

Service Manual

FM/AM Stereo Tuner

ST-S2

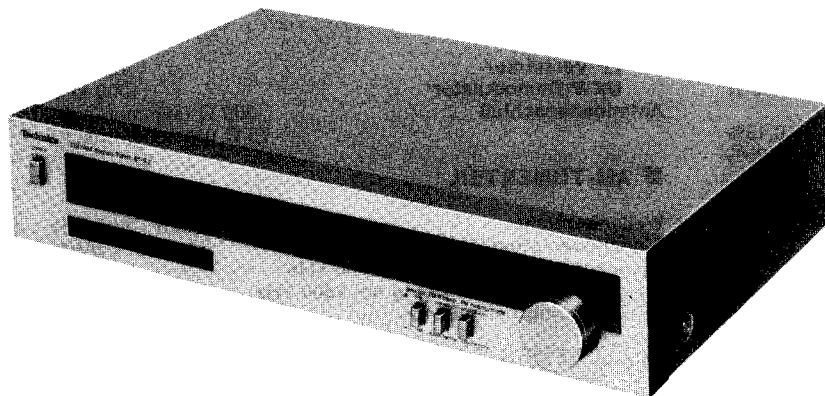
[EX], [EH], [EA],

[Ei], [XA], [XL]

ST-S2(K)

[EX] [EH], [Ei],

[XA]



* The cabinet and front panel are available in black color and silver types.

* The black type model is provided with (K) in the Service Manual.

Areas

- * [EX] is available in Scandinavia.
- * [EH] is available in Holland.
- * [EA] is available in Austria.
- * [Ei] is available in Italy.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- * [XL] is available in Australia.

English

Specifications

(Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	88~108 MHz
Sensitivity	2.0 μ V (IHF, usable)
S/N 30 dB	2.0 μ V (300 Ω), 1.0 μ V (75 Ω)
S/N 26 dB	1.8 μ V (300 Ω), 0.9 μ V (75 Ω)
S/N 20 dB	1.6 μ V (300 Ω), 0.8 μ V (75 Ω)
IHF 46 dB stereo quieting sensitivity	25 μ V/75 Ω
Total harmonic distortion	
MONO	0.15%
STEREO	0.25%
S/N	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~-1.5 dB
Alternate channel selectivity	
normal (\pm 400 kHz)	60 dB
super narrow (\pm 200 kHz)	20 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	70 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	
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)	\pm 1.5 dB
Limiting point	1.2 μ V
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	
	300 Ω (balanced)
	75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	525~1605 kHz
Sensitivity (S/N 20 dB)	30 μ V, 250 μ V/m
Selectivity (\pm 10 kHz) at 1,000 kHz	27 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

■ GENERAL

Output voltage	0.3V, (0.6V, IHF)
Power consumption	7W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 86 × 289 mm (16-15/16" × 3-3/8" × 11-3/8")
Weight	3.0 kg (6.6 lb.)

Technics

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

TECHNISCHE DATEN

(Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ UKW-TUNERTEIL

Wellenbereich	88~108 MHz
Eingangsempfindlichkeit	2,0 μ V (nutzbar nach IHF)
S/R 30 dB	2,0 μ V (300 Ω), 1,0 μ V (75 Ω)
S/R 26 dB	1,8 μ V (300 Ω), 0,9 μ V (75 Ω)
S/R 20 dB	1,6 μ V (300 Ω), 0,8 μ V (75 Ω)
Stereoschaltswelle bei 46 dB nach IHF	25 μ V/75 Ω
Gesamtklirrfaktor	
Mono	0,15%
Stereo	0,25%
Geräuschabstand	
Mono	70 dB (78 dB nach IHF)
Stereo	65 dB (70 dB nach IHF)
Frequenzgang	20 Hz~15 kHz (+0,5 dB~-1,5 dB)
Trennschärfe bei Störsender	
normal (\pm 400 kHz)	60 dB
super narrow (\pm 200 kHz)	20 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	55 dB
ZF-Dämpfung bei 98 MHz	70 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	80 dB
AM-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	40 dB
10 kHz	30 dB

Trägerrest

19 kHz	-30 dB (-35 dB nach IHF)
38 kHz	-45 dB (-50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	\pm 1,5 dB
Begrenzereinsatz	1,2 μ V
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	
300 Ω (symmetrisch)	
75 Ω (unsymmetrisch)	

■ AM-TUNERTEIL

Wellenbereiche	525~1605 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30 μ V, 250 μ V/m
Trennschärfe (\pm 10 kHz) bei 1000 kHz	27 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	50 dB
ZF-Dämpfung bei 1000 kHz	40 dB

■ ALLGEMEINE DATEN

Ausgangsspannung	0,3 V, (0,6V, IHF)
Leistungsaufnahme	7W
Netzspannung	
Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V	
Abmessungen (B×H×T)	430 × 86 × 289 mm
Gewicht	3,0 kg

CARACTERISTIQUES

(Sujet à changement sans préavis.)

(DIN 45 500)

■ SECTION SYNTONISATEUR FM

Gamme de fréquence	88~108 MHz
Sensibilité	2,0 μ V (IHF utilisable)
S/B 30 dB	2,0 μ V (300 Ω), 1,0 μ V (75 Ω)
S/B 26 dB	1,8 μ V (300 Ω), 0,9 μ V (75 Ω)
S/B 20 dB	1,6 μ V (300 Ω), 0,8 μ V (75 Ω)
Sensibilité stéréo au seuil de 46 dB, IHF	25 μ V/75 Ω
Distorsion harmonique totale	
MONO	0,15%
STEREO	0,25%
Signal/Bruit	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Réponse de fréquence	20 Hz~15 kHz, +0,5 dB~-1,5 dB
Sélectivité alternée par canal	
normal (\pm 400 kHz)	60 dB
super narrow (\pm 200 kHz)	20 dB
Taux de capture	1,0 dB
Rejection d'image à 98 MHz	55 dB
Rejection FI à 98 MHz	70 dB
Rejection de réponse parasite à 98 MHz	80 dB
Suppression AM	55 dB
Séparation stéréophonique	
1 kHz	40 dB
10 kHz	30 dB
Fuite de porteuse	
19 kHz	-30 dB (-35 dB, IHF)
38 kHz	-45 dB (-50 dB, IHF)

Equilibrage de canaux (250 Hz~6,300 Hz)	\pm 1,5 dB
Point de limite	1,2 μ V
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	
300 Ω (symétrique)	
75 Ω (asymétrique)	

■ SECTION SYNTONISATEUR AM

Gamme de fréquence	525~1605 kHz
Sensibilité (S/B 20 dB)	30 μ V, 250 μ V/m
Sélectivité (\pm 10 kHz) à 1,000 kHz	27 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

■ DIVERS

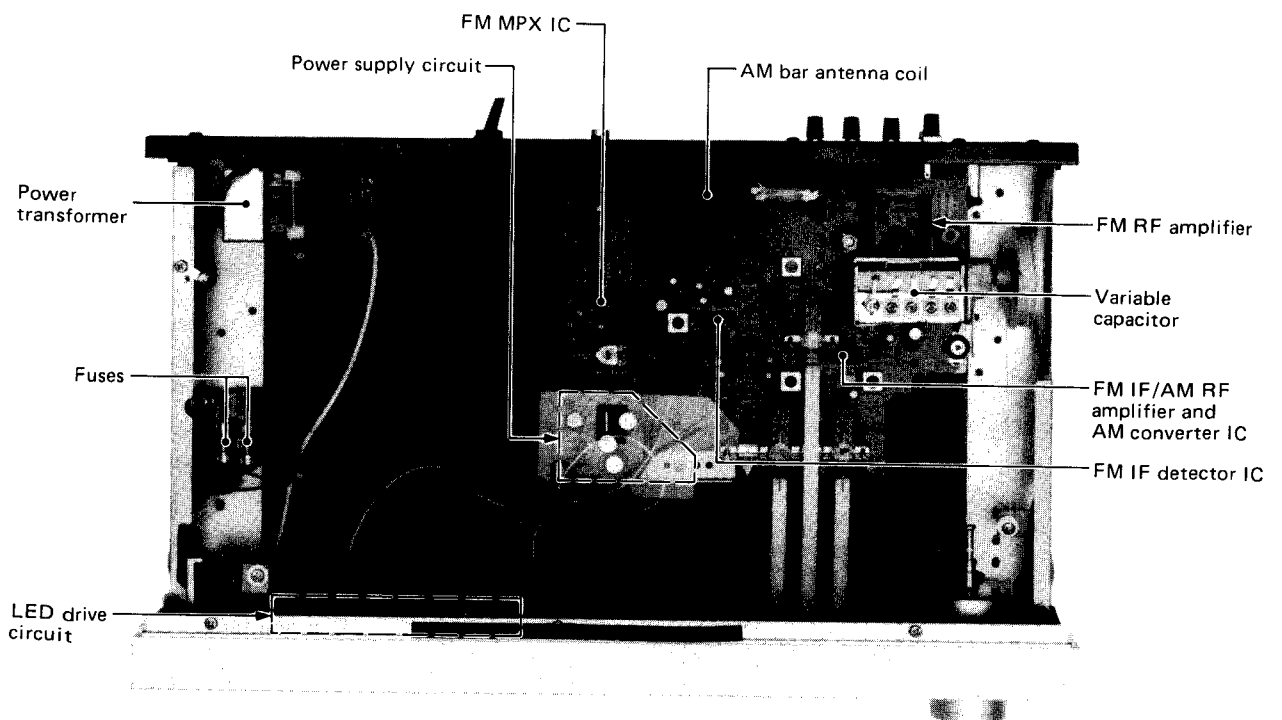
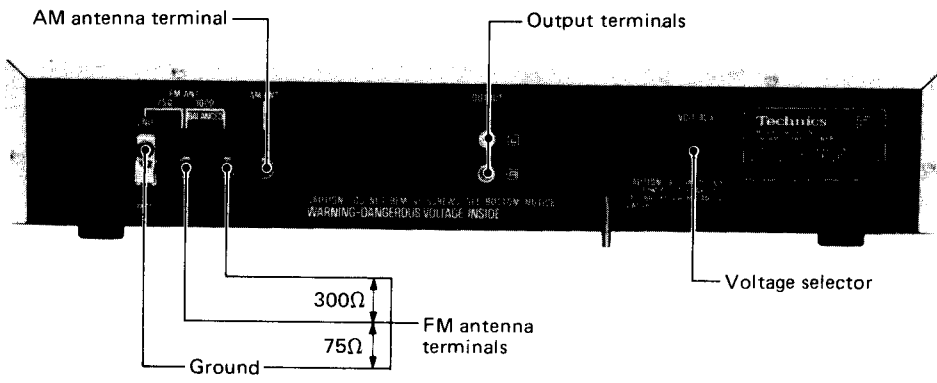
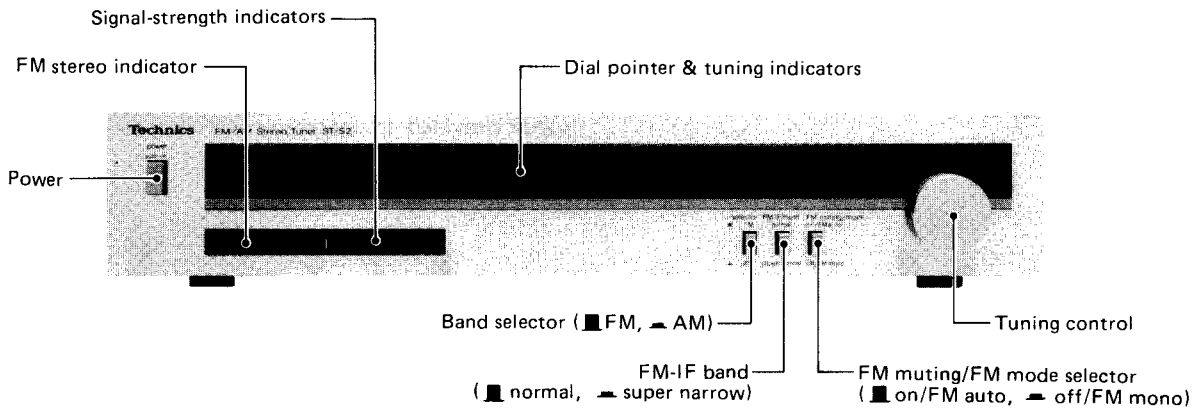
Tension de sortie	0,3 V, (0,6V, IHF)
Consommation	7W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 86 × 289 mm
Poids	3,0 kg

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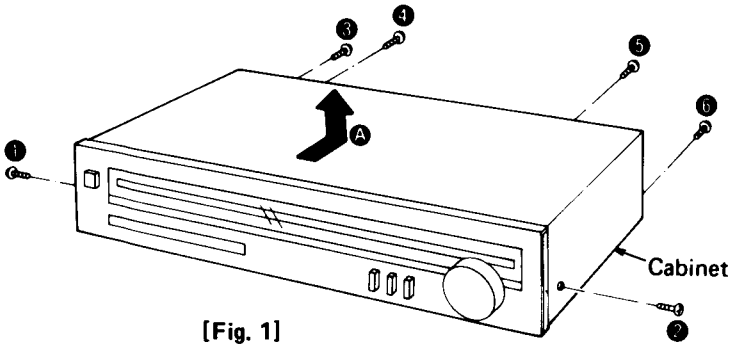
■ LOCATION OF CONTROLS



DISASSEMBLY INSTRUCTIONS

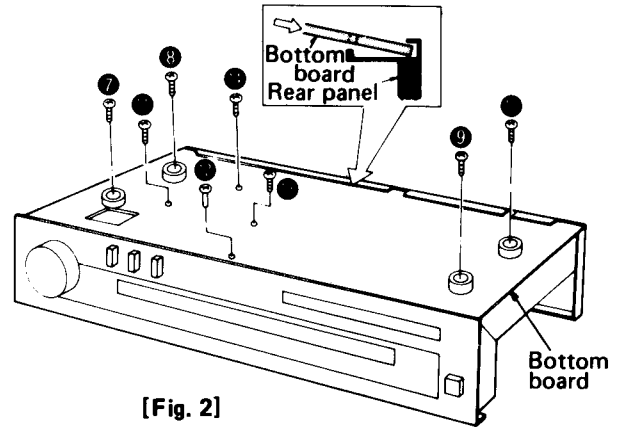
How to remove the cabinet and bottom board

1. Remove the 2 setscrews (Fig. 1 : ①, ②) on the side and 4 setscrews (Fig. 1 : ③ ~ ⑥) on the back of the cabinet.
2. Move the cabinet in the direction of the arrow A in Fig. 1.



[Fig. 1]

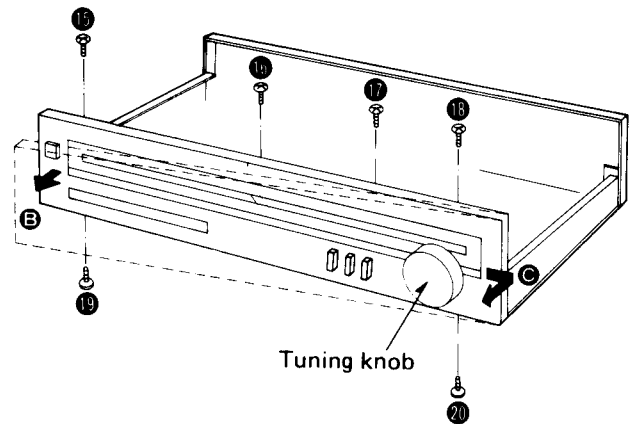
3. To remove the bottom board, remove the 8 setscrews (Fig. 2 : ⑦ ~ ⑭) of the bottom board.
4. Remove the bottom board.
5. When installing the bottom board, the board in the groove provided in the rear panel and then tighten the setscrews. (Fig. 2)



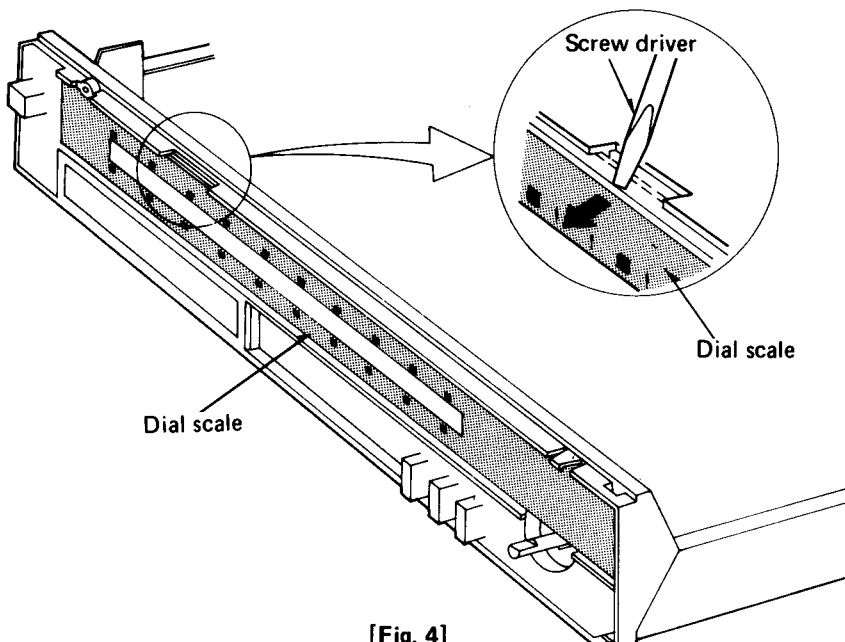
[Fig. 2]

How to remove the dial pointer

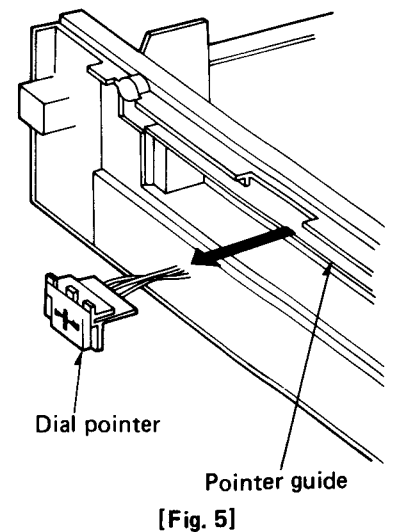
1. Remove the tuning knob.
2. Remove the 6 setscrews (Fig. 3 : ⑮ ~ ⑳) of the front panel. Then move the front panel in the direction of the arrow B and C in Fig. 3.
3. The dial scale is secured on the front chassis with both side adhesive tape. It can be removed by using a screwdriver or the like as illustrated in Fig. 4.
4. The dial pointer is attached to the pointer guide. It can be removed by pulling toward you. (in Fig. 5)



[Fig. 3]



[Fig. 4]

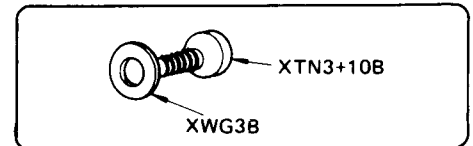


[Fig. 5]

* Since standardized parts are mentioned in the parts list, they are sometimes different in Part No. and Color from the product parts.

Screw No.	Type	Color	Product Part No.	Figure No.
①, ②	⊕ 4 x 8 mm, Tapping	Silver	XTB4+8FFN	Fig. 1
③ ~ ⑥	⊕ 3 x 8 mm, Tapping	Silver	XTB3+8BFN	Fig. 1
⑦ ~ ⑩	⊕ 3 x 12 mm, Tapping (With plain washer)	Red	XTW3+12HFYR	Fig. 2
⑪ ~ ⑭	⊕ 3 x 10 mm, Tapping (With plain washer)	Black	XTW3+10HFZ	Fig. 2
⑮ ~ ⑳	⊕ 3 x 8 mm, Tapping	Gold	XTB3+8B	Fig. 3

Note: Setscrews ⑪ and ⑭ are plain washer-attached screws (Part No. : XTW3+10HFZ).
When substituting, use a 3 x 10mm tapping screw (Part No. : XTN3+10B) and plain washer (Part No. : XWG3B) as shown in Fig. 6.

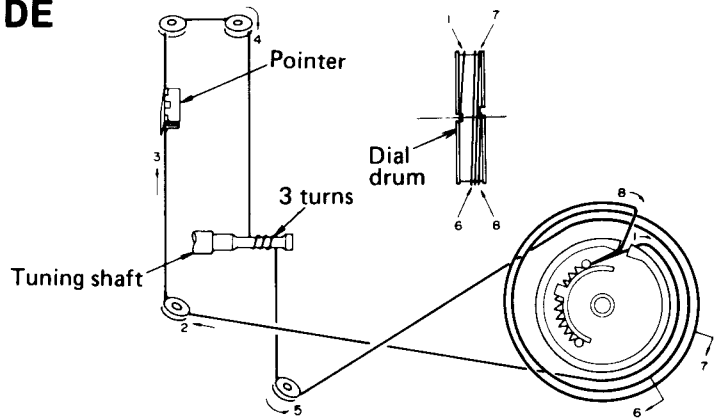


[Fig. 6]

■ DIAL CORD INSTALLATION GUIDE

For threading a fresh cord, proceed as follows.

1. Prepare a fresh cord more than 180 cm (70-15/16") in length.
2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor).
3. Direct the cord in the order from 1 to 8.
4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
5. Fix the knot of the cord with the bond.



■ MEASUREMENTS AND ADJUSTMENTS English

<ul style="list-style-type: none"> ● Setting and Equipment used <ol style="list-style-type: none"> 1. AC and DC electronic voltmeters (VTVM). 2. AM signal generator (AM-SG) 3. FM signal generator (FM-SG). 4. Oscilloscope 5. Frequency counter (19kHz and 108MHz measurable). 6. Band selector switch. {AM (AM adjustment.) {FM (FM adjustment) 7. FM muting/FM mode switch off/FM mono 8. Maintain line voltage at rated voltage. 9. 300Ω FM dummy antenna. Refer to fig. 7. 10. Output of signal generator should be no higher than necessary to obtain an output reading. ● Preparation of FM signal generator (FM-SG) <ol style="list-style-type: none"> 1. Connect stereo modulator to FM-SG. 2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna. 3. The standard input of the set is 60 dB (1mV), 400 Hz 100% modulation (Because of using dummy antenna, SG output must be 12 dB plus (1HF). That is, when input is 60 dB, SG output is to be 72 dB.) 						
Step No.	AM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
AM-IF ADJUSTMENT						
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input)	450kHz (30% Mod. with 400 Hz)	Point of non-interference	Connect AC VTVM or scope to "OUTPUT" terminals.	T201 (1st IFT) T202 (2nd IFT)	● Adjust the input frequency and adjustment points so that the output becomes maximum.

AM/FM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS	
CONNECTION	FREQUENCY					
AM-RF ADJUSTMENT						
Step No. 2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	600kHz (30% Mod. with 400 Hz)	600kHz	Connect AC VTVM or scope to "OUTPUT" terminals.	L252 (AM OSC Coil) L250 (AM ANT Coil)	<ul style="list-style-type: none"> Adjust for maximum output. Adjust L250 by moving coil bobbin along ferrite core.
		1500kHz (30% Mod. with 400 Hz)	1500kHz	Connect AC VTVM or scope to "OUTPUT" terminals.	CT202 (AM OSC Trimmer) CT201 (AM ANT Trimmer)	<ul style="list-style-type: none"> Adjust for maximum output. Repeat steps (2) and (3).
FM-IF ADJUSTMENT						
Step No. 4	_____	No Signal	Point of non-interference	Connect DC VTVM to R109 resistor (Refer to Fig. 8)	T101 (Discri. IFT)	<ul style="list-style-type: none"> FM muting/FM mode switch to "on/FM auto" position. Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
FM-RF ADJUSTMENT						
Step No. 5	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	90MHz (100% Mod. with 400 Hz) weak input.	90MHz	Connect scope to "OUTPUT" terminal.	L4 (OSC Coil) L1 (ANT Coil) L2 (RF DET Coil)	<ul style="list-style-type: none"> Add weak input so that noise is included in the output wave form. Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 9) Repeat the steps (5) and (6) until the frequency correctly matches the dial scale.
		106MHz (100% Mod. with 400 Hz) weak input.	106MHz	Connect scope to "OUTPUT" terminal.	CT3 (OSC Trimmer) CT1 (ANT Trimmer) CT2 (RF DET Trimmer)	
FM MPX V.C.O ADJUSTMENT						
USING A FREQUENCY COUNTER			USING ALTERNATE SYSTEM			
Step No. 7	<ol style="list-style-type: none"> 100MHz 60 dB Non-modulated mono signal applied to set. FM muting/FM mode switch to "on/FM auto". Connect frequency counter to TR301 through resistor (100kΩ). Adjust VR301 to 19kHz ± 30 Hz. 			<ol style="list-style-type: none"> Apply stereo signal from generator or stereo station to tuner. Adjust VR301 until stereo indicator lights up. Cement arm of VR301 as shown in fig. 10. 		

MESSUNGEN UND JUSTIERUNGEN Deutsch

(Für Deutschland)

• Stellungen und zu benutzende Geräte

- Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM).
- AM (MW)-Meßsender (AM-SG)
- UKW-Meßsender (FM-SG)
- Oszilloskop
- Signalfrequenzmesser (meßbar für 19kHz und 108MHz).
- Bereichsschalter (AM (MW) Abgleich)
..... (FM (UKW) Abgleich)
- FM Muting/Mode Schalter. off/FM mono.
- Die Netzspannung auf ihren Sollwert einstellen.
- UKW-Kunstantenne, 300 ohm . . . Vgl. Abb. 1.
- Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute ablesung.

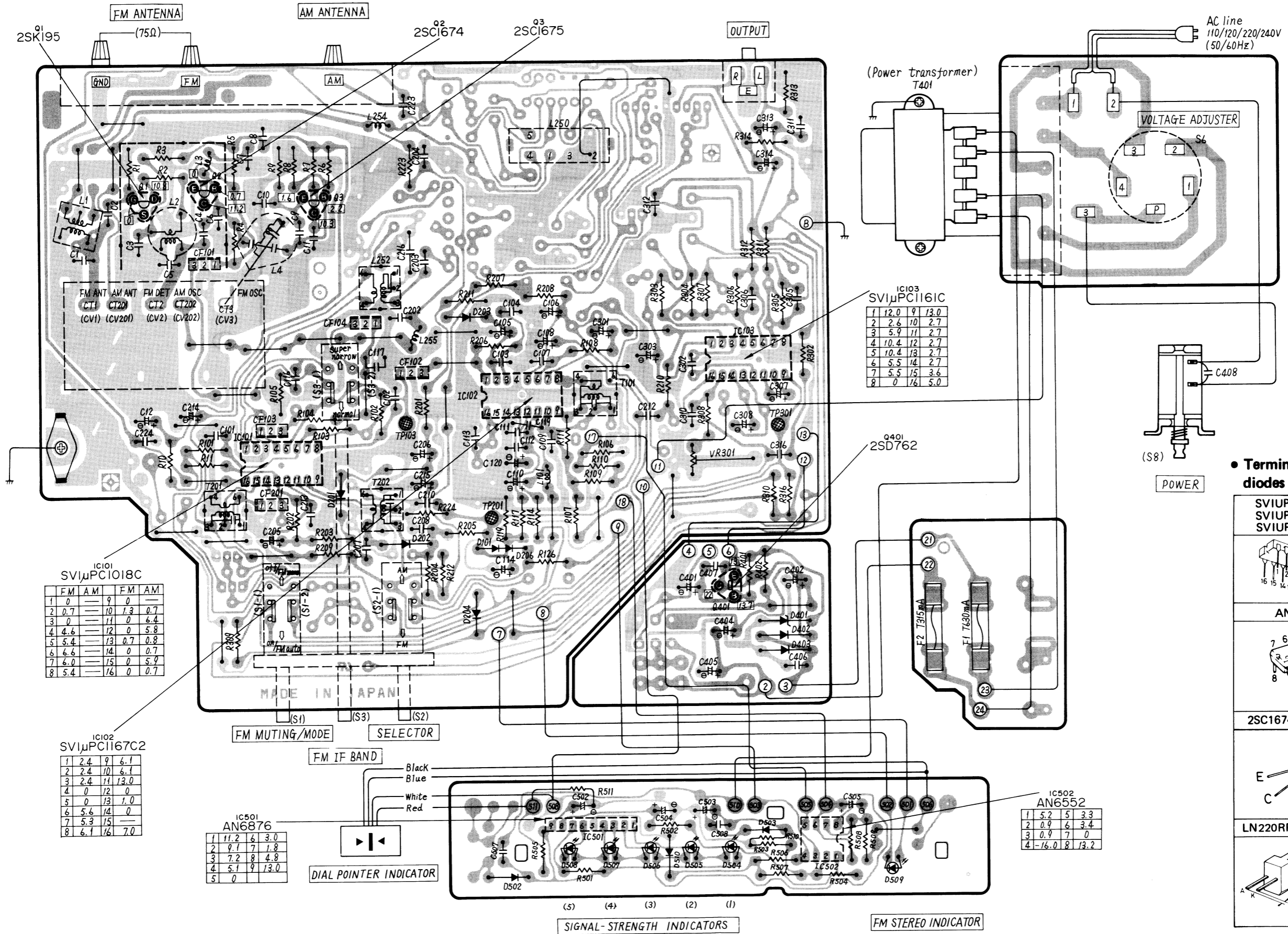
• Vorbereitung AM UKW-Meßsender (FM-SG)

- Stereo-Modulator an FM-SG anschließen.
- SG-Ausgang über 300-ohm UKW Kunstantenne an den Antenneneingang des Gerätes schließen.
- Der normale Eingang des Gerätes beträgt 60 dB (1mV), 400 Hz 100% Modulation. (Wegen Verwendung der Kunstantenne muß der Signalausgang 12 dB plus (IHF) sein: d.h. beim Eingang von 60 dB soll der Signalausgang 72 dB sein.)

AM MESSENDER		SKALENZEIGEREINSTELLUNG DES TUNER	ANZEIGEGERÄT (Röhrenvoltmeter oder Oszillograph)	ABGLEICHSPUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
AM (MW)-ZF-ABGLEICH						
Nr. 1	Einen MW-Signalgenerator über einen 200pF Kondensator mit dem MW-Antenneneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Starker Eingang)	450kHz (400 Hz Modulat., 30%)	Kein Empfang	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adjustieren, daß der Ausgang den maximalen Wert erreicht.

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines



IC101 SVMPC1018C

FM	AM	FM	AM
1	0	9	0
2	0.7	10	1.3
3	0	11	0
4	4.6	12	0
5	5.4	13	0.7
6	6.6	14	0
7	6.0	15	0
8	5.4	16	0

IC102 SVMPC1167C2

1	2.4	9	6.1
2	2.4	10	6.1
3	2.4	11	13.0
4	0	12	0
5	0	13	1.0
6	5.6	14	0
7	5.3	15	0
8	6.1	16	7.0

IC501 AN6876

1	11.2	6	3.0
2	9.1	7	1.8
3	7.2	8	4.8
4	5.1	9	13.0
5	0		

IC103 SVMPC1161C

1	12.0	9	13.0
2	2.6	10	2.7
3	5.9	11	2.7
4	10.4	12	2.7
5	10.4	13	2.7
6	5.5	14	2.7
7	5.5	15	3.6
8	0	16	5.0

IC502 AN6552

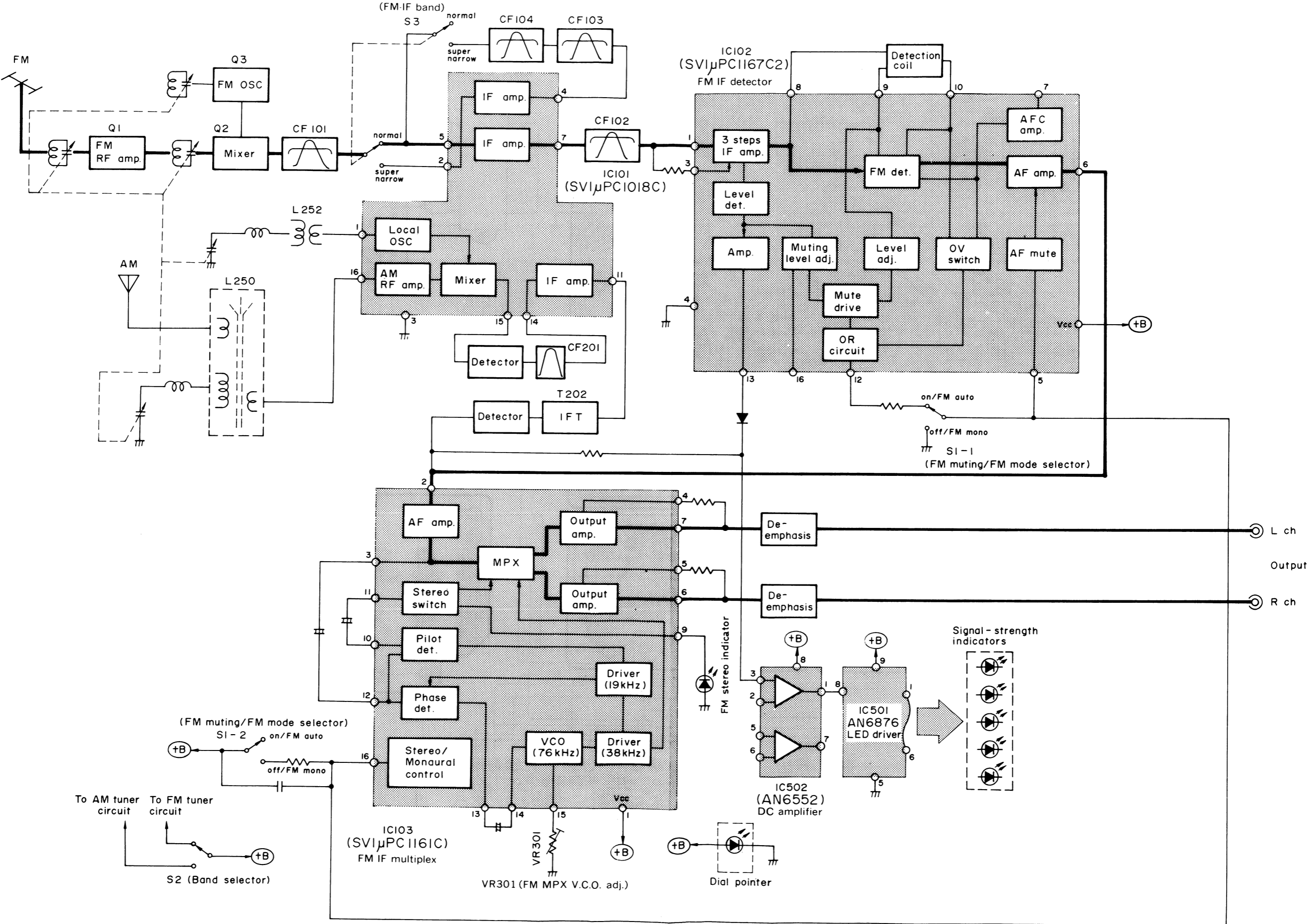
1	5.2	5	3.3
2	0.9	6	3.4
3	0.9	7	0
4	-16.0	8	13.2

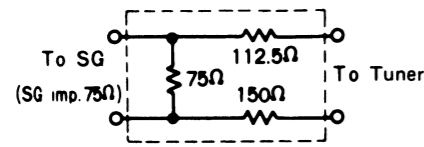
Terminal guide of transistors, diodes and IC's

<p>SVMPC1018C, SVMPC1167C2, SVMPC1161C</p>	<p>AN6876</p>
<p>AN6552</p>	<p>2SK195</p>
<p>2SC1674, 2SC1675</p>	<p>2SD762</p>
<p>LN220RP, LN420YP</p>	

ST-S2 ST-S2

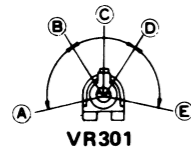
■ BLOCK DIAGRAM





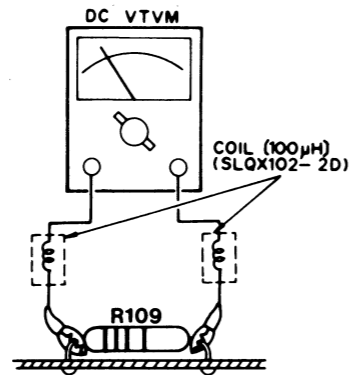
300Ω FM Dummy Antenna

[Fig. 7] Abb. 1

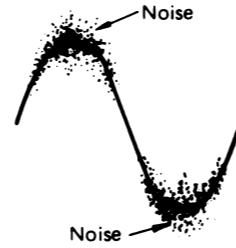


A - B, D - E: Stereo OFF Position.
B - D: Stereo ON Position (indicator Lighting).
C: Adjust Point of Pilot Circuit.

[Fig. 10] Abb. 4



[Fig. 8] Abb. 2



AF output wave form

[Fig. 9] Abb. 3

REPLACEMENT PARTS LIST...Electrical Parts

- Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUIT		
IC101	RV1UPC1018CF	IC, FM IF/AM RF Amplifier and AM Converter
IC102	SV1UPC1167C2	IC, FM IF Detector
IC103	SV1UPC1161C	IC, FM Multiplex
IC501	AN6876	IC, LED Driver
IC502	AN6552F	IC, DC Amplifier
TRANSISTORS		
Q1	2SK195-H2	Transistor, FM RF Amplifier [FET]
Q2	2SC1674-M	Transistor, FM Mixer
Q3	2SC1675-L	Transistor, FM Oscillator
Q401	2SD762-O	Transistor, Regulator
DIODES		
D101, 202, 206	20A90	Diode
D201, 203, 204	MA162A	Diode
D401	SVDEQA0113RA	Diode, 13V Zener
D402, 403	SVDSR1K2	Rectifier
D502, 503, 510	MA162A	Diode
D504 ~ 508	LN420YP	Light Emitting Diode, Yellow
D509	LN220RP	Light Emitting Diode, Red
COILS and TRANSFORMERS		
L1	SLA4N15	Coil, FM Antenna
L2	SLD4P57-P	Coil, FM RF Detector
L3	ELQ5A77	Coil, Choke

Ref. No.	Part No.	Part Name & Description
L4	SLO4P95-P	Coil, FM Local Oscillator
L101	SLQX101-3M	Coil, Choke
L250	SLF2C35-O	Coil, AM Ferrite Bar Antenna
L252	SLO2C1-P	Coil, AM Oscillator
L254, 255	RLQY15G5-O	Coil, Choke
T101	SLI4C521	Transformer, FM IF
T201	SLI2C129R-M	Transformer, AM IF
T202	SLI2C413R	Transformer, AM IF
T401	SLT5J141-W	Transformer, Power Source
T401 [XL] only	SLT5J147-W	Transformer, Power Source
CERAMIC FILTERS		
CF101, 102	SVFE107MM-A	Ceramic Filter, FM 10.7MHz Red
	SVFE107MM-B	Ceramic Filter, FM 10.68MHz Blue
	SVFE107MM-C	Ceramic Filter, FM 10.72MHz Orange
CF103, 104	SVFE107M2Z-A	Ceramic Filter, FM 10.7MHz Red
	SVFE107M2Z-B	Ceramic Filter, FM 10.675MHz Blue
	SVFE107M2Z-C	Ceramic Filter, FM 10.725MHz Orange
		(Use pair ranks as same as CF101, CF102, CF103, and CF104)
CF201	SVFSFU450B3	Ceramic Filter, AM 457kHz
VARIABLE CAPACITOR		
CV1 ~ 3, 201, 202 (CT1 ~ 3, 201, 202)	ECV5MD34X71G	Variable Capacitor, FM & AM

Ref. No.	Part No.	Part Name & Description
VARIABLE RESISTOR		
VR301	EVTS3MA00B53	FM MPX VCO Adjustment
FUSES		
F1	XBA2C06TRO	Fuse, T630mA (250V)
F2	XBA2C03TRO	Fuse, T315mA (250V)
SWITCHES		
S1, 2	SSH2009	Switch, FM/AM Selector, Muting
S3	SSH187-1	Switch, FM IF Band
S6	ESE372	Switch, Voltage Selector
S8	ESB90619A	Switch, Power Source
RESISTORS		
R1	ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R2	ERD25FJ220	Carbon, 1/4W, 22Ω, ± 5%
R3	ERD25FJ221	Carbon, 1/4W, 220Ω, ± 5%
R4	ERD25TJ474	Carbon, 1/4W, 470kΩ, ± 5%
R5	ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R6	ERD25TJ473	Carbon, 1/4W, 47kΩ, ± 5%
R7	ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R8	ERD25FJ103	Carbon, 1/4W, 10kΩ, ± 5%
R9	ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R10	ERD25FJ181	Carbon, 1/4W, 180Ω, ± 5%
R11	ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R101	ERD25FJ661	Carbon, 1/4W, 560Ω, ± 5%
R102	ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R103	ERD25FJ331	Carbon, 1/4W, 330Ω, ± 5%
R104	ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R105	ERD25FJ680	Carbon, 1/4W, 68Ω, ± 5%
R106	ERD25TJ184	Carbon, 1/4W, 180kΩ, ± 5%
R107	ERO25CKF3002	Metal Film, 1/4W, 30kΩ, ± 1%
R108	ERD25TJ393	Carbon, 1/4W, 39kΩ, ± 5%
R109	ERD25FJ682	Carbon, 1/4W, 6.8kΩ, ± 5%
R110	ERD25TJ333	Carbon, 1/4W, 33kΩ, ± 5%
R111	ERD25FJ182	Carbon, 1/4W, 1.8kΩ, ± 5%
R114	ERD25TJ333	Carbon, 1/4W, 33kΩ, ± 5%
R117	ERD25TJ123	Carbon, 1/4W, 12kΩ, ± 5%
R119	ERD25TJ563	Carbon, 1/4W, 56kΩ, ± 5%
R126	ERD25FJ392	Carbon, 1/4W, 3.9kΩ, ± 5%
R201	ERD25FJ103	Carbon, 1/4W, 10kΩ, ± 5%
R202	ERD25FJ392	Carbon, 1/4W, 3.9kΩ, ± 5%
R203	ERD25TJ333	Carbon, 1/4W, 33kΩ, ± 5%
R204	ERD25FJ272	Carbon, 1/4W, 2.7kΩ, ± 5%
R205	ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R206	ERD25FJ271	Carbon, 1/4W, 270Ω, ± 5%
R207, 208	ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R209	ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R210	ERD25TJ273	Carbon, 1/4W, 27kΩ, ± 5%
R211	ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R212	ERD25FJ332	Carbon, 1/4W, 3.3kΩ, ± 5%
R223	ERD25FJ103	Carbon, 1/4W, 10kΩ, ± 5%
R224	ERD25FJ472	Carbon, 1/4W, 4.7kΩ, ± 5%
R302	ERD25FJ470	Carbon, 1/4W, 47Ω, ± 5%
R303, 304	ERD25TJ223	Carbon, 1/4W, 22kΩ, ± 5%
R305, 306	ERD25TJ473	Carbon, 1/4W, 47kΩ, ± 5%
R307	ERD25TJ274	Carbon, 1/4W, 270kΩ, ± 5%
R308	ERD25TJ153	Carbon, 1/4W, 15kΩ, ± 5%
R309	ERD25TJ473	Carbon, 1/4W, 47kΩ, ± 5%
R310	ERD25FJ391	Carbon, 1/4W, 390Ω, ± 5%
R311, 312	ERD25FJ332	Carbon, 1/4W, 3.3kΩ, ± 5%
R313, 314	ERD25TJ333	Carbon, 1/4W, 33kΩ, ± 5%
R316	ERD25FJ103	Carbon, 1/4W, 10kΩ, ± 5%
R401	ERD25FJ661	Carbon, 1/4W, 560Ω, ± 5%
R402	ERD25FJ681	Carbon, 1/4W, 680Ω, ± 5%
R501	ERD25FJ332	Carbon, 1/4W, 3.3kΩ, ± 5%
R502	ERD25FJ682	Carbon, 1/4W, 6.8kΩ, ± 5%
R503	ERD25TJ473	Carbon, 1/4W, 47kΩ, ± 5%

Ref. No.	Part No.	Part Name & Description
R504	ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R505	ERD25FJ152	Carbon, 1/4W, 1.5kΩ, ± 5%
R506	ERD25TJ123	Carbon, 1/4W, 12kΩ, ± 5%
R507	ERD25TJ563	Carbon, 1/4W, 56kΩ, ± 5%
R508	ERD25TJ184	Carbon, 1/4W, 180kΩ, ± 5%
R509	ERD25FJ391	Carbon, 1/4W, 390Ω, ± 5%
R510	ERD25FJ122	Carbon, 1/4W, 1.2kΩ, ± 5%
R511	ERD25FJ272	Carbon, 1/4W, 2.7kΩ, ± 5%
CAPACITORS		
C1	ECCD1H150K	Ceramic, 15pF, 50V, ± 10%
C2	ECCD1H070D	Ceramic, 7pF, 50V, ± 0.5pF
C3	ECKD1H102ZF	Ceramic, 0.001μF, 50V, ± 80%
C4	ECCD1H030C	Ceramic, 3pF, 50V, ± 0.25pF
C5	ECCD1H150K	Ceramic, 15pF, 50V, ± 10%
C6	ECCD1H060C	Ceramic, 6pF, 50V, ± 0.25pF
C7	ECCD1H181K	Ceramic, 180pF, 50V, ± 10%
C8	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C9	ECCD1H390KC	Ceramic, 39pF, 50V, ± 10%
C10	ECCD1H150KC	Ceramic, 15pF, 50V, ± 10%
C11	ECKD1H102ZF	Ceramic, 0.001μF, 50V, ± 80%
C12	ECEA1ES101	Electrolytic, 100μF, 25V, ± 80%
C101, 102	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C103, 104	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C105	ECEA1HS100	Electrolytic, 10μF, 50V, ± 80%
C106	ECEA50Z1	Electrolytic, 1μF, 50V, ± 80%
C107	ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
C108	ECEA50Z1	Electrolytic, 1μF, 50V, ± 80%
C109	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C110	ECEA1CS330	Electrolytic, 33μF, 16V, ± 80%
C111	ECKD1H223ZF	Ceramic, 0.022μF, 50V, ± 80%
C112, 113	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C114	ECEA1HS100	Electrolytic, 10μF, 50V, ± 80%
C116	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C117	ECCD1H470K	Ceramic, 47pF, 50V, ± 10%
C119	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C120	ECEA50Z1	Electrolytic, 1μF, 50V, ± 80%
C202	ECCD1H150KC	Ceramic, 15pF, 50V, ± 10%
C203	ECQP1361JZ	Polypropylene, 360pF, 100V, ± 5%
C204	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C205	ECEA1HS100	Electrolytic, 10μF, 50V, ± 80%
C206	ECEA25Z4R7	Electrolytic, 4.7μF, 25V, ± 80%
C207, 208	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C210	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C212	ECQM1H223KZ	Polyester, 0.022μF, 50V, ± 10%
C213	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C214	ECEA1HS100	Electrolytic, 10μF, 50V, ± 80%
C215	ECEA50Z1	Electrolytic, 1μF, 50V, ± 80%
C223	ECKD1H103MD	Ceramic, 0.01μF, 50V, ± 20%
C224	ECCD1H220K	Ceramic, 22pF, 50V, ± 10%
C301	ECEA25Z4R7	Electrolytic, 4.7μF, 25V, ± 80%
C302	ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
C303	ECEA1ES101	Electrolytic, 100μF, 25V, ± 80%
C305, 306	ECKD1H271KB	Ceramic, 270pF, 50V, ± 10%
C307	ECEA50Z4R7	Electrolytic, 0.47μF, 50V, ± 80%
C308	ECEA50Z1	Electrolytic, 1μF, 50V, ± 80%
C310	ECQP1471JZ	Polypropylene, 470pF, 100V, ± 5%
C311, 312	ECQM1H153KZ	Polyester, 0.015μF, 50V, ± 10%
C313, 314	ECEA50Z4R7	Electrolytic, 0.47μF, 50V, ± 80%
C316	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C401	ECEA1CS331	Electrolytic, 330μF, 16V, ± 80%
C402	ECEA1VS221	Electrolytic, 220μF, 35V, ± 80%
C404, 405	ECEA1CS331	Electrolytic, 330μF, 16V, ± 80%
C406	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C407	ECKD1H271KB	Ceramic, 270pF, 50V, ± 10%
C502, 503	ECEA1HS470	Electrolytic, 47μF, 50V, ± 80%
C504	ECEA25Z4R7	Electrolytic, 4.7μF, 25V, ± 80%
C505	ECEA50Z4R7	Electrolytic, 0.47μF, 50V, ± 80%
C507	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C508	ECKD1H103ZF	Ceramic, 0.01μF, 50V, ± 80%
C601	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, ± 10%

ST-S2 ST-S2

AM/UKW MESSENDER		SKALENZEIGEREIN-STELLUNG DES TUNER	ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph)	ABGLEICHSPUNKTE	BEMERKUNGEN	
ANSCHLUSS	FREQUENZ					
AM (MW)-HF-ABGLEICH						
2	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Antenneneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	600kHz (400 Hz Modul., 30%)	600kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	L252 (Osc. Spule) L250 (Ant. Spule)	<ul style="list-style-type: none"> • Auf max. Ausgang abgleichen. • L250 (Spule) wird abgleichen, in dem die Spule am Ferritstab entlang geschoben wird.
	3	1500kHz (400 Hz Modul., 30%)	1500kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	CT202 (Osc. Trimmer) CT201 (Ant. Trimmer)	<ul style="list-style-type: none"> • Auf max. Ausgang abgleichen. • Schritt (2) und (3) sind zu wiederholen.
UKW-ZF-ABGLEICH						
4	Kein Signal	Kein Empfang	Gleichspannungsmesser über den Ausgang R109 widerstand schließen (Vgl. Abb. 2)	T101 (Diskriminator FT)	<ul style="list-style-type: none"> • FM muting/FM mode-Schalter auf "on/FM auto" stellen. • Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt. 	
UKW-HF-ABGLEICH						
5	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87,5MHz (400 Hz Modul., 100%) Schwacher Eingang	87,5MHz (Frequenzmin.)	Oszillograph über den Ausgang "OUTPUT" schließen.	L4 (Osc. Spule)	<ul style="list-style-type: none"> • Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. • So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 3) • Die Einstellung von (5), (6) und (7) wiederholen, bis die Frequenz mit der Skala übereinstimmt.
		90MHz (400Hz Modul., 100%) Schwacher Eingang	90MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	L1 (Ant. Spule) L2 (Det. Spule)	
		106MHz (400 Hz Modul., 100%) Schwacher Eingang	106MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	CT3 (Osc. Trimmer) CT1 (Ant. Trimmer) CT2 (Det. Trimmer)	
UKW-STEREO-DEKODER-ABGLEICH						
UNTER VERWENDUNG EINES ZÄHLERS			ALTERNATIV-MEß METHODE			
8	1. Unmoduliertes Mono-Signal 100MHz in das Gerät speisen.		1. Stereosignal entweder von einem Stereogenerator, oder einem Sender einspeisen.			
	2. FM muting/mode-Schalter auf "on/FM auto" stellen.		2. VR301 so einstellen, bis die Stereolampe auf leuchtet. Schleifer von VR301 sichern, wie in Abb. 4 gezeigt.			
3. Zähler über einen Widerstand 100k ohm an TP301 schließen.						
4. VR301 auf 19kHz ± 30 Hz einstellen.						

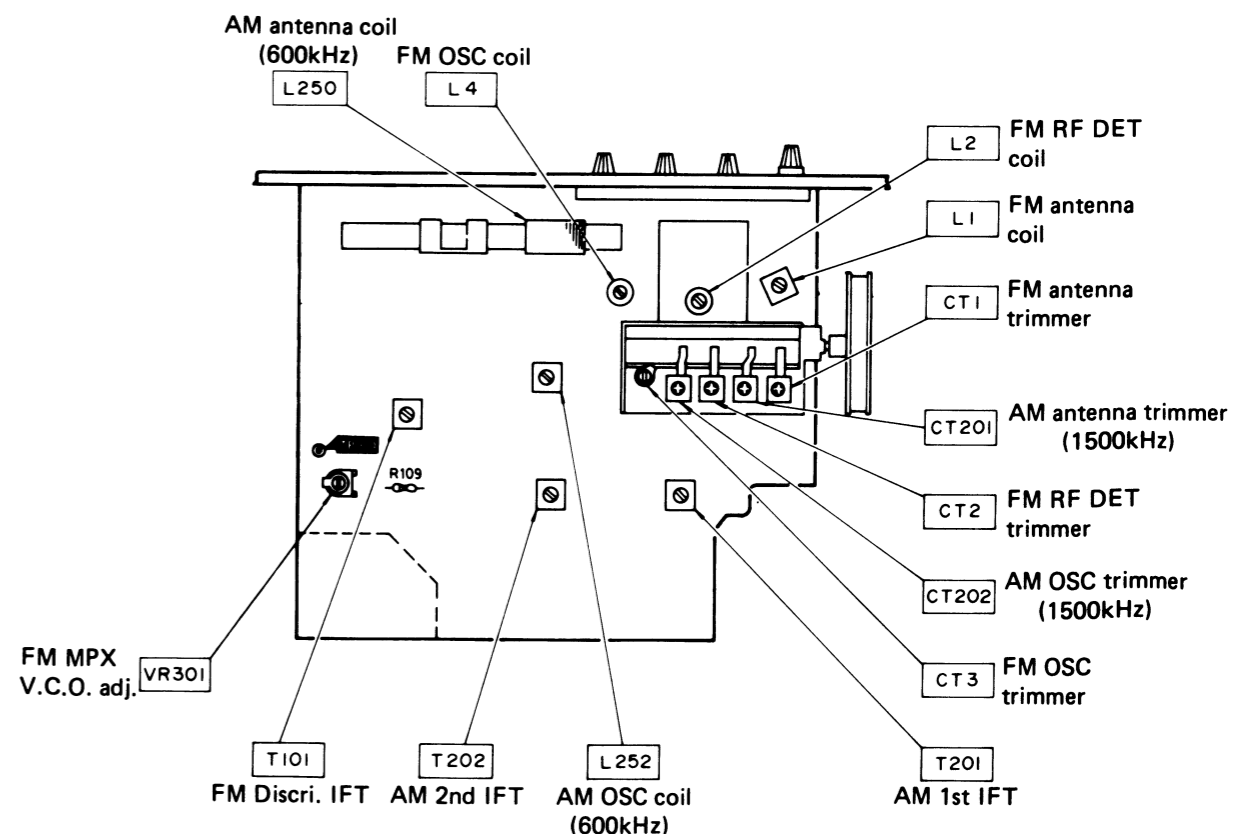
MESURAGES ET RÉGLAGES Français

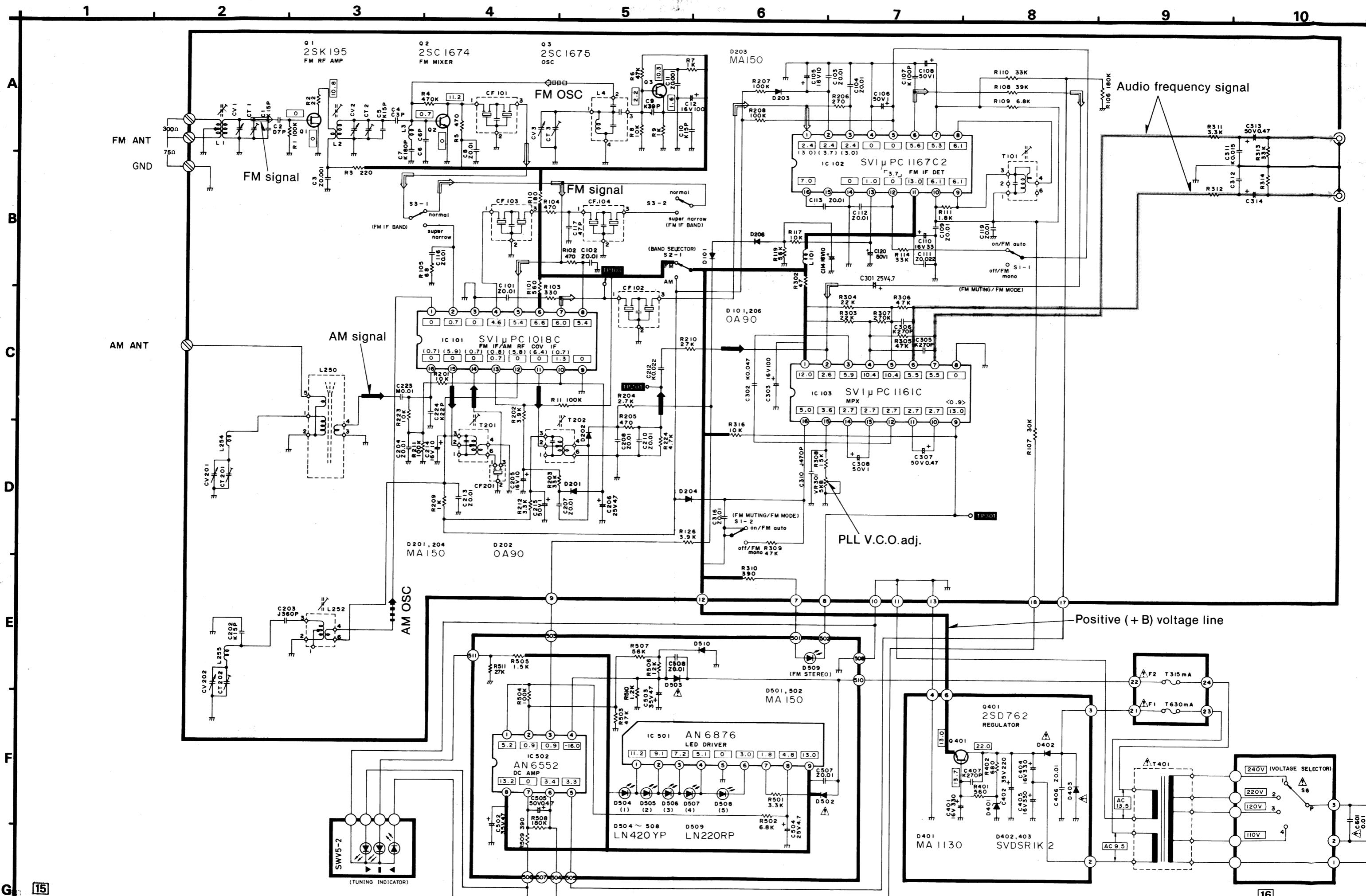
- **Réglage et équipement utilisé**
 1. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
 2. Générateur du signal AM (AM-SG).
 3. Générateur du signal FM (FM-SG).
 4. Oscilloscope
 5. Compteur de fréquence (19kHz et 108MHz mesurable).
 6. Sélecteur de gamme. AM (Alignment AM)
FM (Alignment FM)
 7. Commutateur de silencieux/mode. . . . off/FM mono.
 8. Conserver la tension du secteur à la tension nominale.
 9. Antenne fictive FM 300Ω Voir fig. 7.
 10. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
- **Préparation du générateur de signal FM (FM-SG)**
 1. Brancher la commande de réglage stéréophonique à FM-SG.
 2. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM, 300 ohms.
 3. L'entrée standard de l'appareil est de 60 dB (1mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenne fictive, la sortie SG doit être de plus 12 dB (IHF). Ce qui signifie que quand l'entrée est de 60 dB, la sortie SG doit être de 72 dB.)

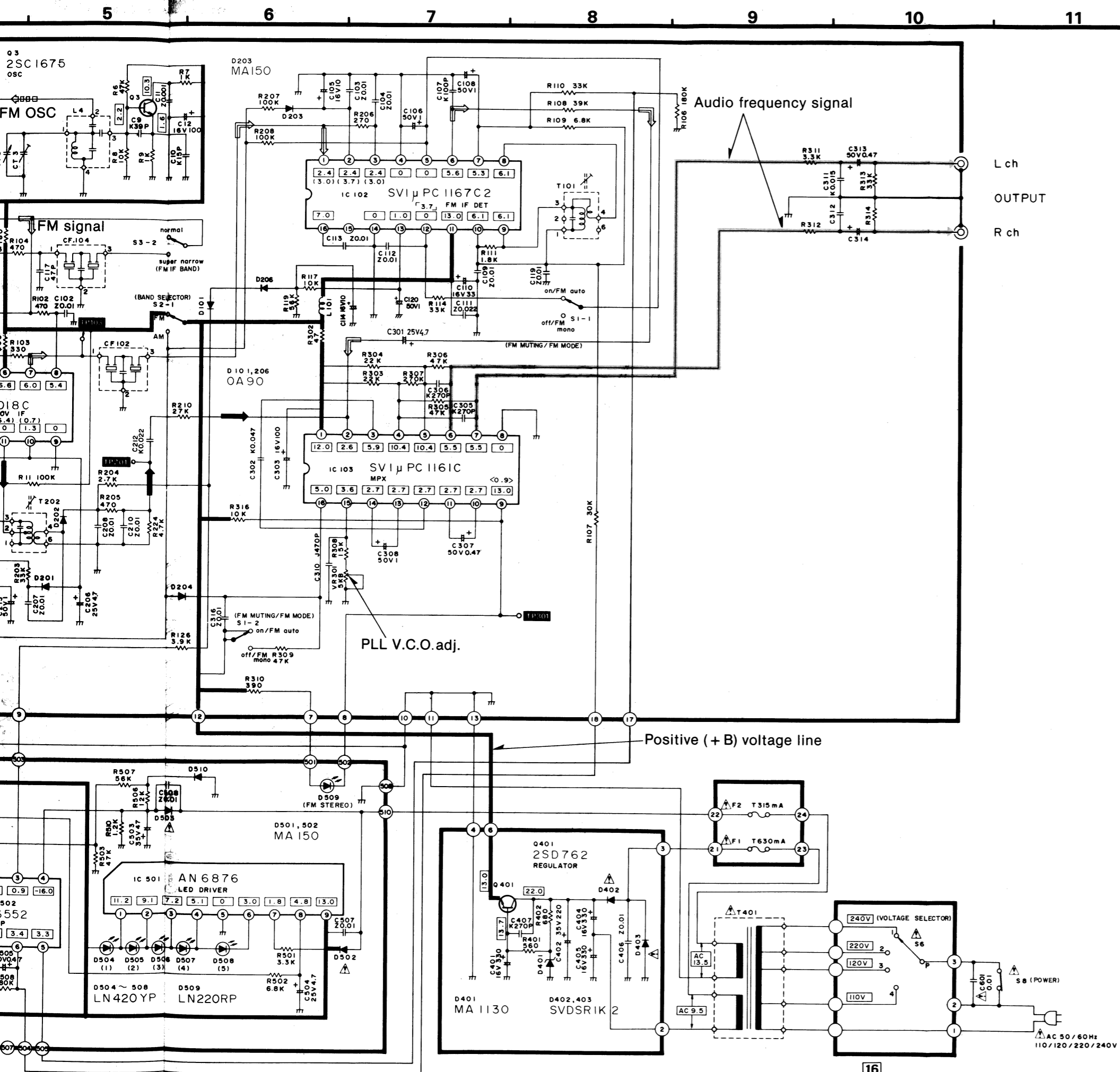
AM GENERATEUR		AIGUILLE SUR LE CADRAN	INDICATEUR (VOLT-METRE ELECTRONIQUE OSCILLOSCOPE)	POINTS DE REGLAGE	OBSERVATIONS
BRANCHEMENT	FREQUENCE				
RÉGLAGE DE FI-AM					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis (Entrée sous puissante)	450kHz (modulé à 30% par 400 Hz)	Point sans signal	T201 (1 transfo FI) T202 (2 transfo FI)	<ul style="list-style-type: none"> • Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.

AM/FM GENERATEUR		AIGUILLE SUR LE CADRAN	INDICATEUR (VOLT-METRE ELECTRONIQUE OSCILLOSCOPE)	POINTS DE REGLAGE	OBSERVATIONS
BRANCHEMENT	FREQUENCE				
RÉGLAGE DE RF-AM					
2	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	600kHz (modulé à 30% par 400 Hz)	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L252 (bobine OSC) L250 (bobine ANT)	<ul style="list-style-type: none"> • Réglez au maximum de signal de sortie. • Régler L250 (bobine AM) en déplaçant la bobine le long du noyau de ferrite.
		1500kHz (modulé à 30% par 400 Hz)	1500kHz	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	
RÉGLAGE DE FI-FM					
4	Sans signal	Point sans signal	C.C. voltmètre sur prise R109 résistance. (Voir la Fig. 8)	T101 (Transfo FI discri.)	<ul style="list-style-type: none"> • Commutateur de silencieux sur "on/FM auto". • Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soit de 0V dans la gamme des 300mV.
RÉGLAGE DE RF-FM					
5	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	90 MHz (modulé à 100% par 400 Hz) Entrée faible	Oscilloscope sur prise de sortie du tuner.	L4 (bobine OSC) L1 (bobine ANT) L2 (bobine DET)	<ul style="list-style-type: none"> • Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. • Faire le réglage de telle sorte que la forme de l'onde de sortie soit verticalement symétrique. (Voir fig. 9) • Refaire les réglages (5) et (6) jusqu'à ce que la fréquence corresponde correctement avec l'échelle du cadran.
		106 MHz (modulé à 100% par 400 Hz) Entrée faible	106 MHz	Oscilloscope sur prise de sortie du tuner.	
RÉGLAGE PILOTE MULTIPLEX FM					
AVEC UN ERÉQUENCEMÈTRE			PAR UN OUTRE SYSTÈME		
1. Signal mono 100MHz non modulé appliqué à l'appareil.			1. Appliquez à l'appareil un signal stéréo provenant d'un générateur ou de la réception d'un émetteur.		
2. Commutateur de silencieux sur "on/FM auto".			2. Régler VR301 jusqu'à ce que l'indicateur de stéréophonie s'allume.		
3. Branchez le fréquencemètre sur TP301 à travers une			Collez le curseur le VR301 comme indiqué sur la fig.10		
4. Régler VR301 sur 19kHz ± 30 Hz.					

ADJUSTMENT POINTS







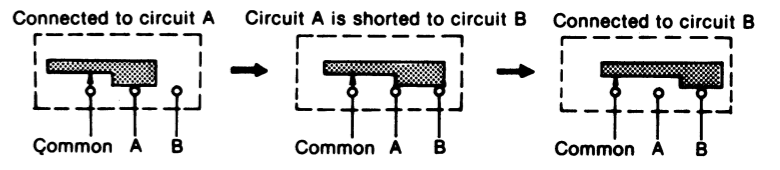
SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

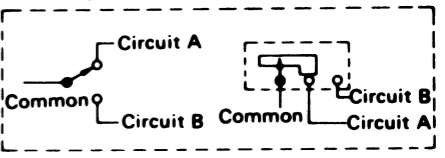
- Notes:**
- S1-1, 1-2:** FM muting/FM mode selector switch in "on/FM auto" position.
on/FM auto → off/FM mono
 - S2-1:** Band selector switch in "FM" position.
FM → AM
 - S3-1, 3-2:** FM IF-band selector switch in "normal" position.
normal → super narrow
 - S6:** Voltage selector switch in "240V" position.
④ 110V → ③ 120V → ② 220V → ① 240V
 - S8:** Power source switch in "on" position.
 - Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
* Figures in □ stand for DC voltage in FM/AM signal reception mode.
* Figures in < > stand for DC voltage in FM stereo signal reception mode.
* Figures in ▭ stand for DC voltage in FM (no signal) muting to on mode.
* Figures in () stand for DC voltage with the band selectors circuit set at AM.
 - Signal lines
 ◀ FM signal
 ▶ Audio frequency signal
 ■ Positive (+B) voltage line
 ▨/▶ AM signal
 - Important safety notice:
Components identified by Δ make have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.



An example of circuit diagram



REPLACEMENT PARTS LIST...Cabinet & Chassis Parts

- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 2. Important safety Notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 3. \square -marked parts are used for black only, while \circ -marked parts are for silver type only.

4. Parts other than \square and \circ -marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. : ST-S2(K)

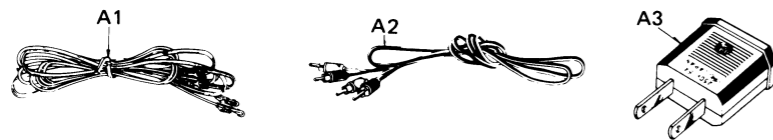
Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1	\circ SYW513	Front Panel Ass'y
1	\square SYW513-1	Front Panel Ass'y (Black)
2	SBN1043	Knob, Tuning
3	SHP671-1	Spacer, Knob
4	SBC337	Button, Power Source
5	SDZ051-2	Cord, Dial 180 cm
6	SWV5-2	Pointer, Dial
7	SHP15-2	Spacer, Pointer
8	SBC409	Button, Push Switch
9	SGU233	Transparent Cover
10	\circ SUFTS2E	Front Sub Panel Ass'y
10	\square SUFTS2KE	Front Sub Panel Ass'y (Black)
11	\circ SKC790S	Cabinet Cover
11	\square SKC790B	Cabinet Cover (Black)
12	RJT202B	Terminal
13	SJT347	Terminal, Fuse
14	SDR3	Roller, Dial Cord
15	SUR125	Bracket, Roller
16	SUG67	Guide, Pointer
18	SUB71	Coupling Rod
19	SUB69	Coupling Rod
20	SDT8083	Shaft, Tuning Ass'y (W/Flywheel)
21	SUR123	Bracket, Roller
22	SHE73	Spacer, PCB
23	SJF3247-1N	Terminal, Output
24 [EX, EA] only	SGPTS2E	Rear Panel (Made in Japan)
24	SGP2630-1F	Rear Panel (Made in Japan)
24 [Ei] only	SGP2630-1K	Rear Panel (Made in Singapore)
25	SHR127	Bushing, AC Cord
26	Δ SJA88	AC Cord
26 [XL] only	Δ QFC1208M	AC Cord
27	SHR401-1	Lock Pin, Terminal
28	SJF4419-4	Terminal
29	SHG711	Spacer
30	SDD47-1	Dram, Dial
31	SDSA4121	Spring, Dial
32	SKU9110	Bottom Board
33	SKL249	Foot

Ref. No.	Part No.	Part Name & Description
SCREWS, WASHERS and NUT		
N1	XTB3+8BFZ	Screw, Tapping, \oplus 3 x 8
N2	XNS11	Nut, ϕ 11
N3	XWD11B	Washer, External Toothed Lock, ϕ 11
N4	XSN3+6S	Screw, \oplus 3 x 6
N5	XWA3B	Washer, Spring, ϕ 3
N6	XTB4+8BFN	Screw, Tapping, \oplus 4 x 8
N7	XTN3+8B	Screw, Tapping, \oplus 3 x 8
N8	XWC3B	Washer, External Toothed Lock, ϕ 3
N9	XTB3+8BFZ	Screw, Tapping, \oplus 3 x 8
N10	SHD3X21F-1	Screw
N11	XTS3+8B	Screw, Tapping, \oplus 3 x 8
N12	XTN3+10B	Screw, Tapping, \oplus 3 x 10
N13	XWG3	Washer, Plain, ϕ 3
N14	XWC3B	Washer, External Toothed Lock, ϕ 3
N15	XTB3+8BFN	Screw, Tapping, \oplus 3 x 8
N16	XTB3+10BFZ	Screw, Tapping, \oplus 3 x 10
N17	XTN3+8B	Screw, Tapping, \oplus 3 x 8
N18	XWG3	Washer, Plain, ϕ 3
N19	XTN3+10BFZ	Screw, Tapping, \oplus 3 x 10
N20	XWG3FZ	Washer, Plain, ϕ 3
N21	XTN3+12B	Screw, Tapping, \oplus 3 x 12
N22	SHD3X27	Screw
ACCESSORIES		
A1	SSA267	Cord, FM Indoor Antenna
A2	SJP2129-5	Cord, Connection
A3 [XA] only	Δ SJP5213-1	Plug Adaptor, AC Power
A4	SQF10785	Instruction Book, Printed Matter
PACKING PARTS		
P1	SPP649	Polyethylene Bag
P2	SPS3073-2	Pad, Left Side
P2 [XL] only	SPS3073-1	Pad, Left Side
P3	SPS3075-2	Pad, Right Side
P3 [XL] only	SPS3075-1	Pad, Right Side
P4 [XA] only	\circ SPG3175	Carton Box
P4 [EX, EG, EH, EA] only	\circ SPG3177	Carton Box
P4 [XL] only	\circ SPG3179	Carton Box
P4 [Ei] only	SPG3301-1	Carton Box (Made in Singapore)
P4 [EX, EH] only	\square SPG3183	Carton Box
P4 [XA] only	\square SPG3181	Carton Box

Areas

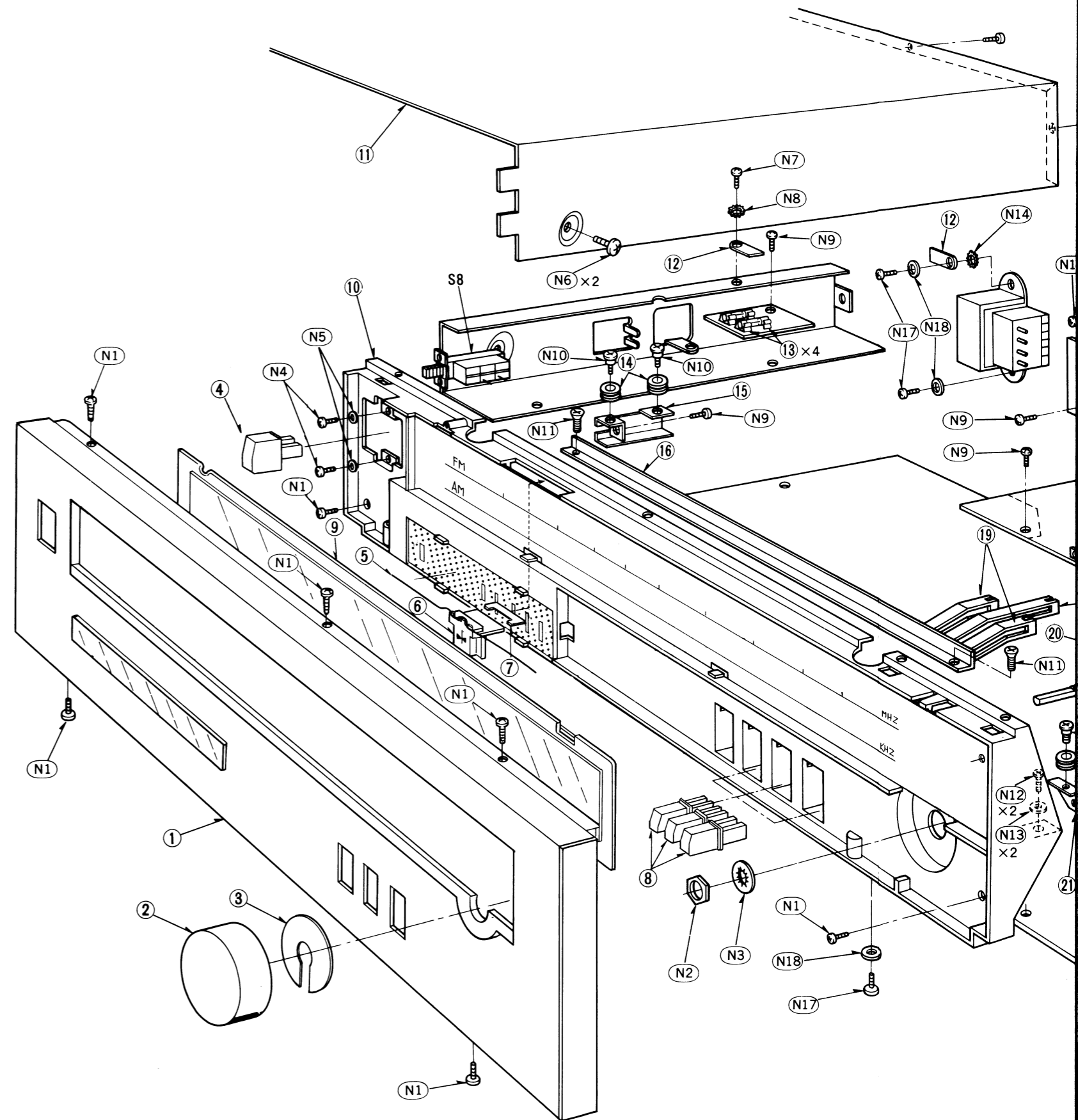
- * [EX] is available in Scandinavia.
- * [EH] is available in Holland.
- * [EA] is available in Austria.
- * [Ei] is available in Italy.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- * [XL] is available in Australia.

Accessories



[XA] area only

EXPLODED VIEWS



EXPLODED VIEWS

ed for both black
Specify the area.
or all areas.

(K)

Name & Description
⊕ 3 x 8
1 Toothed Lock, φ11
φ3
⊕ 4 x 8
⊕ 3 x 8
Toothed Lock, φ3
⊕ 3 x 8
⊕ 3 x 8
⊕ 3 x 10
⊕ 3 x 10
⊕ 3 x 8
⊕ 3 x 10
⊕ 3 x 12
Antenna
n
C Power
k, Printed Matter
de in Singapore)

