No.	AM SSG (400 Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB)			
Track-ing	1			153	———	DC V Meter: More than 2.5 V
	2	218	25	218	T208, T209	mV Meter (1): Maximum
	3			281	———	mV Meter (1): Less than 7.0 V

4.3 FM ADJUSTMENT

Switch position refers to DEX-77 switch.

*Stereo MOD.: 1 kHz, L+R=90%, Pilot=10%

	No.	FM SSG		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dB)			
IF	1	98.1 (400 Hz, 30%)	60	98.1	T51	Center Meter: 0 (MONO SW: MONO)
Track-ing	1			108.0	L3	DC V Meter: 7.0 V±0.2 V
	2			87.5	———	DC V Meter: 2.0 V±0.6 V
	3	89.9 (400 Hz, 100%)	5~10	89.9	L1, L2	mV Meter (1): Maximum
	4	98.1 (400 Hz, 100%)	10	98.1	T2	mV Meter (1): Maximum
ARC	1	98.1 Pilot Only*	60	98.1	VR151	Oscilloscope: Minimum (MONO SW: AUTO)
	2	98.1*	60	98.1	VR101	mV Meter (1): Best separation VR152 rotated counterclockwise.
	3	98.1*	35	98.1	VR152	mV Meter (1): Separation 5 dB
SEEK	1	98.1	35		———	Verify that SEEK stops. (LOC.S SW: DX)
	2	98.1	14		———	Verify that SEEK doesn't stop.
	3	98.1	42		———	Verify that SEEK doesn't stop. (LOC.S SW: LOC.S)
	4	98.1	53±10		———	Verify that SEEK stops.
	5	98.1	75 (EW, ES) 85 (SDK/WG)		VR52	Make SEEK stop (LOC.S SW: LOC.S-HI)
	6	Confirm each stop sensitivity falls within standard values after above adjustment.				

4.4 SK DECODER ADJUSTMENT (SDK/WG)

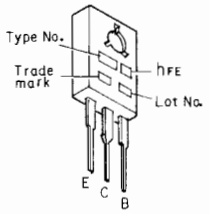
1. Remove dummy antenna from antenna jack.
2. Input 57 kHz, 10 mV rms from oscillator to IC701 pin 2.
3. Adjust VR701 so that IC701 pin 9 output (oscilloscope (2)) is at maximum.

4.5 DK DECODER ADJUSTMENT (SDK/WG)

1. Ground C709 + terminal or F701 pin 5.
2. Adjust VR702 until the frequency counter connected to IC702 pin 7 indicates 125±1 Hz.

• ICs and Transistors

2SB772



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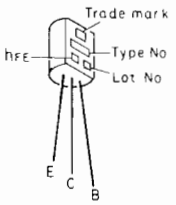
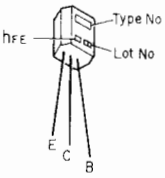


2SC2458
2SC1740S
2SC3113
2SA1048
2SA1150



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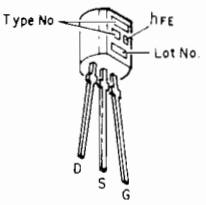

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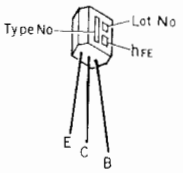

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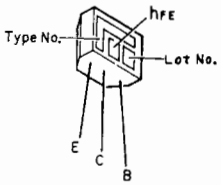

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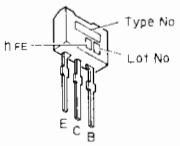

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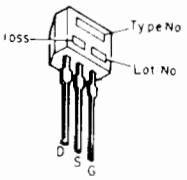

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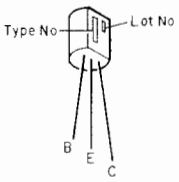
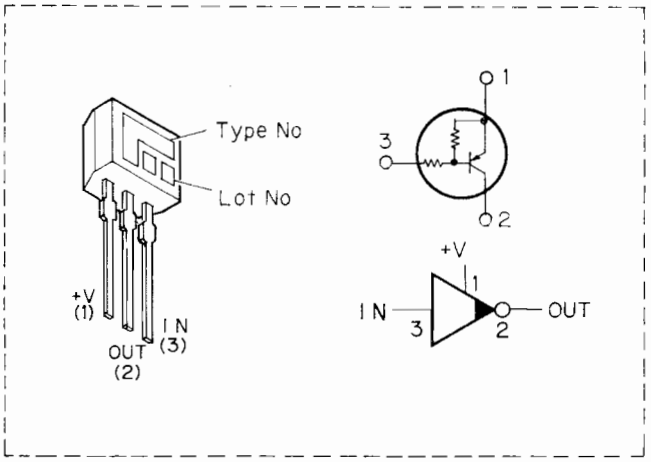
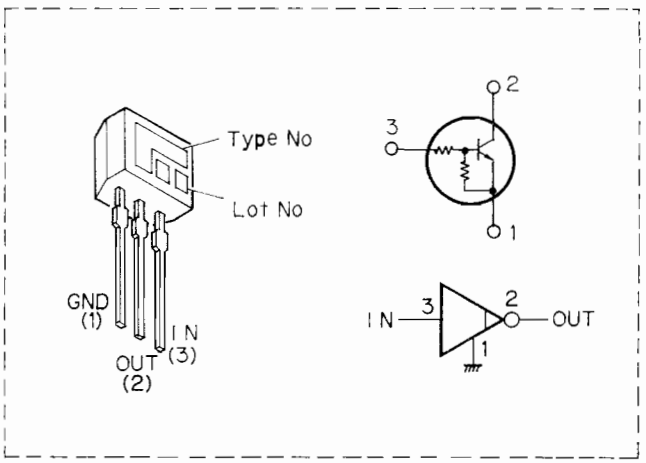


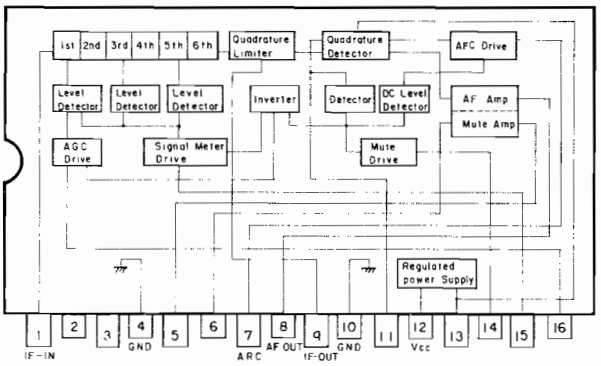
DTA124ES



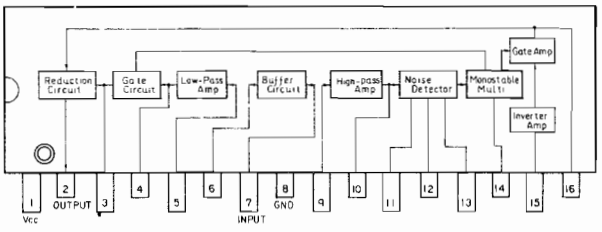
DTC124ES



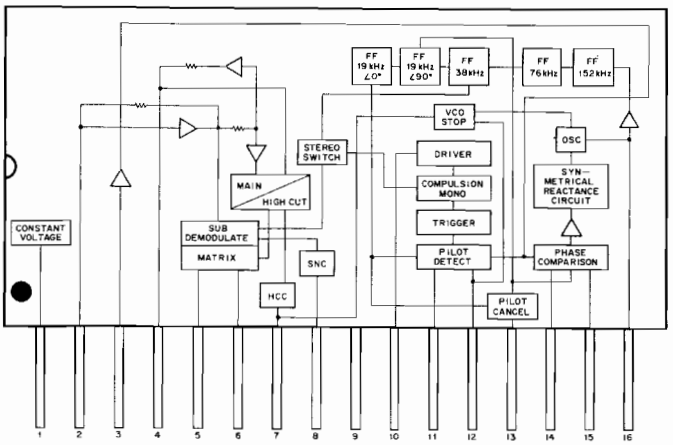
IC51: LA1140B



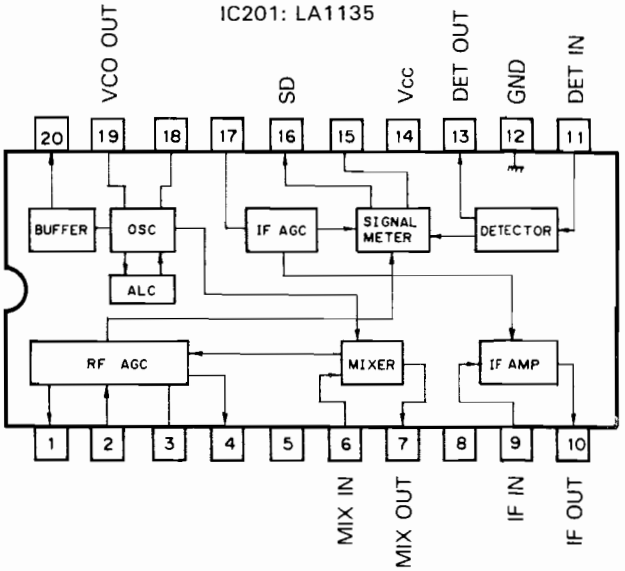
IC101: LA2110



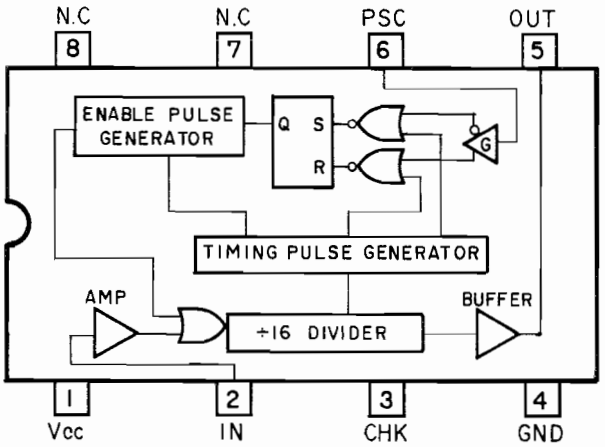
IC151: LA3430



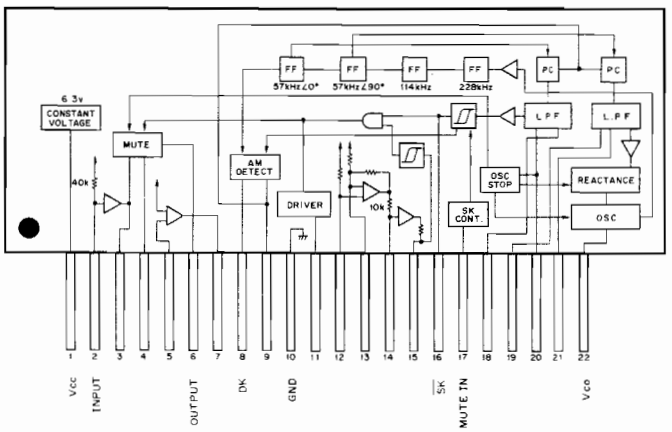
IC201: LA1135



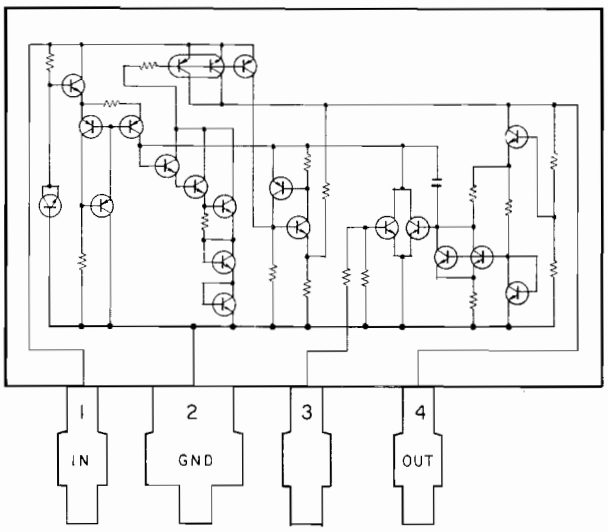
IC501: μPB553AC



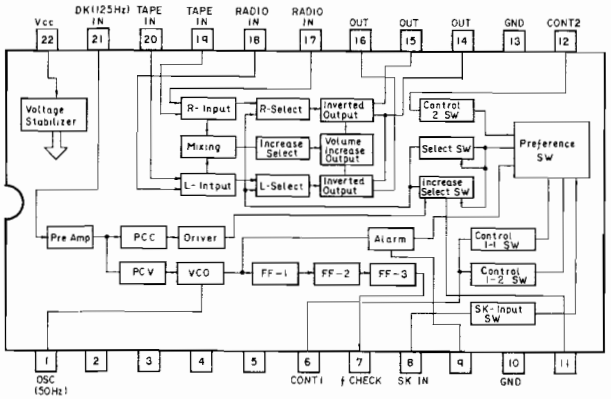
IC701: LA2220



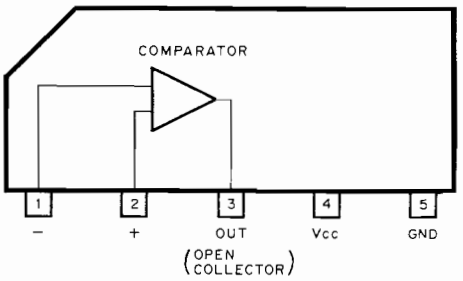
IC601: AN6540



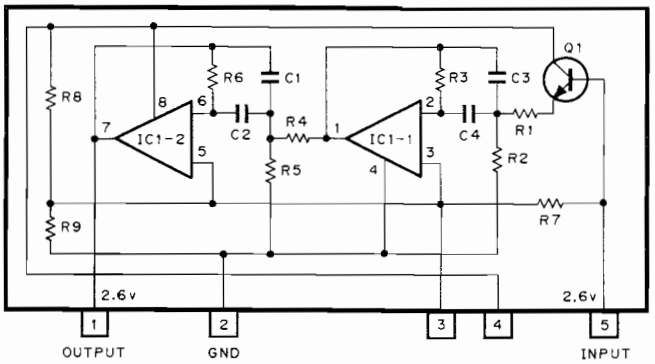
IC702: LA2211



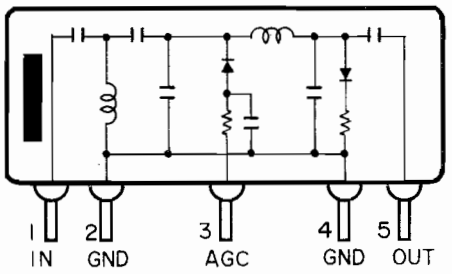
IC703: M51204TL



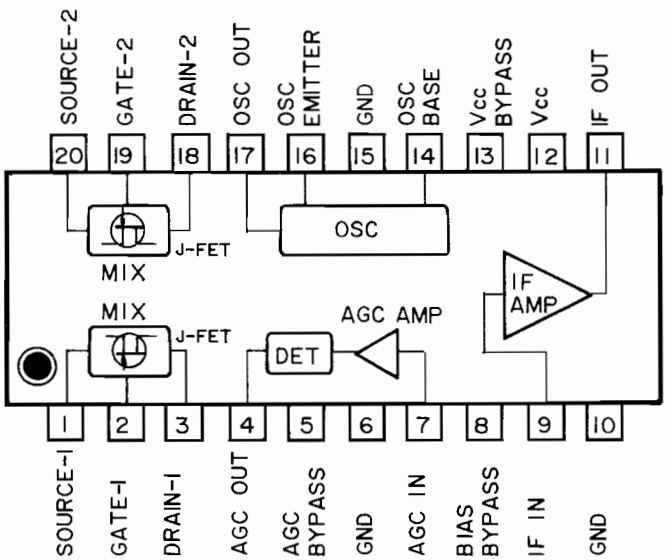
F701: CWW1019



IC1: CWW-173
CWW1015



IC2: PA4009



2. CIRCUIT DESCRIPTION

• **Block Diagram (GEX-T5/EW, SDK/WG)**

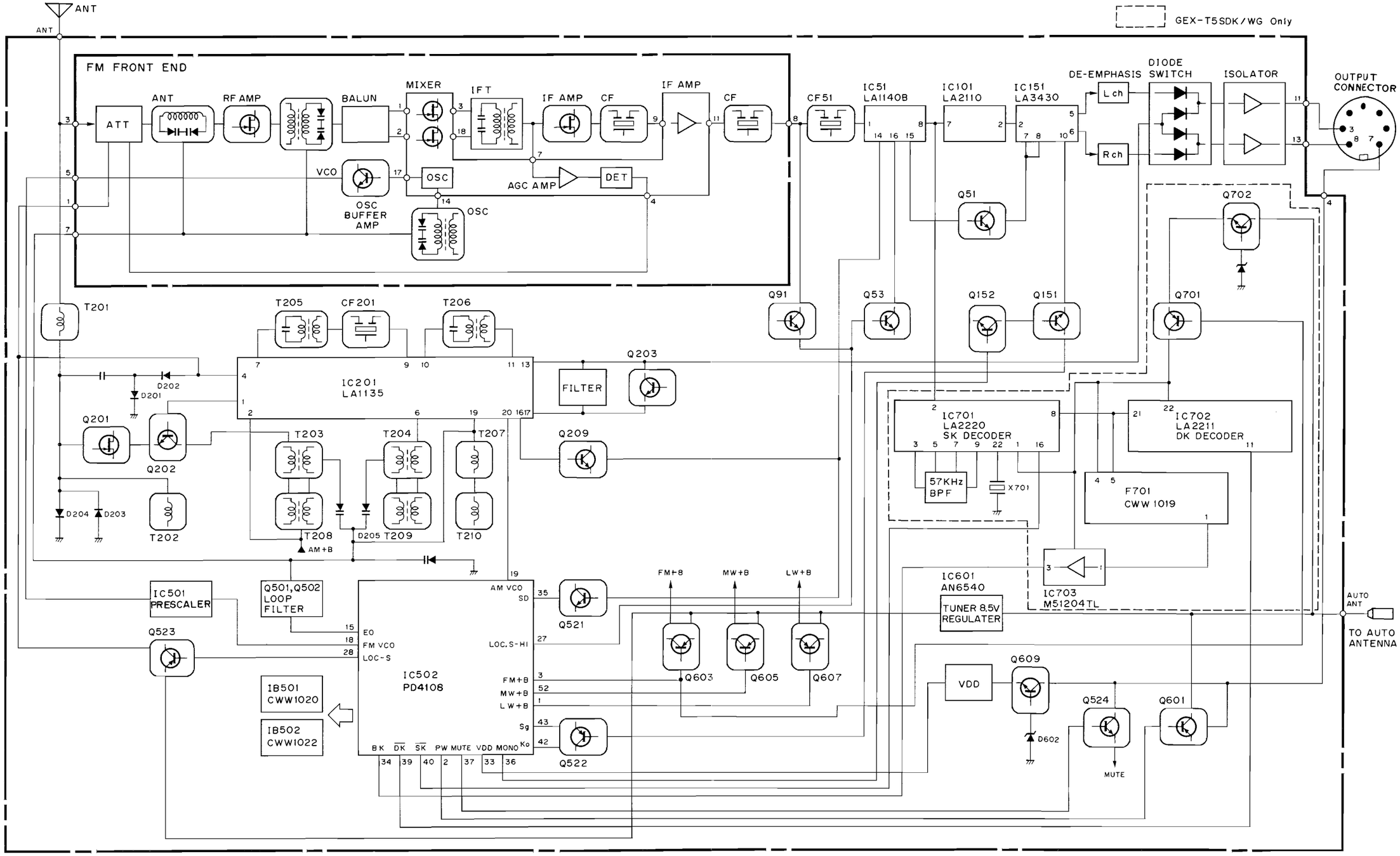


Fig. 1

- **Block Diagram (GEX-T5/ES)**

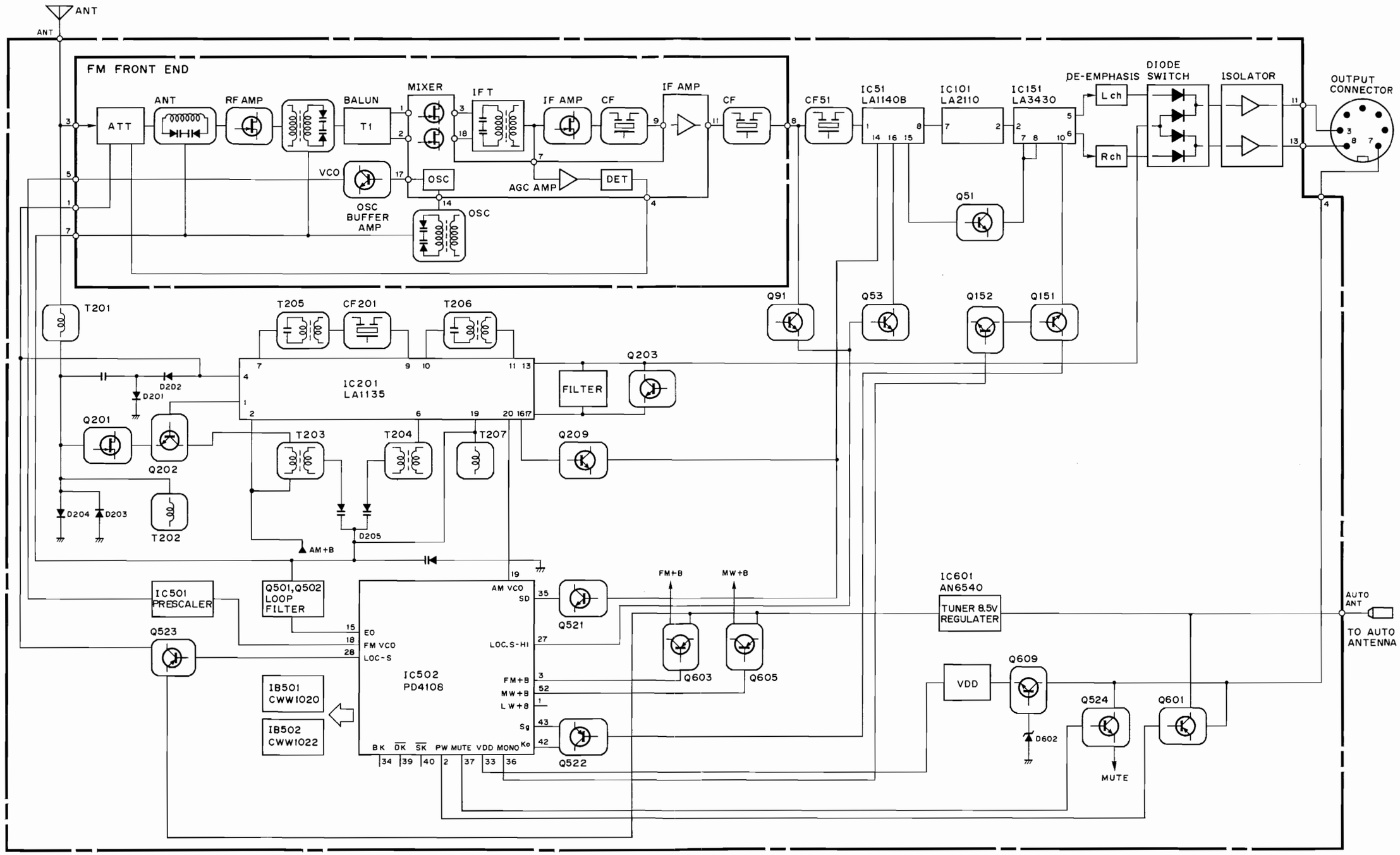
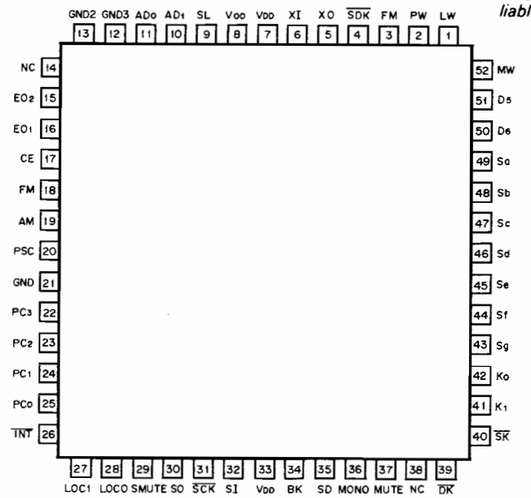


Fig. 2

* IC502: PD4108



*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

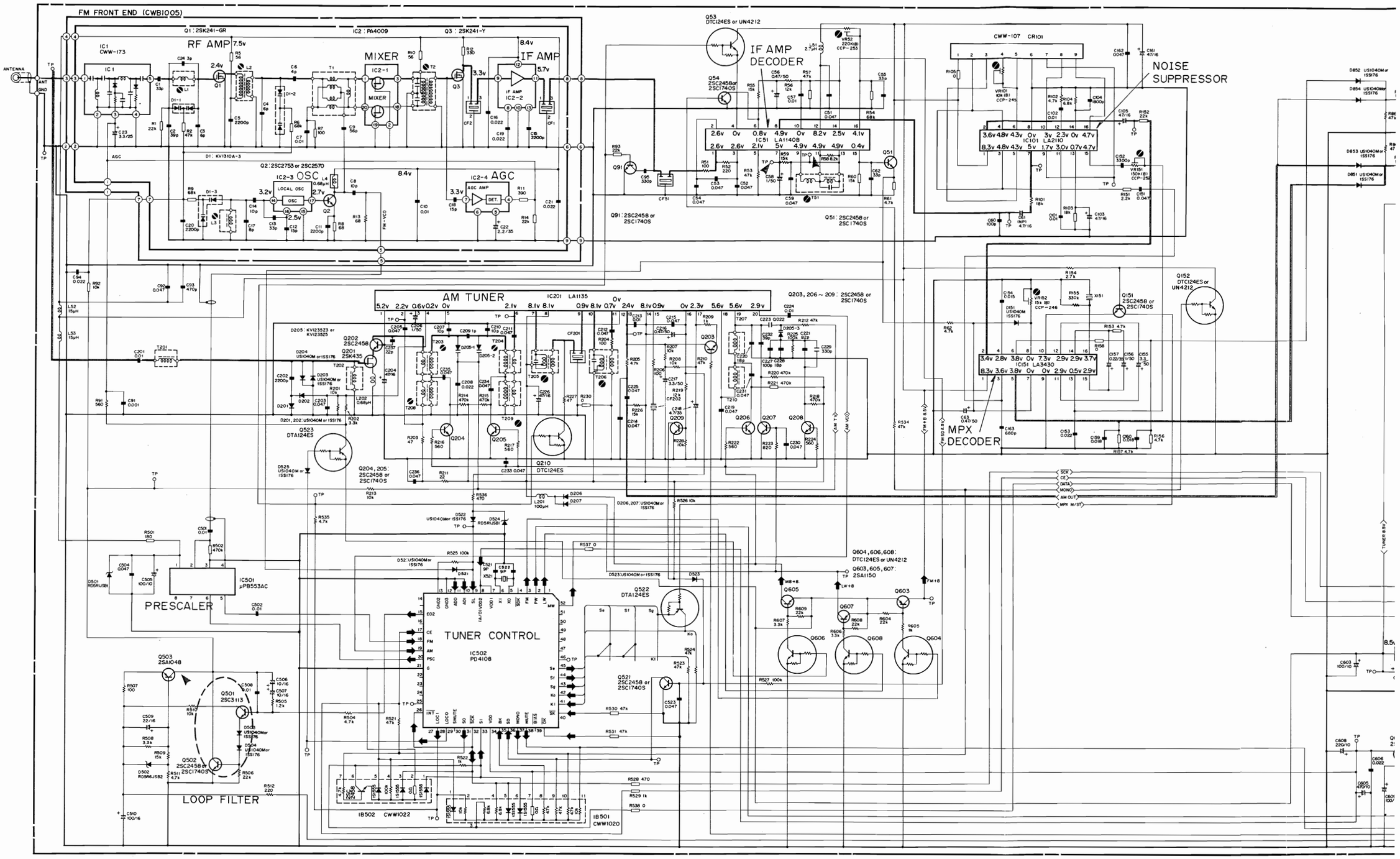
PD4108
PIN FUNCTIONS

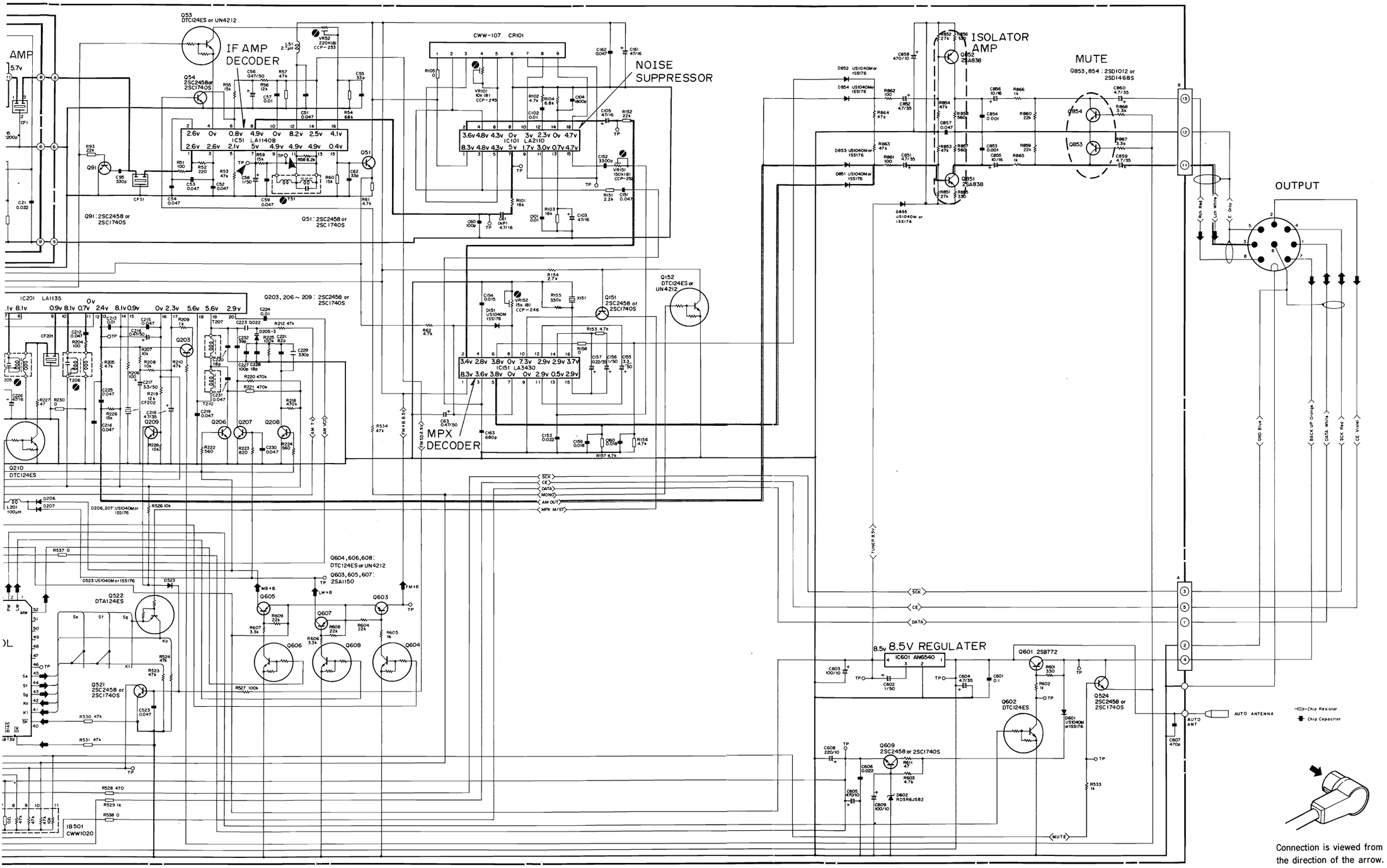
Pin No.	Pin Name	I/O	Functions and Operations
1	LW	Output	LW tuner power supply control output. Active "H" CMOS push-pull.
2	PW	Output	"H" output while tuner power supply is ON. CMOS push-pull.
3	FM	Output	FM tuner power supply control output. Active "H" CMOS push-pull.
4	$\overline{SDK}$	Output	SDK mode output. Active "L" CMOS push-pull. (Not used)
5	X0		Crystal connection for system clock circuit. (4.5 MHz)
6	XI		
7	V_{DD1}		Power supply GND terminal.
8	V_{DD2}	Input	A/D converter (SL terminal) reference voltage input terminal.
9	SL	Input	Field strength measuring terminal. A/D converter input.
10	AD_1	Input	Input port. Connected to GND.
11	AD_0	Input	Input port. Connected to GND.
12	GND_3		Power supply GND terminal.
13	GND_2		Power supply GND terminal.
14	NC		(Not used)
15	EO_2	Output	Phase wave detector output. Three-state.
16	EO_1	Output	Phase wave detector output. Three-state.
17	CE	Input	Chip select signal. Low power consumption mode when "L".
18	FM	Input	FM programmable divider input.
19	AM	Input	AM programmable divider input.
20	PSC	Output	Outputs divided switching signal to prescaler (μPB553AC).
21	G		Power supply GND terminal.
22	PC_3	Output	Not used
23	PC_2	Output	
24	PC_1	Output	
25	PC_0	Output	SL terminal monitor output. "L" output when SL terminal is greater than 2 V, "H" when less. N ch open drain. (Not used)
26	$\overline{INT}$	Input	External interrupt input. Inputs $\overline{SCK}$.
27	LOC_1	Output	Scan sensitivity control output. "L" output when local and local high seek. N ch open drain.
28	LOC_0	Output	Scan sensitivity control output. "H" output when local high seek. N ch open drain.
29	SMUTE	Output	Switches from "H" to "L" when PLL frequency dividing ratio is set. N ch open drain. (Not used)
30	SO	Output	Serial interface data output terminal. N ch open drain.
31	$\overline{SCK}$	Input/output	Serial interface shift clock input/output terminal. Normal "H" CMOS push-pull.
32	SI	Input	Serial interface data input terminal.
33	V_{DD}		Connected internally with Pin 7.
34	BK	Input	BK signal input terminal. (For WG destination).
35	SD	Input	Station detector input terminal.
36	MONO	Output	Monaural control output. "H"—forced monaural, "L"—AUTO. N ch open drain
37	MUTE	Output	Muting output. Active "H". N ch open drain.
38	NC		
39	$\overline{DK}$	Input	DK signal input terminal. Active "L". (For WG destination)
40	$\overline{SK}$	Input	SK signal input terminal. Active "L". (For WG destination)
41	K_1	Input	Indicator stereo signal input and destination setting input. Active "L".
42	K_0	Input	Destination setting matrix input. Active "L".
43	S_g	Output	Destination setting matrix output. P ch open drain.
44	S_f	Output	Destination setting matrix output. P ch open drain.
45	S_e	Output	Destination setting matrix output. P ch open drain.
46	S_d	Output	Not used
47	S_c	Output	Not used
48	S_b	Output	Not used
49	S_a	Output	Not used
50	D_6	Output	Not used
51	D_5	Output	Not used
52	MW	Output	AM tuner power supply control output. Active "H"

Pin No.	Pin Name	I/O	Functions and Operations
25	PC_0	Output	SL terminal monitor output. "L" output when SL terminal is greater than 2 V, "H" when less. N ch open drain. (Not used)
26	$\overline{INT}$	Input	External interrupt input. Inputs $\overline{SCK}$.
27	LOC_1	Output	Scan sensitivity control output. "L" output when local and local high seek. N ch open drain.
28	LOC_0	Output	Scan sensitivity control output. "H" output when local high seek. N ch open drain.
29	SMUTE	Output	Switches from "H" to "L" when PLL frequency dividing ratio is set. N ch open drain. (Not used)
30	S0	Output	Serial interface data output terminal. N ch open drain.
31	$\overline{SCK}$	Input/output	Serial interface shift clock input/output terminal. Normal "H" CMOS push-pull.
32	SI	Input	Serial interface data input terminal.
33	V_{DD}		Connected internally with Pin 7.
34	BK	Input	BK signal input terminal. (For WG destination).
35	SD	Input	Station detector input terminal.
36	MONO	Output	Monaural control output. "H"—forced monaural, "L"—AUTO. N ch open drain
37	MUTE	Output	Muting output. Active "H". N ch open drain.
38	NC		
39	$\overline{DK}$	Input	DK signal input terminal. Active "L". (For WG destination)
40	$\overline{SK}$	Input	SK signal input terminal. Active "L". (For WG destination)
41	K_1	Input	Indicator stereo signal input and destination setting input. Active "L".
42	K_0	Input	Destination setting matrix input. Active "L".
43	S_g	Output	Destination setting matrix output. P ch open drain.
44	S_f	Output	Destination setting matrix output. P ch open drain.
45	S_e	Output	Destination setting matrix output. P ch open drain.
46	S_d	Output	Not used
47	S_c	Output	Not used
48	S_b	Output	Not used
49	S_a	Output	Not used
50	D_6	Output	Not used
51	D_5	Output	Not used
52	MW	Output	AM tuner power supply control output. Active "H"

5. SCHEMATIC CIRCUIT DIAGRAM (GEX-T5/EW)

TUNER P.C.BOARD



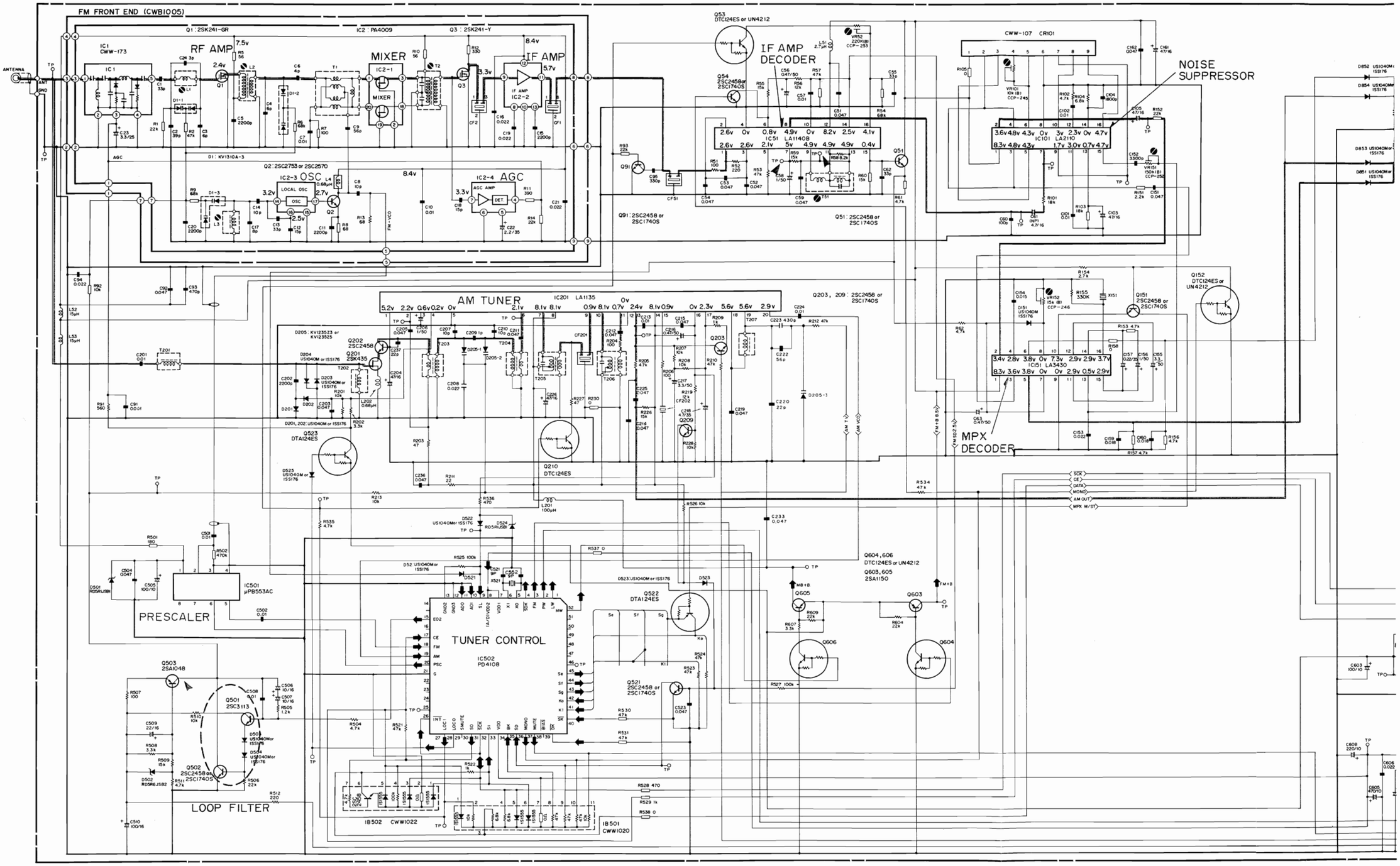


Connection is viewed from the direction of the arrow.

Fig. 12

7. SCHEMATIC CIRCUIT DIAGRAM (GEX-T5/ES)

TUNER P. C. BOARD



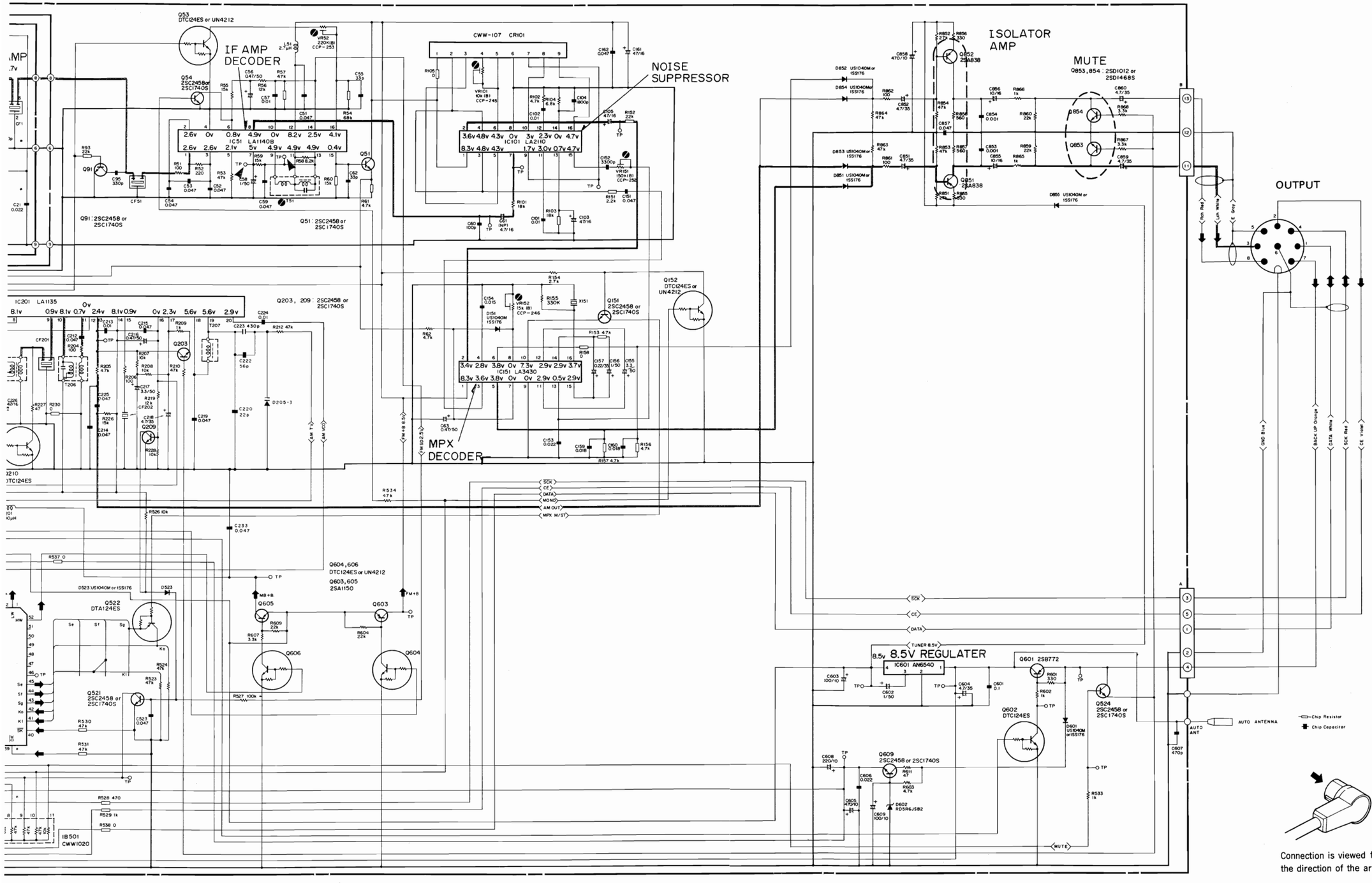
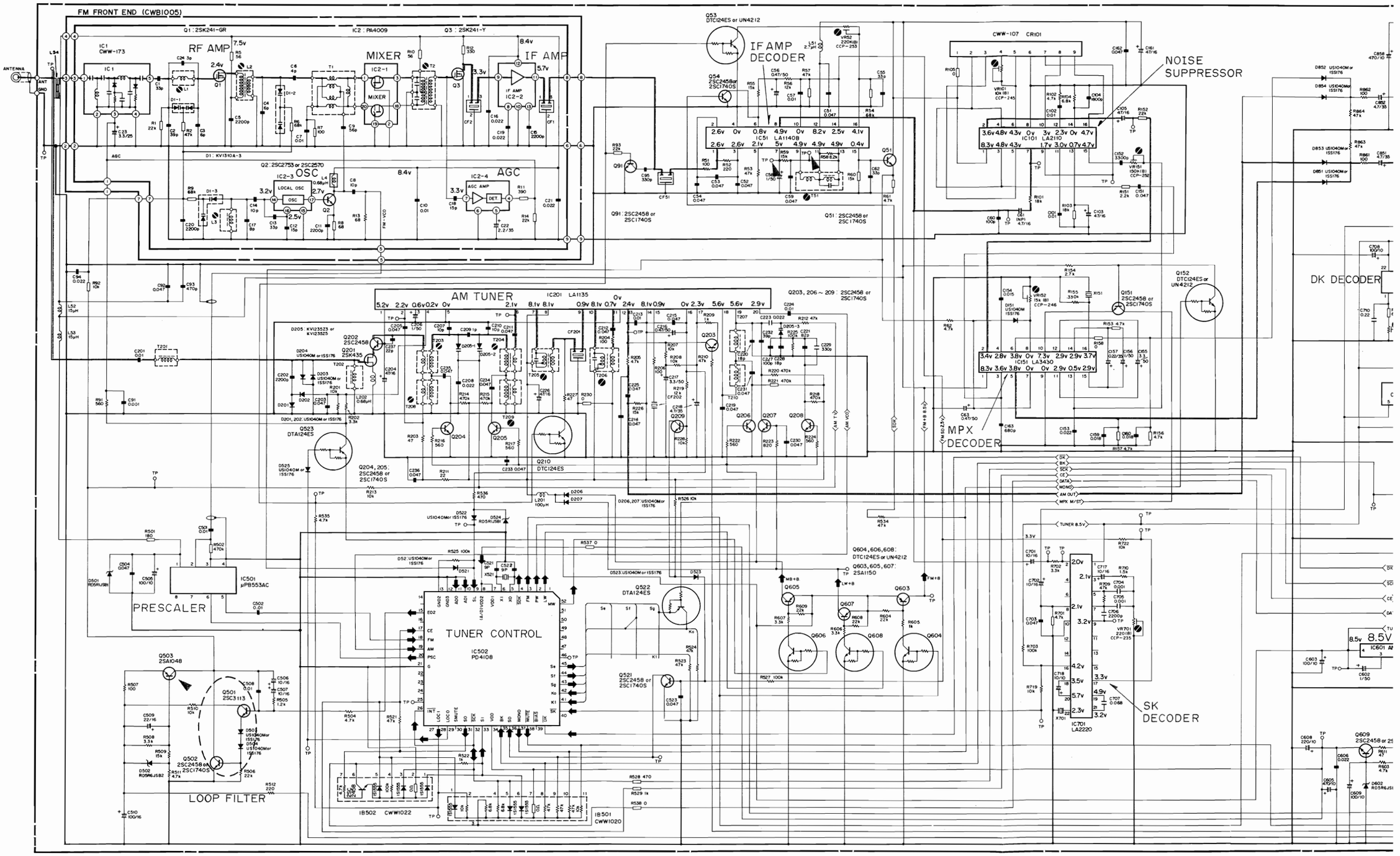
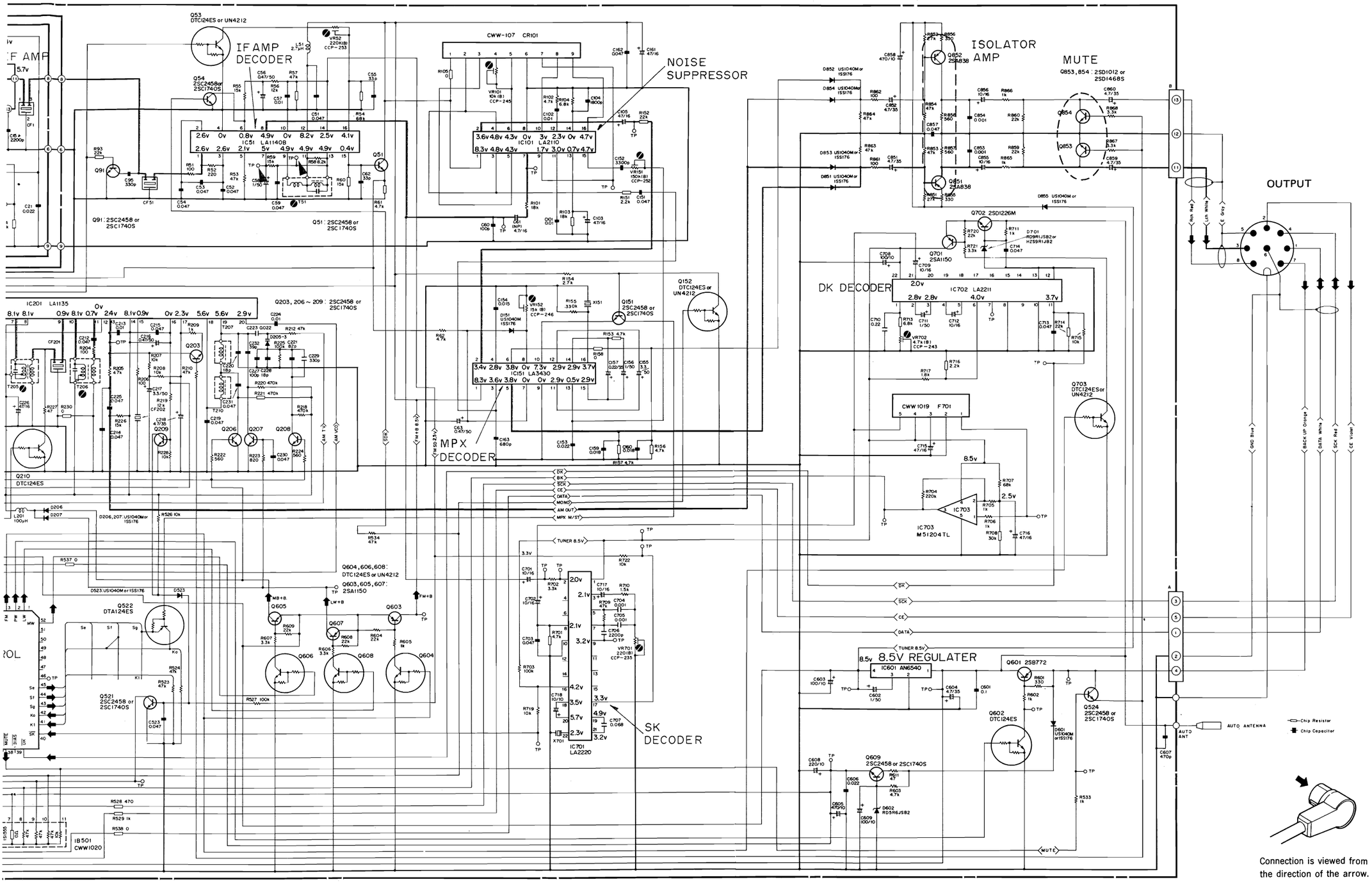

IF AMP DECODER
NOISE SUPPRESSOR
ISOLATOR AMP
MUTE
Q853, 854 : 2SD1012 or 2SD1468S
OUTPUT
MPX DECODER
8.5V REGULATER
IC601 AN6540
Q601 2SB772
Q602 DTC124ES
Q524 2SC2458 or 2SC1740S
Q521 2SC2458 or 2SC1740S
Q522 DTA124ES
Q604,606 DTC124ES or UN4212
Q603,605 2SA1150
Q91 : 2SC2458 or 2SC1740S
Q51 : 2SC2458 or 2SC1740S
Q203, 209 : 2SC2458 or 2SC1740S
Q151 2SC2458 or 2SC1740S
Q152 DTC124ES or UN4212
Q609 2SC2458 or 2SC1740S
IC201 LA1135
IC51 LA11408
IC101 LA2110
IC151 LA3430
CWW-107 CR101
IB501 CWW1020
AUTO ANTENNA
Chip Resistor
Chip Capacitor
Connection is viewed from the direction of the arrow.

Fig. 14

9. SCHEMATIC CIRCUIT DIAGRAM (GEX-T5SDK/WG)

TUNER P. C. BOARD



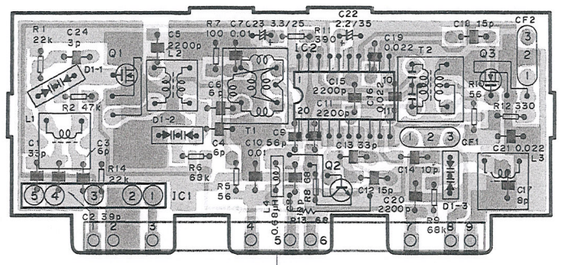


Connection is viewed from the direction of the arrow.

Fig. 16

6. CONNECTION DIAGRAM (GEX-T5/EW)

FM FRONT END (CWB1005)



IC1 : CWW-173 Q1 : 2SK241-GR D1 : KV1310A-3
IC2 : PA4009 Q2 : 2SC2753 or 2SC2570
Q3 : 2SK241-Y

FM FRONT END (CWB1005)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC2	/	0	/	/	/	0	3.3	/	3.3	0	5.7	8.4	/	3.2	0	2.5	2.7	/	0	/

(V)

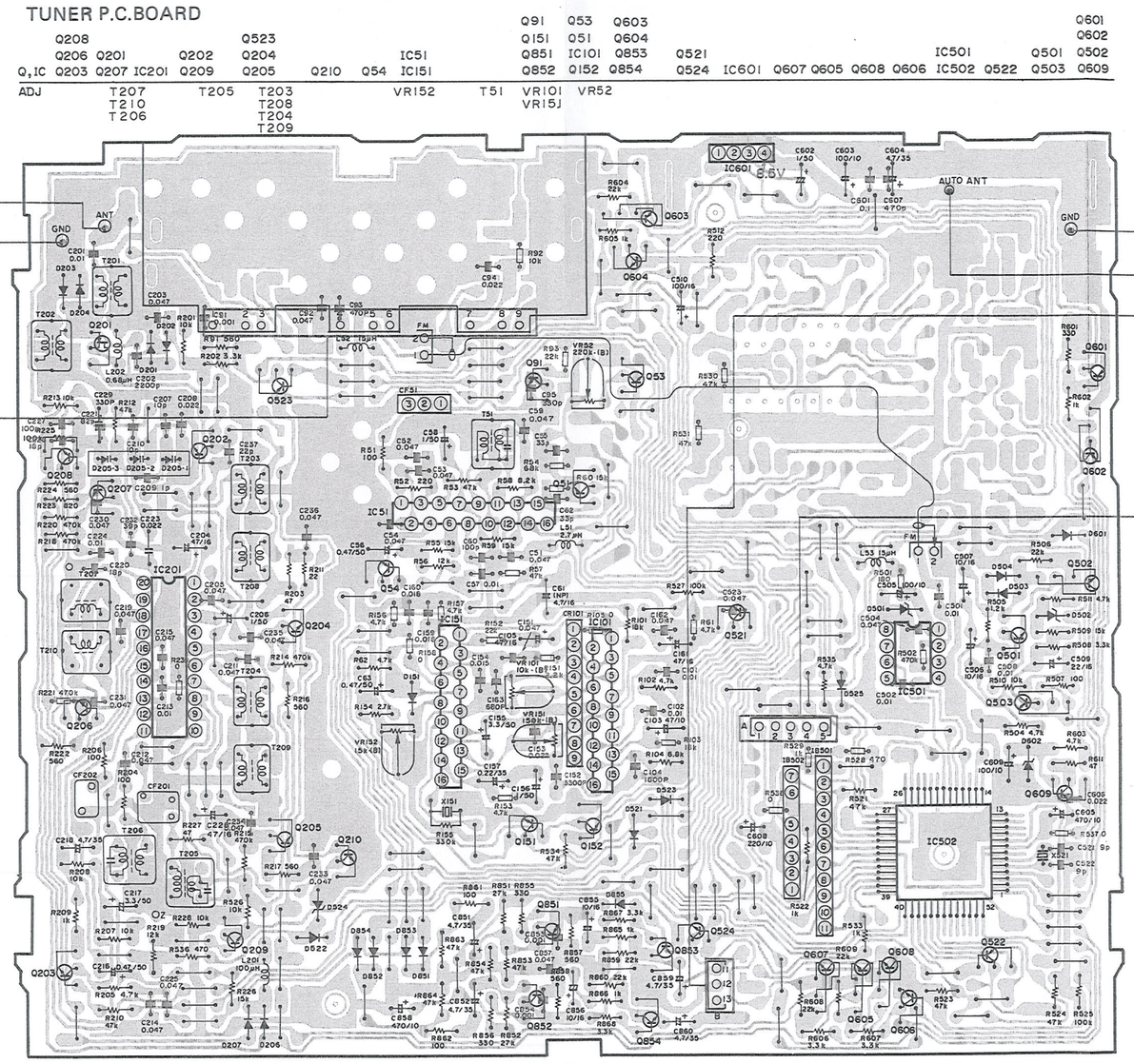
TUNER P.C.BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC51	2.6	2.6	2.6	0	2.1	0.8	5	4.9	4.9	0	4.9	8.2	4.9	2.5	0.4	4.1				
IC101	8.3	3.6	4.8	4.8	4.3	4.3	5	0	1.7	3	3.0	2.3	0.7	0	4.7	4.7				
IC151	8.3	3.4	3.6	2.8	3.8	3.8	0	0	0	7.3	2.9	2.9	0.5	2.9	2.9	3.7				
IC201	5.2	2.2	0.6	0.2	0	2.1	8.1	8.1	0.9	8.1	0.7	0	2.4	8.1	0.9	0	2.3	5.6	5.6	2.9

(V)

ANTENNA

TUNER P.C.BOARD



IC51 : LA1140B
IC101 : LA2110
IC151 : LA3430
IC201 : LA1135
IC501 : μPB553AC
IC502 : PD4108
IC601 : AN6540
CR101 : CWW107
IB501 : CWW1020
IB502 : CWW1022

Q51, 54, 91, 151, 202～209, 502, 521, 524, 609 : 2SC2458 or 2SC1740S
Q53, 152, 210, 602, 604, 606 : DTC124ES or UN4212
Q201 : 2SK435
Q501 : 2SC3113
Q503 : 2SA1048
Q522, 523, 855 : DTA124ES
Q601 : 2SB772
Q603, 605, 607, : 2SA1150
Q851, 852 : 2SA838
Q853, 854 : 2SD1012 or 2SD1468S

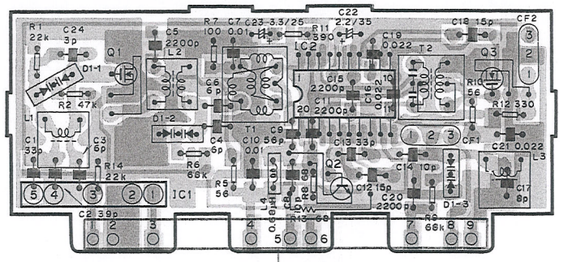
D51, 151, 201～204, 206, 207, 503, 504, 521, 522 : US1040M or 1SS176
D205 : KV1235Z3 or KV1235Z5
D501, 524 : RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
D502, 602 : RD5R6JSB2 or HZS5R6JB2
D523, 525, 601, 851～856 : US1040M or 1SS176

8. CONNECTION DIAGRAM (GEX-T5/ES)

FM FRONT END (CWB1005)

Q,IC IC1 Q1 Q2 IC2 Q3

ADJ. L1 L2 T2 L3



IC1 : CWW-173 Q1 : 2SK241-GR D1 : KV1310A-3
IC2 : PA4009 Q2 : 2SC2753 or 2SC2570
Q3 : 2SK241-Y

FM FRONT END (CWB1005)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC2	/	0	/	/	/	0	3.3	/	3.3	0	5.7	8.4	/	3.2	0	2.5	2.7	/	0	/

(V)

TUNER P.C.BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC51	2.6	2.6	2.6	0	2.1	0.8	5	4.9	4.9	0	4.9	8.2	4.9	2.5	0.4	4.1				
IC101	8.3	3.6	4.8	4.8	4.3	4.3	5	0	1.7	3	3.0	2.3	0.7	0	4.7	4.7				
IC151	8.3	3.4	3.6	2.8	3.8	3.8	0	0	0	7.3	2.9	2.9	0.5	2.9	2.9	3.7				
IC201	5.2	2.2	0.6	0.2	0	2.1	8.1	8.1	0.9	8.1	0.7	0	2.4	8.1	0.9	0	2.3	5.6	5.6	2.9

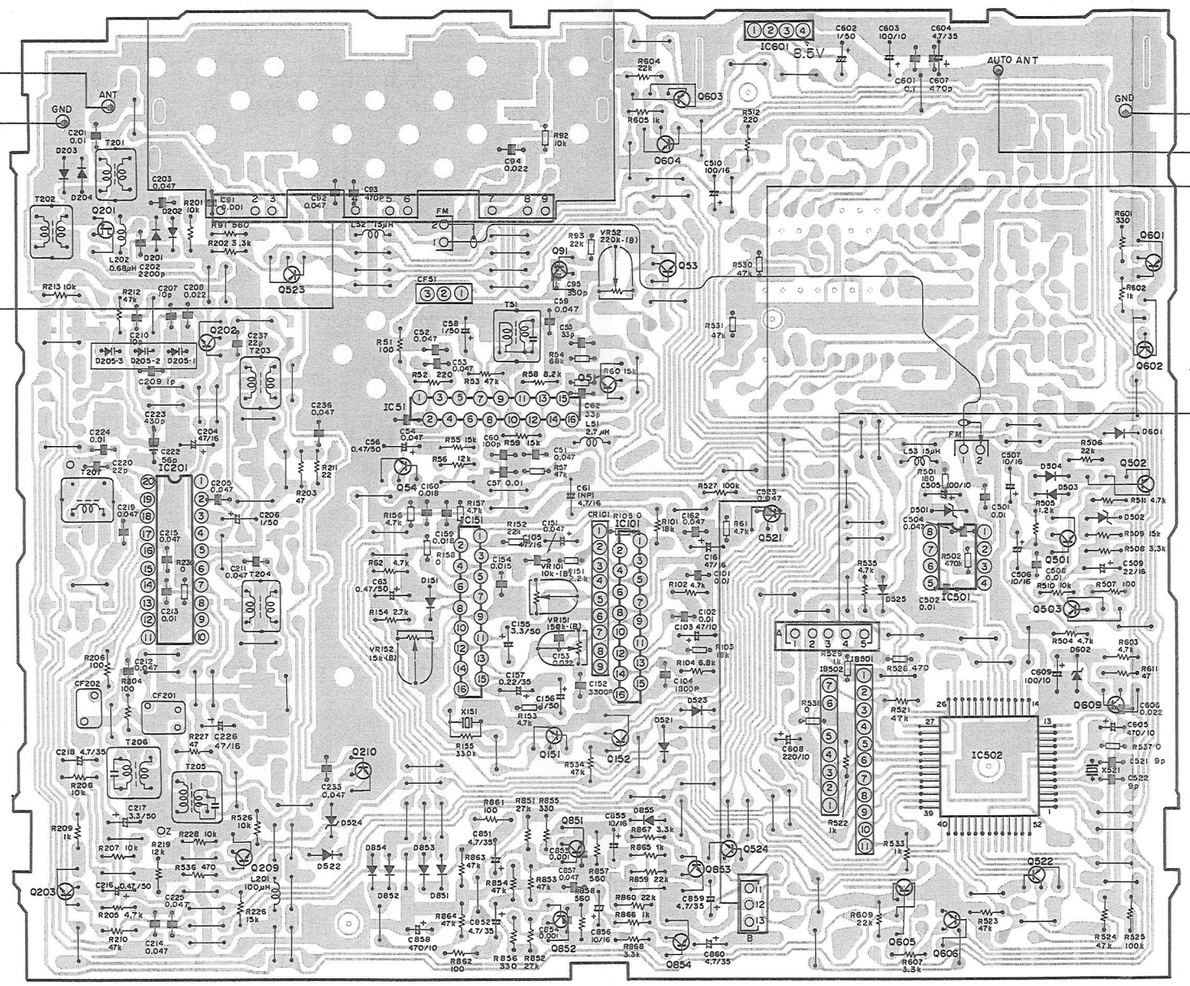
(V)

TUNER P.C.BOARD

Q,IC Q203 Q201 IC201 Q202 Q209 Q523 Q210 Q54 IC51 IC151 Q91 Q151 Q851 Q852 Q53 Q51 IC101 Q152 Q604 Q853 Q854 Q603 Q521 Q524 IC601 Q605 IC501 Q606 IC502 Q601 Q602 Q522 Q501 Q503 Q502 Q609

ADJ T207 T206 T205 T203 T204 VR152 T51 VR101 VR151 VR52

ANTENNA



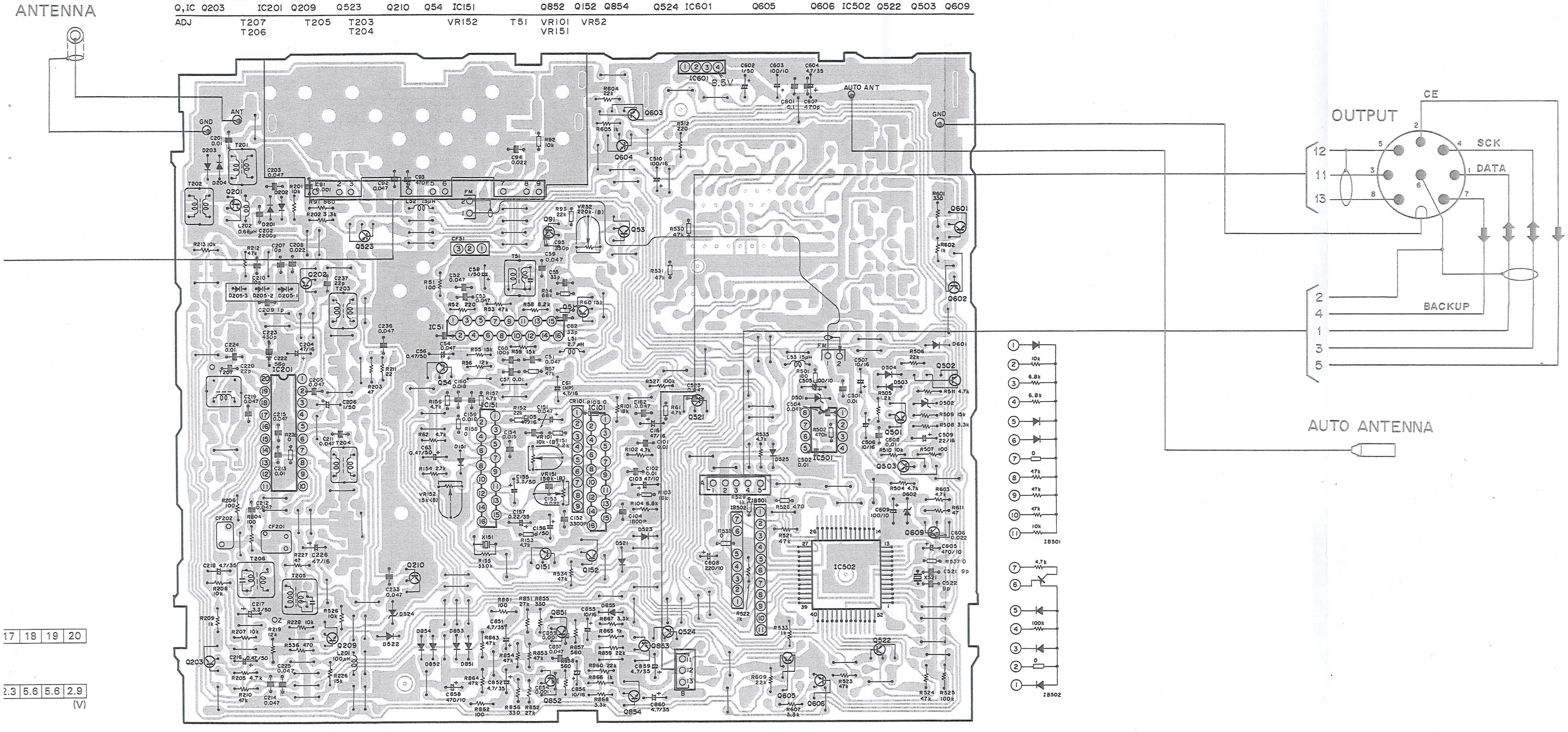
IC51 : LA1140B
IC101 : LA2110
IC151 : LA3430
IC201 : LA1135
IC501 : μPB553AC
IC502 : PD4108
IC601 : AN6540
CR101: CWW107
IB501: CWW1020
IB502: CWW1022

Q51, 54, 91, 151, 202, 203, 209, 502, 521, 524, 609 : 2SC2458 or 2SC1740S
Q53, 152, 210, 602, 604, 606 : DTC124ES or UN4212
Q201 : 2SK435
Q501 : 2SC3113
Q503 : 2SA1048
Q522, 523, 855 : DTA124ES
Q601 : 2SB772
Q603, 605 : 2SA1150
Q851, 852 : 2SA838
Q853, 854 : 2SD1012 or 2SD1468S

D51, 151, 201 ~ 204, 503, 504, 521, 522 : US1040M or ISS176
D205 : KV1235Z3 or KV1235Z5
D501, 524 : RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
D502, 602 : RD5R6JSB2 or HZS5R6JB2
D523, 525, 601, 851 ~ 856 : US1040M or ISS176

TUNER P.C.BOARD

Q,IC	Q203	Q201 IC201	Q202 Q209	Q523	Q210	Q54	IC51 IC151		Q91 Q151 Q851 Q852	Q53 Q51 IC101 Q152	Q604 Q853 Q854	Q603	Q521 Q524	IC601	Q605	Q606	IC501 IC502	Q522	Q501 Q503	Q601 Q602 Q502 Q609
ADJ		T207 T206	T205	T203 T204			VR152	T51	VR101 VR151	VR52										



17	18	19	20

2.3	5.6	5.6	2.9

(V)

IC51 : LA1140B
IC101 : LA2110
IC151 : LA3430
IC201 : LA1135
IC501 : μPB553AC
IC502 : PD4108
IC601 : AN6540
CR101: CWW107
IB501 : CWW1020
IB502 : CWW1022

Q51, 54, 91, 151, 202, 203, 209, 502, 521, 524, 609 : 2SC2458 or 2SC1740S
Q53, 152, 210, 602, 604, 606 : DTC124ES or UN4212
Q201 : 2SK435
Q501 : 2SC3113
Q503 : 2SA1048
Q522, 523, 855 : DTA124ES
Q601 : 2SB772
Q603, 605 : 2SA1150
Q851, 852 : 2SA838
Q853, 854 : 2SD1012 or 2SD1468S

D51, 151, 201 ~ 204, 503, 504, 521, 522 : US1040M or ISS176
D205 : KV1235Z3 or KV1235Z5
D501, 524 : RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
D502, 602 : RD5R6JSB2 or HZS5R6JB2
D523, 525, 601, 851 ~ 856 : US1040M or ISS176

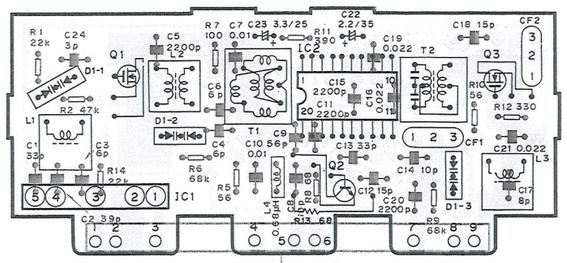
Fig. 15

10. CONNECTION DIAGRAM (GEX-T5SDK/WG)

FM FRONT END (CWB1005)

Q,IC IC1 Q1 Q2 IC2 Q3

ADJ. L1 L2 T2 L3



IC1 : CWW-173 Q1 : 2SK241-GR D1 : KV1310A-3

IC2 : PA4009 Q2 : 2SC2753 or 2SC2570

Q3 : 2SK241-Y

FM FRONT END (CWB1005)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC2	/	0	/	/	/	0	3.3	/	3.3	0	5.7	8.4	/	3.2	0	2.5	2.7	/	0	/

(V)

TUNER P.C.BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC51	2.6	2.6	2.6	0	2.1	0.8	5	4.9	4.9	0	4.9	8.2	4.9	2.5	0.4	4.1				
IC101	8.3	3.6	4.8	4.8	4.3	4.3	5	0	1.7	3	3.0	2.3	0.7	0	4.7	4.7				
IC151	8.3	3.4	3.6	2.8	3.8	3.8	0	0	0	7.3	2.9	2.9	0.5	2.9	2.9	3.7				
IC201	5.2	2.2	0.6	0.2	0	2.1	8.1	8.1	0.9	8.1	0.7	0	2.4	8.1	0.9	0	2.3	5.6	5.6	2.9

(V)

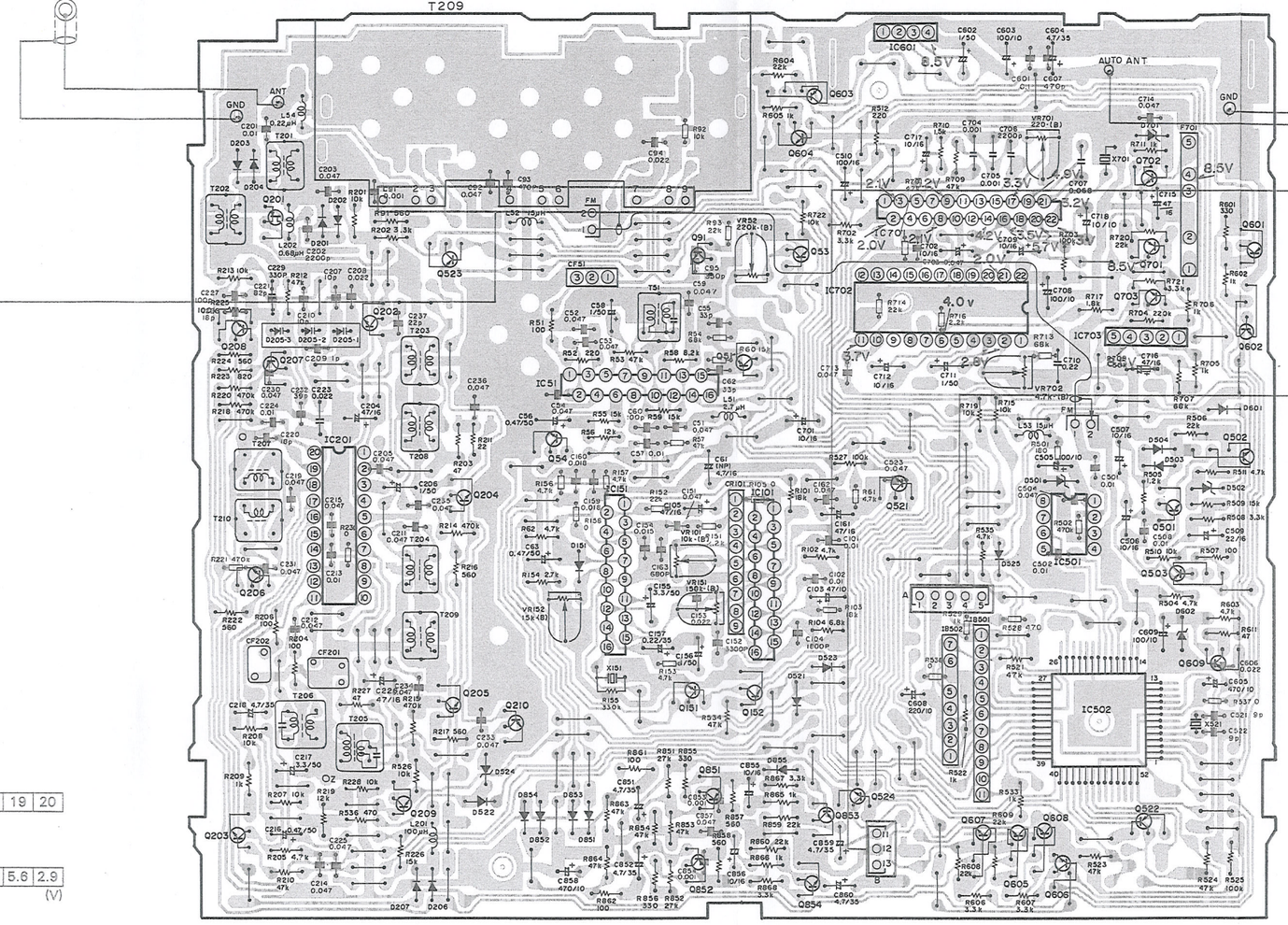
TUNER P.C.BOARD

Q208 Q523 Q91 Q53 Q604 Q603 IC601 Q702 Q601

Q206 Q201 Q202 Q204 IC51 Q151 Q51 IC701 IC703 Q701 Q602

Q,IC Q203 Q207 IC201 Q209 Q205 Q210 Q54 IC151 Q851 IC101 Q853 Q521 IC702 IC501 Q703 Q501 Q502

ADJ T207 T210 T206 T205 T203 T208 T204 T209 VR152 T51 VR101 VR151 VR52 Q852 Q152 Q854 Q524 Q607 Q605 Q608 Q606 VR702 VR701 IC502 Q522 Q503 Q609



IC51 : LA1140B

IC101 : LA2110

IC151 : LA3430

IC201 : LA1135

IC501 : μPB553AC

IC502 : PD4108

IC601 : AN6540

IC701 : LA2220

IC702 : LA2211

IC703 : M51204TL

CRI01 : CWW107

IB501 : CWW1020

IB502 : CWW1022

Q51, 54, 91, 151, 202～209, 502, 521, 524, 609 : 2SC2458 or 2SC1740S

Q52, 53, 152, 210, 602, 604, 606 : DTC124ES or UN4212

Q201 : 2SK435

Q501 : 2SC3113

Q503 : 2SA1048

Q522, 523, 855 : DTA124ES

Q601 : 2SB772

Q603, 605, 607, 701 : 2SA1150

Q851, 852 : 2SA838

Q853, 854 : 2SD1012 or 2SD1468S

Q702 : 2SD1226M

D51, 151, 201 ～ 204, 206, 207, 503, 504, 521, 522 : US1040M or 1SS176

D205 : KV1235Z3 or KV1235Z5

D501, 524 : RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB

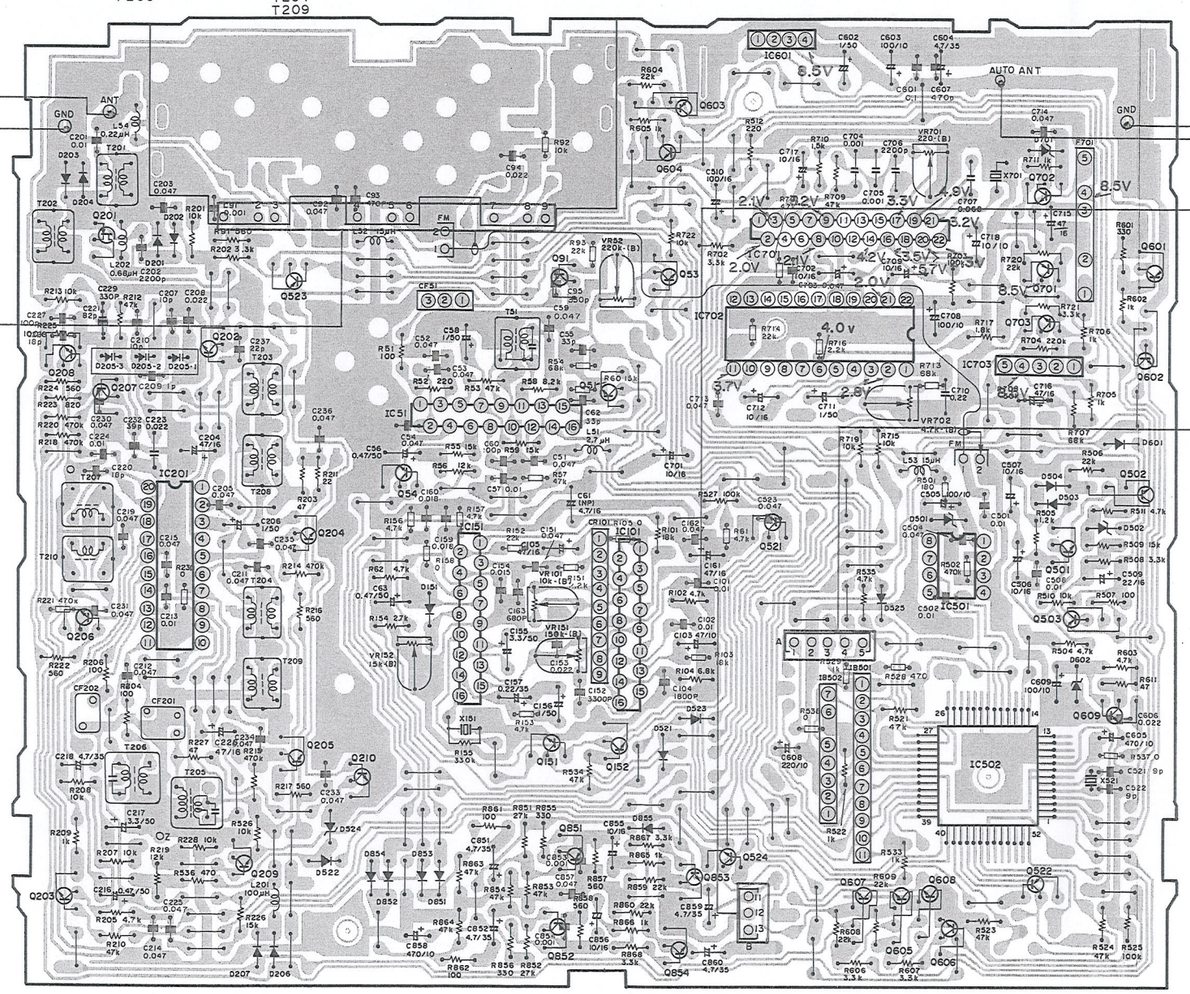
D502, 602 : RD5R6JSB2 or HZS5R6JB2

D523, 525, 601, 851～856 : US1040M or 1SS176

TUNER P.C.BOARD

		Q208				Q523							Q91	Q53	Q604	Q603		IC601					Q702		Q601
		Q206	Q201		Q202		Q204				IC51		Q151	Q51				IC701				IC703	Q701		Q602
Q,IC		Q203	Q207	IC201	Q209		Q205	Q210	Q54		IC151		Q851	IC101	Q853		Q521	IC702				IC501	Q703	Q501	Q502
													Q852	Q152	Q854		Q524		Q607	Q605	Q608	Q606	IC502	Q522	Q503	Q609
ADJ			T207		T205		T203				VR152	T51	VR101	VR52							VR702	VR701				
			T210				T208						VR151													
			T206				T204																			
							T209																			

ANTENNA



11. EXPLODED VIEW

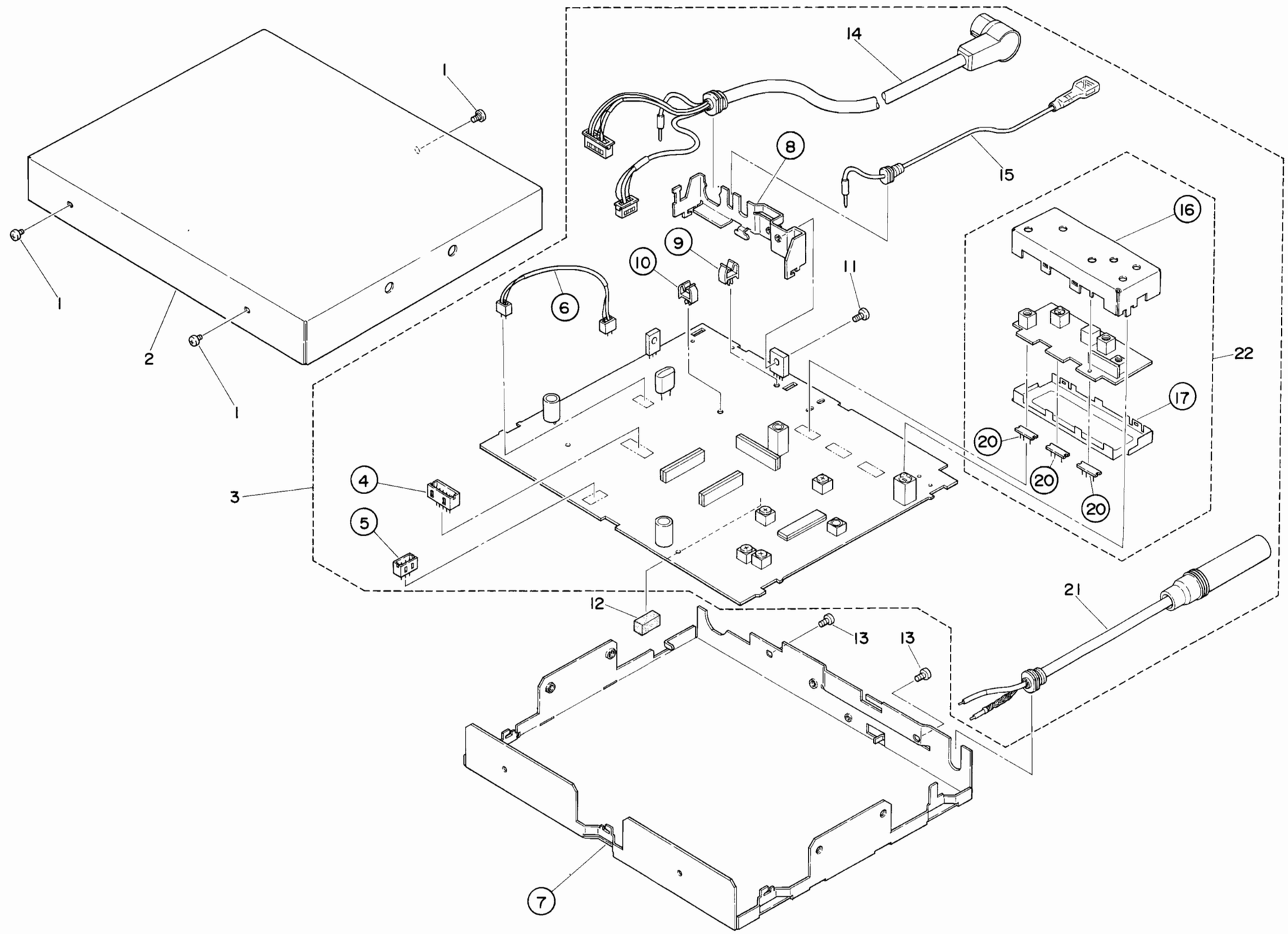


Fig. 18

• Part

NOTE:
• *Part*
• *Part long.*

Mark

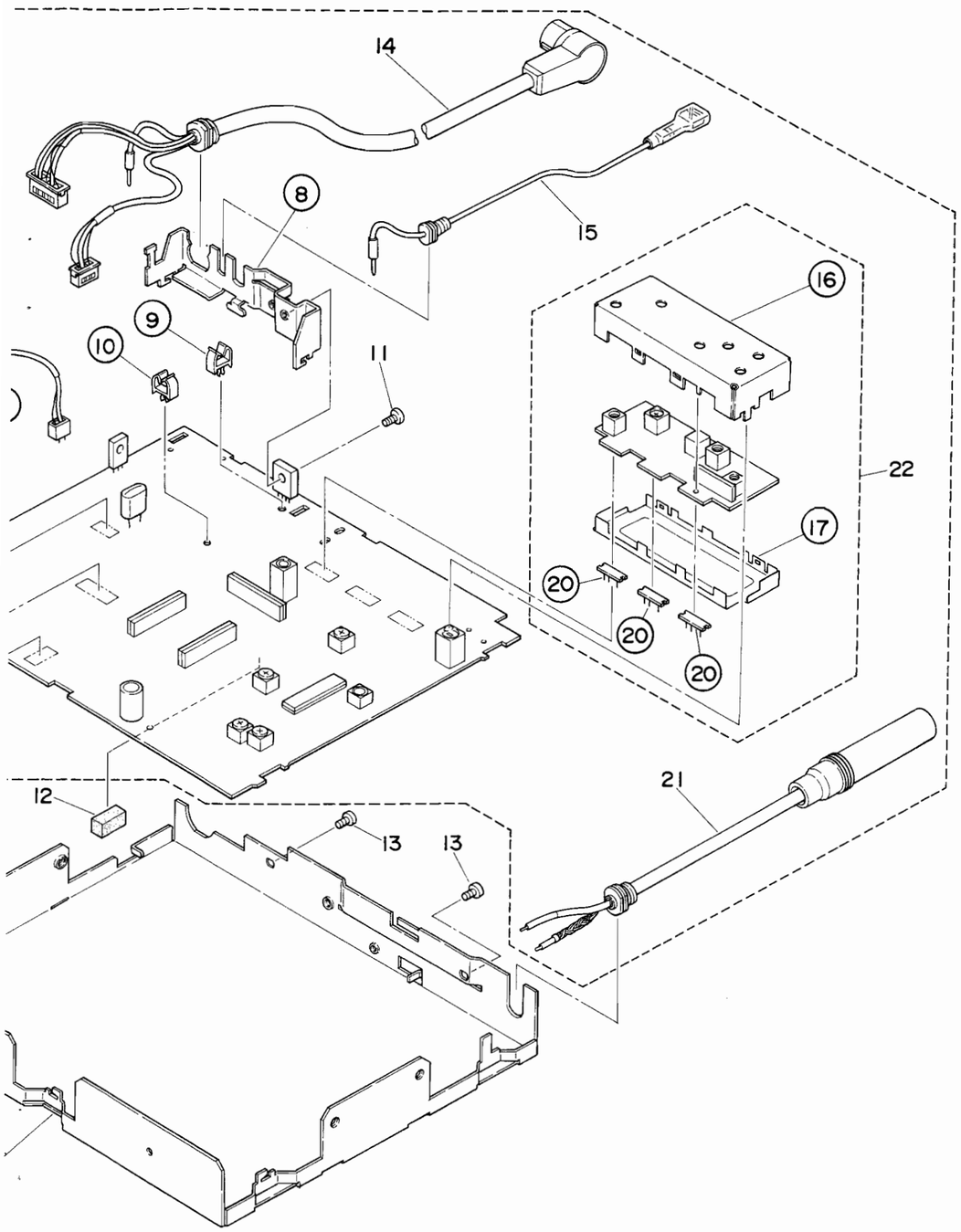


Fig. 18

• Parts List

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Part No.	Description
	1.	BMZ26P050FZK	Screw
	2.	CNB1080	Case (EW)
		CNB1090	Case (ES)
		CNB1089	Case (WG)
◉	3.	CWE1038	Tuner Unit (EW)
		CWE1037	Tuner Unit (ES)
		CWE1039	Tuner Unit (WG)
	4.		Plug
	5.		Plug
	6.		Connector
	7.		Chassis
	8.		Holder
	9.		Clamper (WG)
	10.		Clamper (EW, ES)
	11.	BMZ30P060FMC	Screw
	12.		Spacer
	13.	BMZ26P040FMC	Screw
	14.	CDE1285	Connector
	15.	CDF-885	Cord
	16.		Case
	17.		Case
	18.	VACANT	
	19.	VACANT	
	20.		Plug
	21.	CDH1047	Antenna Cable
	22.	CWB1005	FM Front End

12.ELECTRICAL PARTS LIST

NOTE:

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	*56×10^1*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47×10^3*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562×10^1*		*RN1/4SR 5 6 2 1 F*

- *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.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*
  Chip Resistor
  RS1/8S □□□J
  Chip Capacitor (except for CQS. . . . .)
  CKS. . . . ., CCS. . . . .

FM Front End (CWB1005)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		CWW-173 or CWW1015
★★	IC2		PA4009
★★	Q1		2SK241
★★	Q2		2SC2753 or 2SC2570
★★	Q3		2SK241
★	D1		KV1310A-3
	L1	Coil	CTC1001
	L2	Coil	CTC1002
	L3	Coil	CTC1003
	L4	Inductor	CTF-185
	CF1, 2	Ceramic Filter	CTF-182
	T1	Coil	CTC1005
	T2	Coil	CTC1004

RESISTORS

Mark	Symbol & Description	Part No.
	R4, 13	RD1/6PS□□□J or RD1/4PS□□□JL
	Other Resistors	RS1/8S□□□J

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CCSSH330J50
	C2	CCSSH390J50
	C3	CCSCH060D50 or CCSCH060C50
	C4	CCSTH060C50 or CCSTH060D50
	C5, 11, 15, 20	CKSYB222K50
	C6	CCSCH040C50
	C7, 10	CKSYB103K50
	C8	CCSCH050C50
	C9	CCSSH560J50
	C12, 18	CCSTH150J50
	C13	CCSTH330J50
	C14	CCSTH100D50
	C16, 19, 21	CKSYB223K50
	C17	CCSUJ080D50
	C22	CEA2R2M35LS
	C23	CEA3R3M25LS
	C24	CCSSH030C50

Tuner P.C. Board (GEX-T5/ES)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC51	LA1140B
★★	IC101	LA2110
★★	IC151	LA3430
★★	IC201	LA1135
★★	IC501	μPB553AC
★★	IC502	PD4108
★★	IC601	AN6540
★★	Q51, 54, 91, 151, 202, 203, 209, 502, 521, 524, 609	2SC2458 or 2SC1740S
★★	Q53, 152, 210, 602, 604, 606	DTC124ES or UN4212
★★	Q201	2SK435
★★	Q501	2SC3113
★★	Q503	2SA1048
★★	Q522, 523	DTA124ES
★★	Q601	2SB772
★★	Q603, 605	2SA1150
★★	Q851, 852	2SA838
★★	Q853	2SD1012
★★	Q854	2SD1012 or 2SD1468S
★	D151, 201–204, 503, 504, 521–523, 525, 601, 851–855	US1040M or 1SS176
★	D205	KV1235Z3 or KV1235Z5
★	D501, 524	RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
★	D502, 602	RD5R6JSB2 or HZS5R6JB2
	L51 Micro-Inductor	LAU2R7M
	L52, 53 Inductor	LAU150K
	L201 Ferri-Inductor	LAU101K
	L202 Micro-Inductor	LAUR68M
	T51 Coil	CTC-198
	T201 Coil	CTB-149
	T202 Coil	CTB-171
	T203, 204 Coil	CTB-172
	T205 Coil	CTE-159
	T206 Coil	CTE-160
	T207 Coil	CTB-164
	CF51 Ceramic Filter	CTF-182
	CF201 Filter	CTF-100 or CTF-240
	CF202 Ceramic Resonator	CTF-247
	CR101	CWW-107
	IB501	CWW1020
	IB502	CWW1022
★★	VR52 Semi-fixed, 220kΩ(B)	CCP-253
★★	VR101 Semi-fixed, 10kΩ(B)	CCP-245
★★	VR151 Semi-fixed, 150kΩ(B)	CCP-252
★★	VR152 Semi-fixed, 15kΩ(B)	CCP-246
	X151 Ceramic Resonator	CSS1002
	X521 X'tal	CSS-046

RESISTORS

Mark	Symbol & Description	Part No.
	R54, 57, 60, 61, 92, 93, 103, 105, 151–153, 156–158, 230, 501, 502, 528–531, 537, 538	RS1/8S□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C51–54, 59, 92, 151, 162, 203, 205, 211, 212, 214, 215, 225, 233, 504, 523, 857	CKSYF473Z50
	C55, 62	CCSSL330J50
	C56, 63, 216	CEAR47M50L2
	C57, 101, 102, 201, 213, 224, 501, 502, 508	CKSYB103K50
	C58, 156, 206, 602	CEA010M50L2
	C60	CCSSL101J50
	C61	CEA4R7M16NPLL
	C91, 853, 854,	CKSYB102K50
	C93, 607	CCSSL471J50
	C94, 153, 208, 606	CKSYB223K50
	C95	CCSUJ331J50
	C103, 105, 161, 204, 226	CEA470M16L2
	C104	CKSYB182K50
	C152	CKSYB332K50
	C154	CKSYB153K50
	C155, 217	CEA3R3M50L2
	C157	CSZAR22M35
	C159, 160	CKSYB183K50
	C202	CKSYB222K50
	C207, 210	CCSCH100D50
	C209	CCSCH010C50

Mark	Symbol & Description	Part No.
	C218, 604, 851, 852, 859, 860	CEA4R7M35L2
	C219, 236	CKSYB473K25
	C220	CCSUJ220J50
	C222	CCSUJ560J50
	C223	CQPA431G100
	C237	CCSSL220J50
	C505, 603, 609	CEA101M10L2
	C506, 507, 855, 856	CEA100M16L2
	C509	CEA220M16L2
	C510	CEA101M16LL
	C521, 522	CCSCH090D50
	C601	CKSYF104Z25
	C605, 858	CEA471M10L2
	C608	CEA221M10L2

Tuner P.C. Board (GEX-T5/EW)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC51	LA1140B
★★	IC101	LA2110
★★	IC151	LA3430
★★	IC201	LA1135
★★	IC501	μPB553AC
★★	IC502	PD4108
★★	IC601	AN6540
★★	Q51, 54, 91, 151, 202–209, 502, 521, 524, 609	2SC2458 or 2SC1740S
★★	Q53, 152, 210, 602, 604, 606, 608	DTC124ES or UN4212
★★	Q201	2SK435
★★	Q501	2SC3113
★★	Q503	2SA1048
★★	Q522, 523	DTA124ES
★★	Q601	2SB772
★★	Q603, 605, 607	2SA1150
★★	Q851, 852	2SA838
★★	Q853	2SD1012
★★	Q854	2SD1012 or 2SD1468S
★	D151, 201–204, 206, 207, 503, 504, 521–523, 525, 601, 851–855	US1040M or 1SS176
★	D205	KV1235Z3 or KV1235Z5
★	D501, 524	RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
★	D502, 602	RD5R6JSB2 or HZS5R6JB

Mark	Symbol & Description		Part No.
	L51	Micro-Inductor	LAU2R7M
	L52, 53	Inductor	LAU150K
	L201	Ferri-Inductor	LAU101K
	L202	Micro-Inductor	LAUR68M
	T51	Coil	CTC-198
	T201	Coil	CTB-149
	T202	Coil	CTB-167
	T203, 204	Coil	CTB-172
	T205	Coil	CTE-159
	T206	Coil	CTE-160
	T207	Coil	CTB1001
	T208, 209	Coil	CTB1002
	T210	Coil	CTB-165
	CF51	Ceramic Filter	CTF-182
	CF201	Filter	CTF-100 or CTF-240
	CF202	Ceramic Resonator	CTF-247
	CR101		CWW-107
	IB501		CWW1020
	IB502		CWW1022
★★	VR52	Semi-fixed, 220 kΩ(B)	CCP-253
★★	VR101	Semi-fixed, 10 kΩ(B)	CCP-245
★★	VR151	Semi-fixed, 150 kΩ(B)	CCP-252
★★	VR152	Semi-fixed, 15 kΩ(B)	CCP-246
	X151	Ceramic Resonator	CSS1002
	X521	X'tal	CSS-046

RESISTORS

Mark	Symbol & Description	Part No.
	R54, 57, 60, 61, 92, 93, 103, 105, 151–153, 156–158, 221, 230, 501, 502, 528–531, 537, 538	RS1/8S□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C51–54, 59, 92, 151, 162, 203, 205, 211, 212, 214, 215, 225, 230, 231, 233–235, 504, 523, 857	CKSYF473Z50
	C55, 62	CCSSL330J50
	C56, 63, 216	CEAR47M50L2

Mark	Symbol & Description	Part No.
	C57, 101, 102, 201, 213, 224, 501, 502, 508	CKSYB103K50
	C58, 156, 206, 602	CEA010M50L2
	C60	CCSSL101J50
	C61	CEA4R7M16NPLL
	C91, 853, 854	CKSYB102K50
	C93, 607	CCSSL471J50
	C94, 153, 208, 606	CKSYB223K50
	C95	CCSUJ331J50
	C103, 105, 161, 204, 226	CEA470M16L2
	C104	CKSYB182K50
	C152	CKSYB332K50
	C154	CKSYB153K50
	C155, 217	CEA3R3M50L2
	C157	CSZAR22M35
	C159, 160	CKSYB183K50
	C163	CCSSL681J50
	C202	CKSYB222K50
	C207, 210	CCSCH100D50
	C209	CCSCH010C50
	C218, 604, 851, 852, 859, 860	CEA4R7M35L2
	C219, 236	CKSYB473K25
	C220	CCSUJ180J50
	C221	CCSCH820J50
	C223	CKDYF223Z50L
	C227	CCSRH101J50
	C228	CCSCH180J50
	C229	CQPA331G100
	C232	CCSSH390J50
	C237	CCSSL220J50
	C505, 603, 609	CEA101M10L2
	C506, 507, 855, 856	CEA100M16L2
	C509	CEA220M16L2
	C510	CEA101M16LL
	C521, 522	CCSCH090D50
	C601	CKSYF104Z25
	C605, 858	CEA471M10L2
	C608	CEA221M10L2

Tuner P.C. Board (GEX-T5SDK/WG)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC51	LA1140B
★★	IC101	LA2110
★★	IC151	LA3430
★★	IC201	LA1135
★★	IC501	μPB553AC
★★	IC502	PD4108
★★	IC601	AN6540
★★	IC701	LA2220
★★	IC702	LA2211
★★	IC703	M51204TL
★★	Q51, 54, 91, 151, 202—209, 502, 521, 524, 609	2SC2458 or 2SC1740S
★★	Q53, 152, 210, 602, 604, 606, 608, 703	DTC124ES or UN4212
★★	Q201	2SK435
★★	Q501	2SC3113
★★	Q503	2SA1048
★★	Q522, 523	DTA124ES
★★	Q601	2SB772
★★	Q603, 605, 607, 701	2SA1150
★★	Q702	2SD1226M
★★	Q851, 852	2SA838
★★	Q853	2SD1012
★★	Q854	2SD1012 or 2SD1468S
★	D151, 201—204, 206, 207, 503, 504, 521—523, 525, 601, 851—855	US1040M or 1SS176
★	D205	KV1235Z3 or KV1235Z5
★	D501, 524	RD5R1JSB1 or RD5R1JSB2 or MTZ5R1JA or MTZ5R1JB
★	D502, 602	RD5R6JSB2 or HZS5R6JB2
★	D701	RD9R1JSB2 or HZS9R1JB2
	L51 Micro-Inductor	LAU2R7M
	L52, 53 Inductor	LAU150K
	L54 Bead Core	CTX-022
	L201 Ferri-Inductor	LAU101K
	L202 Micro-Inductor	LAUR68M
	T51 Coil	CTC-198
	T201 Coil	CTB-149
	T202 Coil	CTB-167
	T203, 204 Coil	CTB-172
	T205 Coil	CTE-159
	T206 Coil	CTE-160
	T207 Coil	CTB1001
	T208, 209 Coil	CTB1002

Mark	Symbol & Description		Part No.
	T210	Coil	CTB-165
	CF51	Ceramic Filter	CTF-182
	CF201	Filter	CTF-100 or CTF-240
	CF202	Ceramic Resonator	CTF-247
	CR101		CWW-107
	F701	Filter Unit	CWW1019
	IB501		CWW1020
	IB502		CWW1022
★★	VR52	Semi-fixed, 220 kΩ(B)	CCP-253
★★	VR101	Semi-fixed, 10 kΩ(B)	CCP-245
★★	VR151	Semi-fixed, 150 kΩ(B)	CCP-252
★★	VR152	Semi-fixed, 15 kΩ(B)	CCP-246
★★	VR701	Semi-fixed, 220 kΩ(B)	CCP-235
★★	VR702	Semi-fixed, 4.7 kΩ(B)	CCP-243
	X151, 701	Ceramic Resonator	CSS1002
	X521	X'tal	CSS-046

RESISTORS

Mark	Symbol & Description	Part No.
	R54, 57, 60, 61, 92, 93, 103, 105, 151—153, 156—158, 221, 230, 501, 502, 528, 529, 537, 538, 701, 708, 713, 714, 716	RS1/8S□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C51—54, 59, 92, 151, 162, 203, 205, 211, 212, 214, 215, 225, 230, 231, 233—235, 504, 523, 703, 713, 714, 857	CKSYF473Z50
	C55, 62	CCSSL330J50
	C56, 63, 216	CEAR47M50L2
	C57, 101, 102, 201, 213, 224, 501, 502, 508	CKSYB103K50
	C58, 156, 206, 602, 711	CEA010M50L2
	C60	CCSSL101J50
	C61	CEA4R7M16NPLL
	C91, 853, 854	CKSYB102K50
	C93, 607	CCSSL471J50
	C94, 153, 208, 606	CKSYB223K50
	C95	CCSUJ331J50
	C103, 105, 161, 204, 226, 715, 716	CEA470M16L2
	C104	CKSYB182K50
	C152	CKSYB332K50
	C154	CKSYB153K50
	C155, 217	CEA3R3M50L2
	C157	CSZAR22M35
	C159, 160	CKSYB183K50
	C163	CCSSL681J50
	C202	CKSYB222K50
	C207, 210	CCSCH100D50
	C209	CCSCH010C50
	C218, 604, 851, 852, 859, 860	CEA4R7M35L2
	C219, 236	CKSYB473K25
	C220	CCSUJ180J50
	C221	CCSCH820J50
	C223	CKDYF223Z50L
	C227	CCSRH101J50
	C228	CCSCH180J50
	C229	CQPA331G100
	C232	CCSSH390J50
	C237	CCSSL220J50
	C505, 603, 609, 708	CEA101M10L2
	C506, 507, 701, 702, 709, 712, 717, 855, 856	CEA100M16L2
	C509	CEA220M16L2
	C510	CEA101M16LL
	C521, 522	CCSCH090D50
	C601	CKSYF104Z25
	C605, 858	CEA471M10L2
	C608	CEA221M10L2
	C704, 705	CQMA102K50L
	C706	CQMA222K50L
	C707	CQMA683J50L
	C710	CQMA224K50L
	C718	CSZA100M10

13.PACKING METHOD

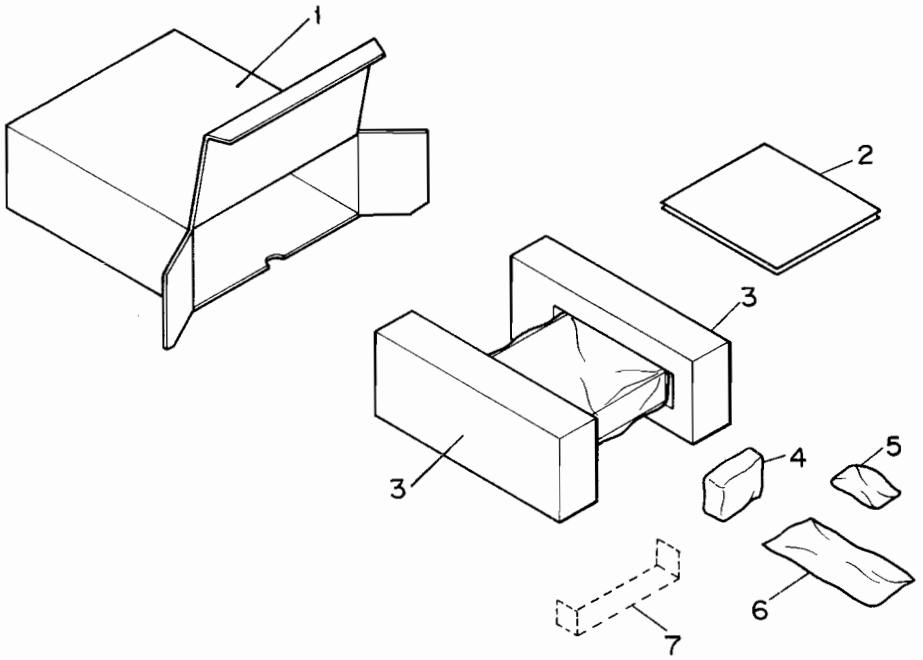


Fig. 19

• Parts List

Mark	No.	Part No.	Description
	1.	CHG1117	Carton (EW)
		CHG1105	Carton (ES)
		CHG1118	Carton (WG)
	2.	CRD1063	Owner's Manual (EW, ES) (English, French, German, Spanish)
		CRD1064	Owner's Manual (EW) (Swedish, Norwegian, Dutch)
		CRB1055	Owner's Manual (ES) (Arabic)
		CRD1065	Owner's Manual (WG) (German, French)
	3.	CHP1038	Styrofoam
	4.	CNM-667	Fastener
	5.	CDH-048	Sub Feeder
	6.	CEA-782	Accessory Kit
	6-1.	BNC50P160FMC	Screw
	6-2.	B20-223-F	Pin
	6-3.	CBA-101	Screw
	6-4.	CBA-102	Screw
	6-5.	CDE-437	Cord
	6-6.	NF50FMC	Nut
	6-7.	WA45F130M080	Washer
	7.	CNB-720	Mounting Bracket