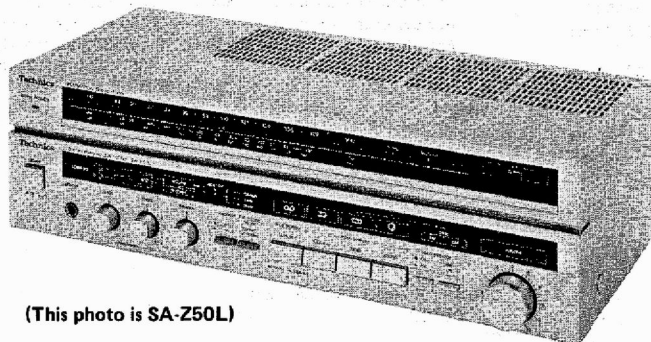


Service Manual

FM/AM Stereo Receiver (SA-Z50)
FM/MW/LW Stereo Receiver (SA-Z50L)

Receiver
SA-Z50
SA-Z50L



(This photo is SA-Z50L)

Color

(K)...Black Type
(S)...Silver Type

Color	Areas
(K) (S)	[EX]...Continental Europe (SA-Z50)
(K) (S)	[XA]...Southeast Asia, Oceania, Africa, Middle Near East, Central South America (SA-Z50)
(K) (S)	[Ei] ...Italy (SA-Z50)
(K) (S)	[EH]...Holland (SA-Z50)
(K) (S)	[XL]...Australia (SA-Z50)
(K) (S)	[EK]...United Kingdom (SA-Z50L)
(K) (S)	[EF]...France (SA-Z50L)
(K) (S)	[EB]...Belgium (SA-Z50L)

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

1 kHz continuous power output both channels driven	2 × 25W (8Ω)
Total harmonic distortion half power at 1 kHz	0.05% (8Ω)
Intermodulation distortion rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.8%
Power bandwidth both channels driven, -3 dB	15 Hz~25 kHz (8Ω)
Damping factor	30 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
CD/AUX, TAPE/EXT	150 mV/18kΩ
PHONO maximum input voltage (1 kHz, RMS)	130 mV
S/N	
rated power	
PHONO	70 dB (IHF, A: 70 dB)
CD/AUX, TAPE/EXT	85 dB (IHF, A: 95 dB)
Frequency response	
PHONO	RIAA standard curve ±0.8 dB (30 Hz~15 kHz)
CD/AUX, TAPE/EXT	10 Hz~60 kHz (-3 dB)
Tone controls	
BASS	50 Hz, +10 dB~-10 dB
TREBLE	20 kHz, +10 dB~-10 dB
Loudness control (volume at -30 dB)	50 Hz, +9 dB
Output voltage	
REC OUT	150 mV
Channel balance, AUX 250 Hz~6,300 Hz	±1 dB
Channel separation	55 dB
Headphones output level and impedance	380 mV/330Ω
Load impedance	8Ω~16Ω

■ FM TUNER SECTION

Frequency range	88~108 MHz
Sensitivity	
S/N 30 dB	1.3 μV (75Ω)
S/N 26 dB	1.2 μV (75Ω)
S/N 20 dB	0.9 μV (75Ω)
IHF usable sensitivity	0.95 μV (IHF '58, 75 Ω)
Total harmonic distortion	
MONO	0.15%
STEREO	0.3%
S/N	
MONO	60 dB (76 dB, IHF)
STEREO	58 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +1 dB~-2 dB
Alternate channel selectivity	±400 kHz, 60 dB
Capture ratio	1 dB
Image rejection at 98 MHz	40 dB
IF rejection at 98 MHz	60 dB
Spurious response rejection at 98 MHz	70 dB
AM suppression	50 dB
Stereo	
1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	-30 dB (-35 dB, IHF)
38 kHz	-45 dB (-50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75Ω (unbalanced)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SA-Z50/SA-Z50L

■ AM TUNER SECTION (SA-Z50)

Frequency range	527~1605 kHz
Sensitivity (S/N 20 dB)	20 μ V, 300 μ V/m
Selectivity	27 dB
Image rejection at 1,000 kHz	40 dB
IF rejection at 1,000 kHz	55 dB

■ AM TUNER SECTION (SA-Z50L)

Frequency range	527~1605 kHz
MW	140~350 kHz
LW	
Selectivity (S/N 20 dB)	
MW	20 μ V, 300 μ V/m
LW	100 μ V
Selectivity	
MW	27 dB
LW	27 dB

Image rejection

MW (at 1000 kHz)	40 dB
LW (at 250 kHz)	30 dB

IF rejection

MW (at 1000 kHz)	55 dB
LW (at 250 kHz)	40 dB

■ GENERAL

Power consumption 150W

Power supply

For Australia and United Kingdom	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
For others	AC 50 Hz/60 Hz, 110V/127V/220V/240V

Dimensions (W×H×D)

430 × 127 × 210 mm
(16-15/16" × 5" × 8-1/4")

Weight

3.9 kg
(8.6 lb.)

• Specifications are subject to change without notice for further improvement.

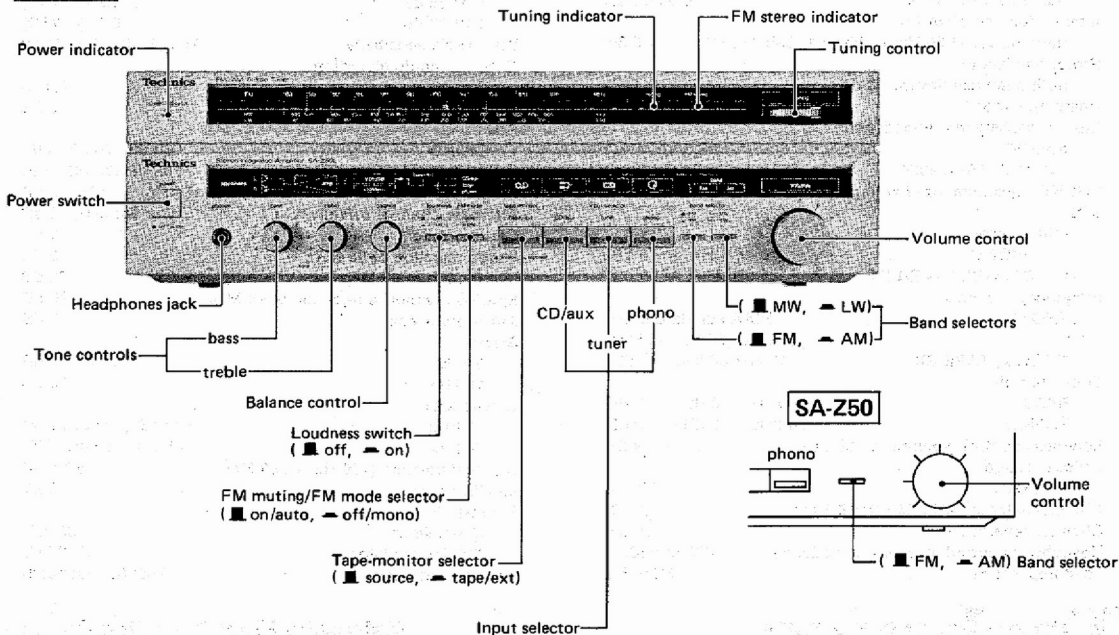
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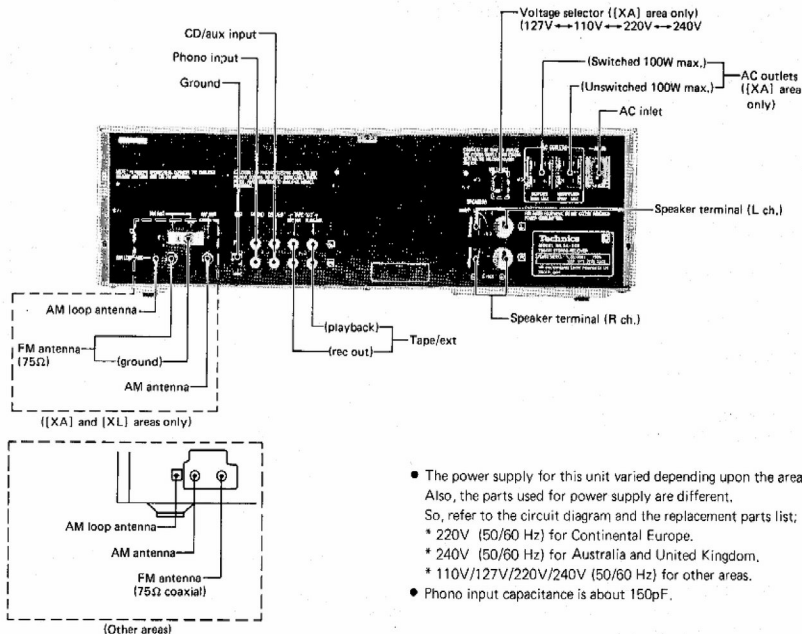
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■ LOCATION OF CONTROLS

SA-Z50L





PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again.

Note

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power. Discharge both power supply capacitors (C706, C707, 4700 μ F) through a 10 Ω , 5W resistor to ground. Do not short between C706 and C707. It may damage the capacitors.
2. After completion of repair, slowly apply the primary voltage by using a variac to avoid over current. Current consumption at 60 Hz/50 Hz in no signal mode should be shown below with respect to supply voltage 110V/127V/220V/240V.

Power supply voltage		AC 110V	AC 127V	AC 220V	AC 240V
Consumed current	50 Hz	110 ~ 300mA	100 ~ 290mA	50 ~ 150mA	40 ~ 140mA
	60 Hz	100 ~ 290mA	90 ~ 280mA	40 ~ 140mA	40 ~ 130mA

DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet	Ref. No. 2	How to remove the front panel
Procedure 1	1. Remove the 5 screws (1 ~ 5).	Procedure 1 → 2	1. Remove the screw (1) of tuning drum and the 2 pins (2, 3) of plate.

2. Remove the knob of volume control and 3 knobs of tone and balance control.
3. Remove the 3 nuts (4 ~ 7).
4. Remove the 3 screws of front panel (8 ~ 10).

When setting the dial cord, refer to next page.

Ref. No. 3	How to check the voltage
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Procedure
1 → 3

- Remove the 2 screws (1, 2) of Main P.C.B.
- Remove the 8 screws (3 ~ 10) of Bottom.
- Remove the bottom board.

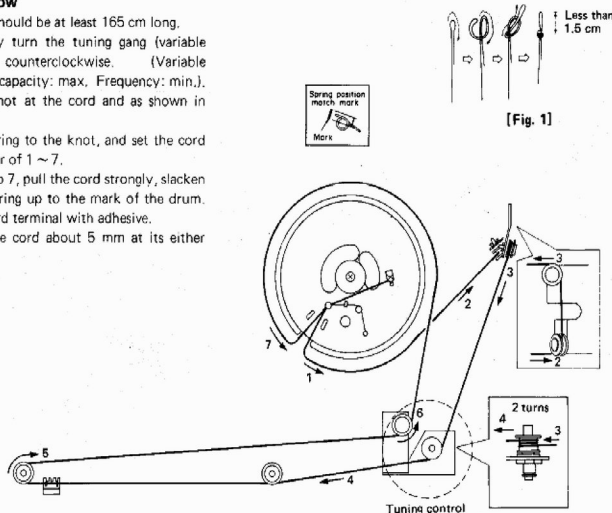
DIAL CORD INSTALLATION GUIDE

When setting the cord, follow the procedure given below

- The cord should be at least 165 cm long.
- Completely turn the tuning gang (variable capacitor) counterclockwise. (Variable condenser capacity: max. Frequency: min.)
- Make a knot at the cord and as shown in Fig. 1.
- Set the spring to the knot, and set the cord in the order of 1 ~ 7.

Note: At step 7, pull the cord strongly, slacken the spring up to the mark of the drum.

- Fix the cord terminal with adhesive.
- Cut off the cord about 5 mm at its either end.



MEASUREMENTS AND ADJUSTMENTS

LW/MW/FM

Control positions and equipment used

- AM and FM signal generator (AM and FM-SG).
- Oscilloscope
- AC and DC electronic voltmeter (EVM).
- Frequency counter.
- Choke coil (100μH).
- Resistor (100kΩ).
- Ceramic capacitor (200pF).

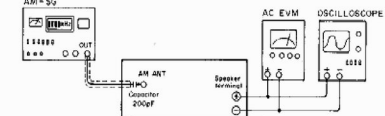
Note: For T202 (AM-IFT) adjusted part is supplied. So do not turn the core of this part.

AM (MW) ADJUSTMENT

- Test equipment connection is shown in figure.
- Set the unit to "AM (MW)" position.
- Place the radio dial and signal generator setting to 600 kHz.
- Adjust L201 and L202 for maximum output.
- Place the radio dial and signal generator setting to 1500 kHz.
- Adjust CT201 and CT202 for maximum output.
- Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency 400 Hz

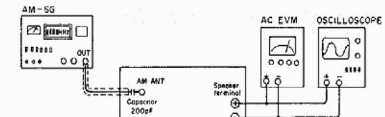


LW-RF ADJUSTMENT (SA-Z50L only)

- Test equipment connection is shown in figure.
- Set the unit to "LW" position.
- Place the radio dial and signal generator setting to 145 kHz.
- Adjust L203 and L204 for maximum output.
- Place the radio dial and signal generator setting to 350 kHz.
- Adjust CT203 and CT224 for maximum output.
- Repeat steps 3 ~ 6.

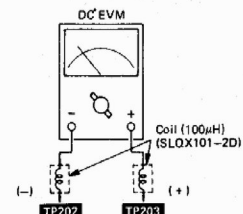
Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency 400 Hz



FM-IF ADJUSTMENT

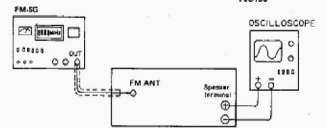
- Test equipment connection is shown in figure.
- Set the unit to "FM" position.
- Place the radio dial setting to point of non-interference.
- Adjust T201 core so that voltage measured in signal mode is 0 mV (0 ± 50 mV) in 300 mV range.



FM-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" position.
3. Place the radio dial and signal generator setting to 90 MHz. Add weak input so that noise is included in the output waveform.
4. Adjust L104 and L102 so that the output waveform is vertically symmetrical.
5. Place the radio dial and signal generator setting to 106 MHz.
6. Adjust CT102 so that the output waveform is vertically symmetrical. (For United Kingdom, adjust CT101 as well).
7. Repeat steps 3 ~ 6.

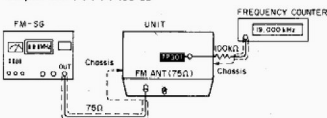
FM SIGNAL GENERATOR CONDITION
 Modulation 100%
 Modulation frequency 400 Hz
 Output level 66 dB



MPX VCO ADJUSTMENT

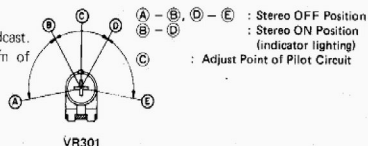
1. Test equipment connection is shown in figure.
2. Set the unit to "on/auto" position.
3. Place the radio dial and signal generator setting to 100 MHz.
4. Adjust VR301 for 19 kHz \pm 50 Hz on frequency counter reading.

FM SIGNAL GENERATOR CONDITION
 Modulation 0% (non-modulation)
 Output level 66 dB

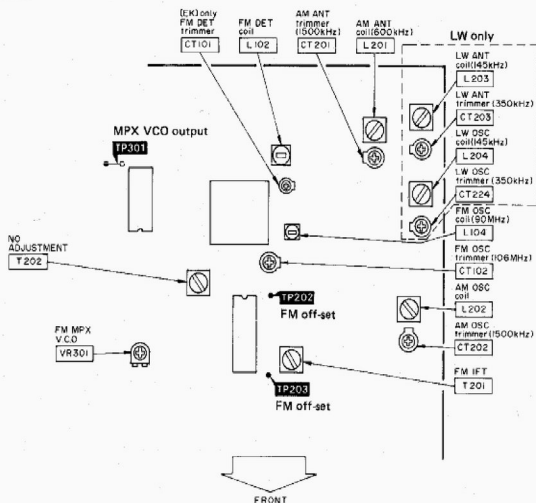


★ USING ALTERNATE SYSTEM

1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust VR301 until stereo indicator lights up. Cement arm of VR301 as shown in figure.



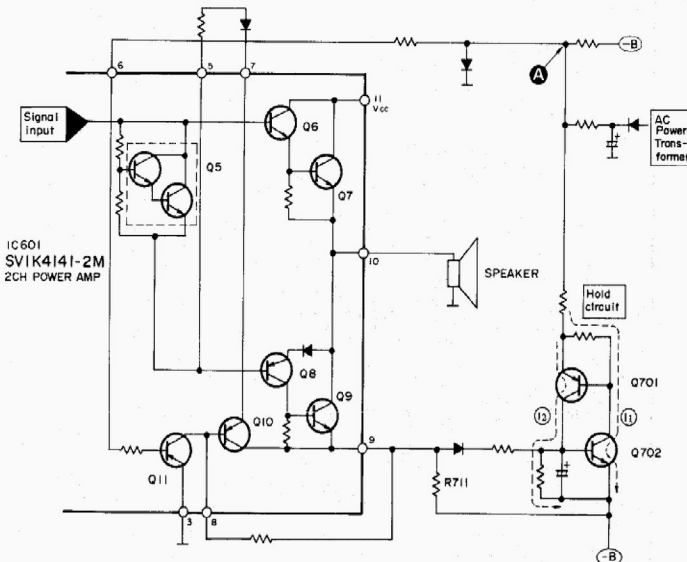
• Adjustment points

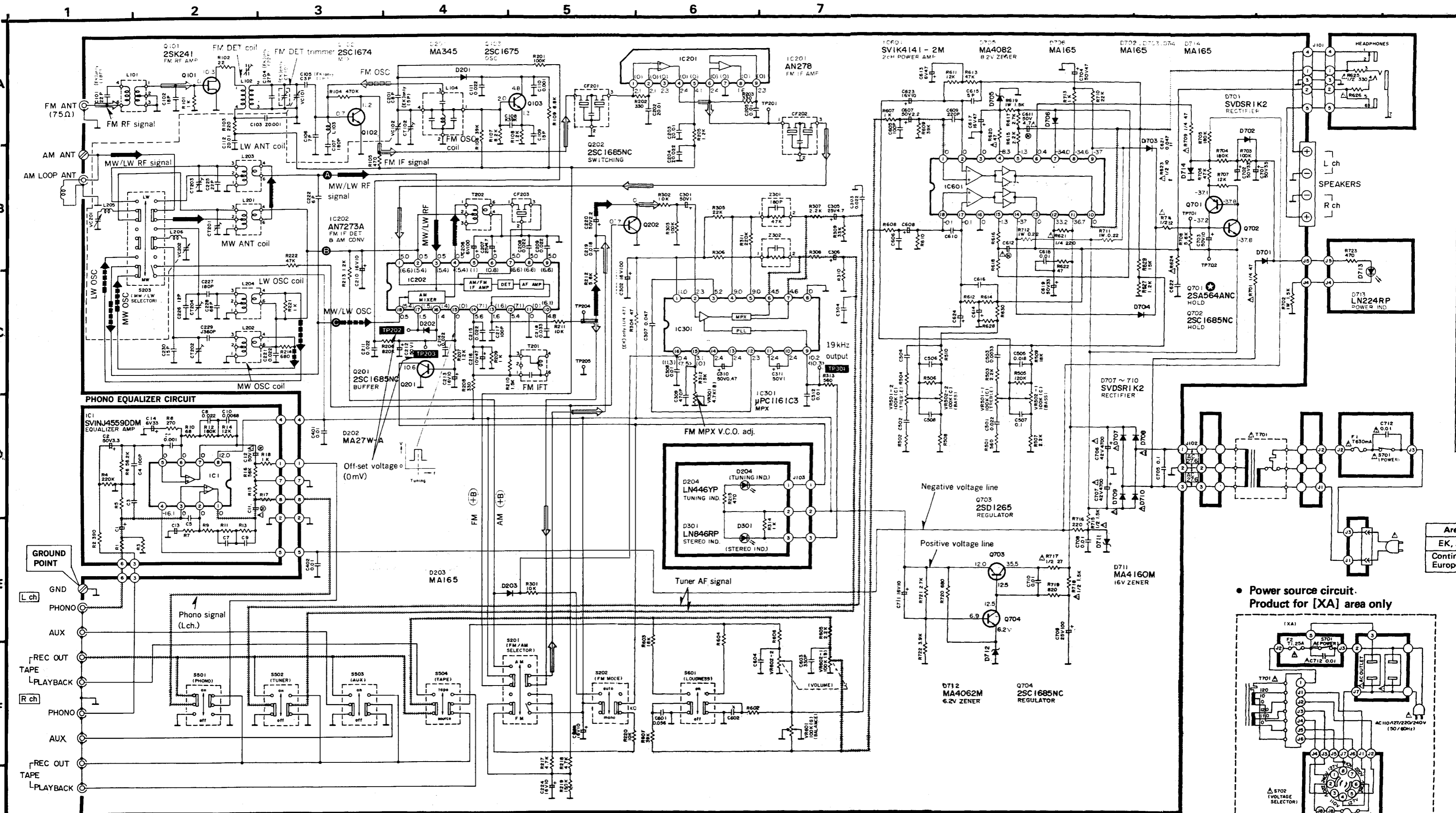


■ OPERATION DESCRIPTION OF PROTECTIVE CIRCUIT

This circuit prevents the power amplifier circuit from breakdown in case of speaker terminal shortcircuit during speaker operation (with 8Ω, 2V or more output) or of high output operation due to low impedance speaker connection.

1. If large current flows into the power amplifier due to speaker terminal shortcircuit or other trouble, it will cause generation of potential difference between pin 9 and R711 of the power amplifier.
2. When the potential difference exceeds 1.5V, a bias is applied to Q702, then Q702 turns ON and current (1) flows.
3. Current (1) causes a bias to be applied to Q701, then current (2) flows.
4. A bias is again applied to Q702 due to (2). Accordingly, even when normal current flows to the power amplifier again, Q701 and Q702 continue operating. (Hold circuit)
5. The voltage at point A is about 0.5V when the Hold circuit is not operated, but it becomes negative (minus voltage) when the Hold circuit is operated and (2) flows.
6. When the voltage at point A becomes negative, the current switching transistor Q11 in power amplifier turns ON and Q10 is cut off.
7. As the current switching transistor Q10 in power amplifier is cut off, the voltage at pin 7 becomes zero and then no voltage is applied to pin 5.
8. The bias voltage of power transistor obtained from pin 5 of power amplifier is cut off thereby protecting the power amplifier.





Area
EK, XL
Contin:
Europe

• Power source circuit.
Product for [XA] area only

