SERIAL NO. 3046

ONKYO® SERVICE MANUAL

QUARTZ LOCKED STEREO RECEIVER Model TX-4500MKII

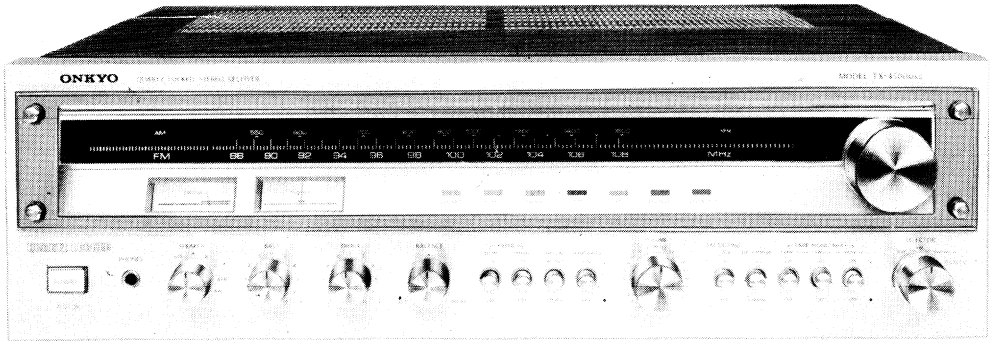


TABLE OF CONTENTS

ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power Output	60 watts per channel, min. RMS, at 8 ohms both channels driven from 20 Hz to 20 kHz, with no more than 0.1% total harmonic distortion.
Total Harmonic Distortion	0.1% at rated power 0.08% at 1 watt output
IM Distortion	0.3% at rated power 0.1% at 1 watt output
Damping Factor	50 (8 ohms 1 kHz)
Frequency Response	15 ~ 30,000 Hz (±1 dB)
Sensitivity and Impedance	PHONO 1/2: 2.5 mV 50 kohms TAPE PLAY: 150 mV 50 kohms TAPE REC: 150 mV 3.5 kohms (phono)
Phono Overload	200 mV RMS at 1 kHz 0.1% THD.
Bass Control	± 12 dB at 100 Hz
Treble Control	± 10 dB at 10 kHz
Signal to Noise ratio	PHONO: 86 dB (at 10 mV input IHF A network) 65 dB (IHF C network) TAPE: 95 dB (IHF A network) 90 dB (IHF C network)
Filter	HIGH: 6 kHz (12 dB/oct) LOW: 50 Hz (12 dB/oct)
Loudness	+8 dB at 50 Hz +5 dB at 20 kHz

TUNER SECTION

Tuning Range	FM: 87.5~108 MIIz AM: 530 ~ 1605 kHz
Usable Sensitivity	FM mono: 10.3 dBf, 1.8μV FM stereo: 18.3 dBf, 4.5μV AM: 25μV
50 dB Quieting Sensitivity	FM mono: 17.2 dBf, 4μV FM stereo: 37.2 dBf, 40μV
Intermediate Frequency	FM: 10.7 MHz AM: 455 kHz
Capture Ratio	FM: 1.5 dB
Image Rejection Ratio	FM: 80 dB AM: 45 dB
IF Rejection Ratio	FM: 100 dB AM: 40 dB
Spurious Rejection	FM: 1/2 IF 90 dB
Signal to Noise Ratio	FM mono: 70 dB FM stereo: 65 dB AM: 40 dB
ACA	FM: 70 dB
AM suppression Ratio	FM: 55 dB
Harmonic Distortion	FM mono: 0.2% FM stereo: 0.4% AM: 0.8%
Frequency Response	FM: 30 ~ 15,000 Hz +0.5, –2 dB
Stereo Separation	FM: 40 dB 1 kHz 30 dB 100 Hz ~10,000 Hz
Sub Carrier Suppression	FM: 60 dB
Muting Level	FM: 17.2 dBf, 4μV
Stereo Threshold	FM: 17.2 dBf, 4μV
Quartz Lock Level	FM: 17.2 dBf, 4μV
Tuning Meters	Signal Strength & Center Tuning

GENERAL

Power Supply	AC 110/120/220/240 Volts 50/60Hz (Universal model) AC 120 Volts 60Hz (U.S.A. model) 200Watts
Dimensions (WxHxD)	21-3/16" x 6-7/16" x 15-7/8" 538 mm x 163 mm x 403 mm
Weight	33 lbs. 15 kg.
Semiconductors	1 FET, 46 Transistors, 11 ICs, 39 Diodes

Specifications and features are subject to change without notice for improvement.

SERVICE INFORMATION

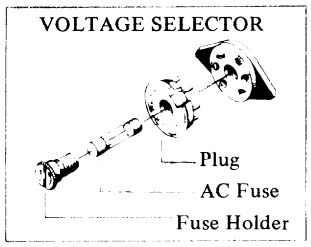
1. REPLACEMENT OF THE AC FUSE

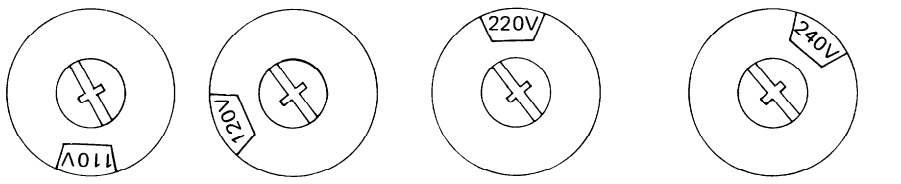
Universal Model

This model is equipped with a universal power transformer to permit operation at either power source of 110, 120, 220 or 240V AC 50/60Hz.

To convert the unit to a different power source voltage, change the plug as illustrated in the drawing below.

CAUTION: DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.





For 110V Operation For 120V Operation For 220V Operation For 240V Operation

Fig. 1

2. DE-EMPHASIS SWITCH

The 25μsec/Normal selector switch for Dolby FM broadcasts is located on the front panel. The 50μsec/75μsec selector switch employed in the Universal Type is located on the bottom board. When shipped from the factory, this bottom board switch is set to the 50μsec position. For use in 75μsec regions, switch over to the 75μsec position.

Fig. 2

3. REMOVEMENT OF THE FRONT PANEL

1) Remove four screws holding top cover and chassis.
2) Remove two screws holding top cover and back panel.
3) Remove five screws holding front panel and front bracket.
4) Pull out all control knobs.

4. REMOVEMENT OF THE DIAL GLASS

1) Remove four screws holding dial glass and front panel.

NOTES: The dial glass has been mounted by applying an 800gr torque to the screws. If the dial glass is removed during repairs, and a torque driver is available, apply 800gr torque to the screws when replacing. If however, a torque driver is not available, simply tighten the screws by hand. When replacing the dial glass, insert all relevant component parts in accordance with the cross-sectional diagram.

5. REPLACEMENT OF THE METER

1) Remove the top cover and the front panel.
2) Remove the two screws securing the illumination bracket and front bracket.
3) Remove the pointer ass'y from the front bracket.
4) Remove the 2 sets of screws securing the left and right lamp covers and dial plate covers to the front bracket.
5) Move the front panel out, keeping the dial plate cover held against the dial plate, and remove the 2 (left and right) lamp PC boards. Then remove the dial plate from the drive shaft.
6) Remove the 3 screws securing the front cover to the back plate.
7) The top sides of the meter covers are fastened to the back plate by adhesive tape. Remove this tape, taking care not to jar or knock the meters.

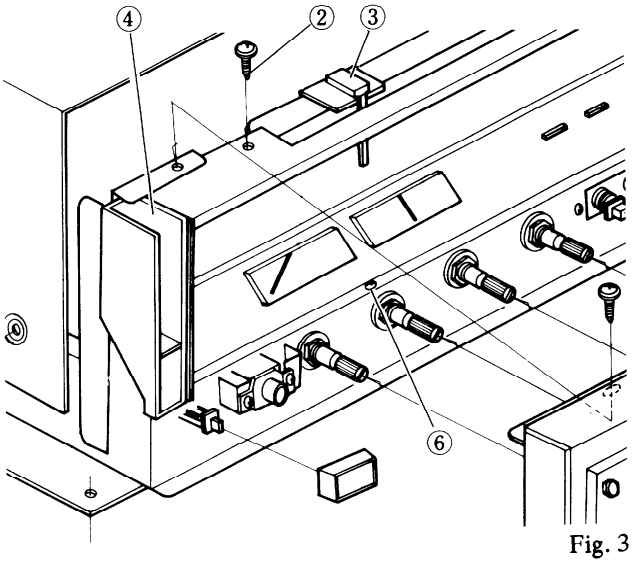


Fig. 3

6. REPLACEMENT OF THE PUSH-PULL AMPLIFIER TRANSISTOR

When replacing push-pull amplifier transistors, be sure that transistors of one channel have the same h_{FE} ratings.

CIRCUIT DESCRIPTION

1. PROTECTION CIRCUIT

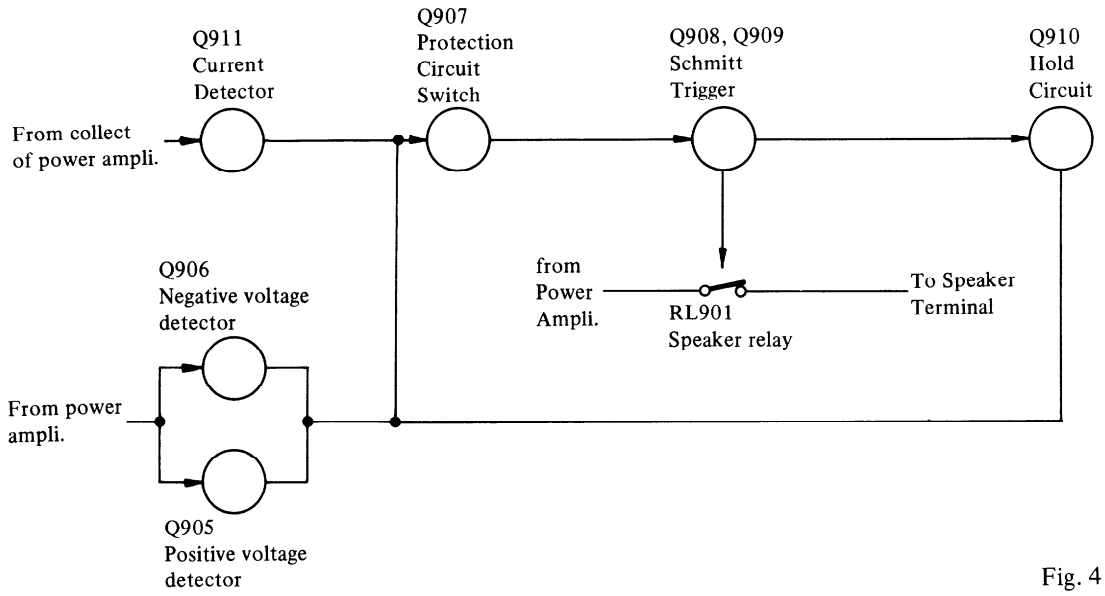


Fig. 4

The protection circuit is operated:

(1) when the B circuit is unstable when the power is turned ON (approximately 5 seconds)

(2) when the speaker terminals are shorted and abnormal current has flowed in the power amplifier thru this low impedance,

(3) when the center voltage has increased because of trouble at the differential amplifier, etc.

When Q907 is turned on by voltage detection or current detection, Q908 is turned ON by the voltage drop across R928. Q908, Q909 constitute a digitalized, fast response Schmitt trigger circuit. When Q908 is turned ON, Q909 is turned OFF. Q909 is a relay drive transistor. When it is turned OFF, the relay is also turned OFF.

When the power switch is turned ON, charging current flows thru the loop R929 → C922 → R927 → R928 and Q908 is turned ON by the voltage drop across R928. Consequently, Q909 and the relay are turned OFF until the charging current drops below a certain value. When the power switch is turned OFF, the B voltage falls and C922 is quickly discharged thru the loop R929 → C922 → D912. During normal operation, C922 is charged to almost the B voltage. But since the saturation resistance of Q911 is sufficieiently low, when Q907 is turned ON, C922 is quickly discharged thru the loop R929 → C922 → Q911 and the relay is also turned OFF. The relay is not turned ON again thereafter until C922 is charged, even if the set should return to normal and Q911 is turned OFF.

Hold Circuit

The reference voltage is produced by R934, R935, Q910 is operated as a comparator. When Q909 has been turned OFF, the collector voltage of Q909 rises and C922 is charged. Therefore, when C922 is charged to above a certain voltage relative to the reference voltage at the junction of R934 and R935, Q910 is turned ON, Q907 is turned ON thru R936 and the circuit is held.

Current Detector

Q911 is turned ON by the voltage detected from the collector circuit of the power amplifier. C924 prevents erroneous operation.

When the impedance is low at a certain frequency of the speaker, the protection circuit may be unexpectediy actuated each time a large audio signal of that frequency has entered. However, when this occurs the relay is opened and the power amplifier current returns to normal. The power amplifier current is also automatically returned to normal in a like manner when the load has been inadvertently shorted momentarily. When connected with the load shorted, the relay is repeatediy turned ON and OFF in load short – relay OFF (no load) – automatic reset (load short current detection) – relay. OFF order. Since the OFF time is sufficiently longer than the relay ON time in this case, the voltage across C923 gradually increases until a voltage sufficient to turn Q916 is reached, at which time the relay is held OFF, thus protecting the power transistor against damage by a continuous overcurrent.

2. QUARTZ LOCKED CIRCUIT

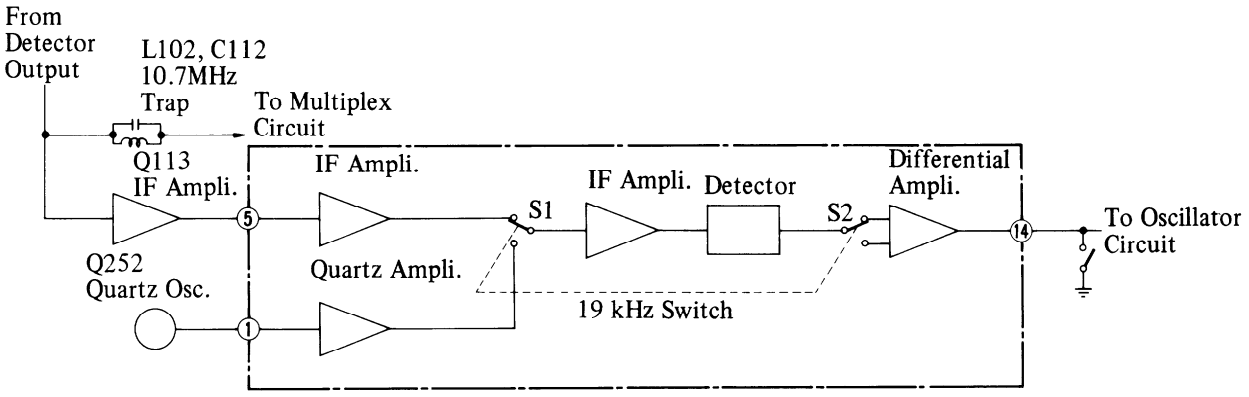


Fig. 5

The quartz locked circuit compares the frequency difference between the 10.7MHz reference signal and the IF signal, the difference being used to subsequently drive the AFC circuit.

A 10.7MHz component is extracted from the quadrature detector output by the L102 trap, amplified by the Q104 IC, and applied to pin no. 5 of the Q251 IC. An accurate 10.7MHz reference signal is generated by the quartz oscillator, and applied to pin no. 1 of the same IC. A 19kHz square wave is obtained from pin no. 10 of the PLL IC, and applied to pin no. 3 of Q251. The IF signal and the quartz oscillator reference signal are switched back and forth in a 19kHz cycle, and passed on to the detector and amplification stages. When S1 and S2 and both connected to the IF signal line, the IF frequency is detected, resulting is the generation of a voltage whose level corresponds to the IF frequency. This voltage is then applied to one of the differential amplifier inputs. When S1 and S2 are then both switched across to the quartz oscillator signal line, the quartz oscillator reference signal is detected, converted into the corresponding voltage, and applied to the other input of the differential amplifier. The difference between the IF detector DC component and quartz oscillator detector component is then amplified, appearing at pin no. 14 of the IC. This voltage serves as the AFC circuit control voltage. Any slight drift or deviation in the detector transformer will therefore result in the same amount of drift in both lines, thereby maintaining a constant difference. Precise local oscillator frequency will thus be kept at all times.

3. TUNING METER CIRCUIT

The tuning meter circuit compares the DC component difference between the quartz oscillator signal and IF signal detector outputs, and drives the tuning meter in accordance to this difference. The Q253 transistor is designed to short circuit the tuning meter when the input signals are weak.

4. MUTING CITCUIT

The muting circuit is activated by the combined effects of the IF component, noise component, and zero cross detector output. The IF level detector circuit is incorporated in the quadrature IC, the output appearing at pin no. 12. This pin is switched to high level when the IF level drops below the muting level, but is switched back to low level when the IF level exceeds the muting level again. The detection of noise above 100kHz in the composite signal will also result in pin no. 12 being switched to high level. Furthermore, the output of the zero cross detector (which compares the difference between the IF detector DC component and quartz oscillator detector DC component) will be at low level when a station is tuned, and at high level when turning away from the station, the switching point being several

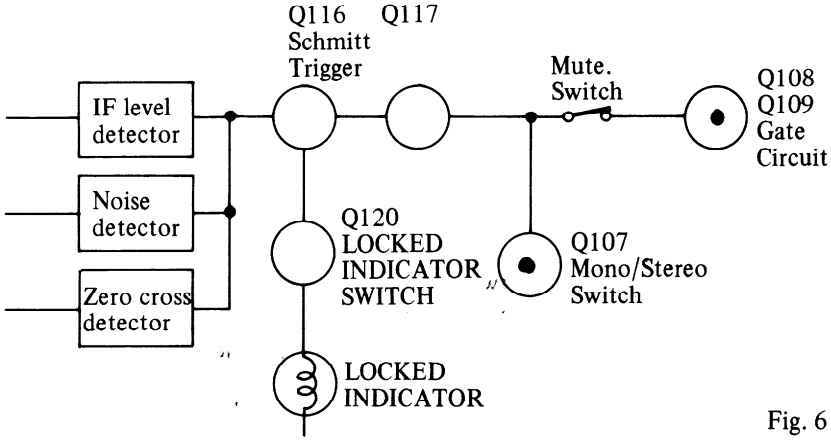


Fig. 6

kHz away from the exact tuning frequency. Consequently, when all detector circuit outputs are switched to low level, the Q116 transistor is cut off, and the Q120 transistor turned on, followed by the LOCKED lamp turning on. At the same time, Q117 is also turned on, and Q107 turned off, resulting in the STEREO lamp turning on (if the tuned station is broadcasting in stereo). Q108 and Q109 are also turned off, resulting in the appearance of an FM broadcast output signal at the receiver's output terminals.

5. AFC SWITCHING CIRCUIT

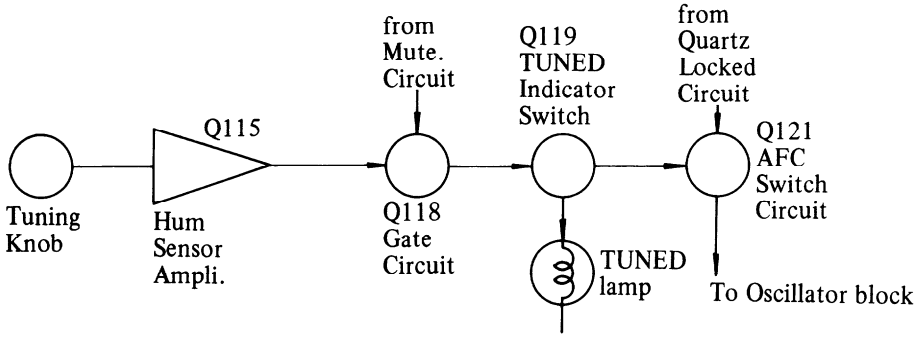


Fig. 7

In order to ensure accurate turning, the AFC circuit is turned off automatically once the tuning knob is touched, and also when the muting circuit is switched off.

When a station is tuned, Q118 will turn off and Q119 turn on (since Q116 will already be off and Q117 on), resulting in the LOCKED lamp turning on. And since Q121 will turn off when Q119 turns on, the AFC circuit will also begin to operate.

When the tuning knob is touched, a certain amount of hum is induced. This hum is amplified by Q115, rectified (full-wave) by D115 and D116 into a DC signal, and applied to Q118 is consequently turned on, resutling in the AFC circuit being switched off. If, however, the hum level is rather low, the LOCKED lamp might not turn on even when the tuning knob is touched. If this happens, reset the rear panel sensor switch to either the Normal or High positions.

ALIGNMENT PROCEDURES

INSTRUMENTS REQUIRED

1. DC Voltmeter
2. AM Sweep Generator
3. AM/FM Signal Generator
4. AC VTVM
5. Oscilloscope
6. Monitorscope
7. Distortion Analyzer
8. Stereo Modulator
9. Frequency Counter

GENERAL ALIGNMENT CONDITIONS

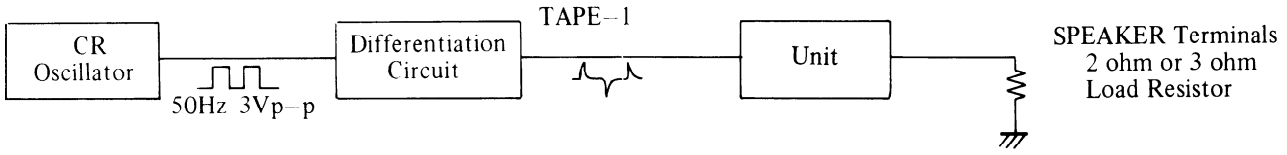
1. Signal input should be kept as low as possible.
2. Standard modulation is 400Hz 30% (AM), 1kHz 100% (FM MONO), pilot 9% sub and main 91% (FM STEREO).
3. Standard knob position

SPEAKERS . . . . . A
BASS, TREBLE & BALANCE . . . . . Center
HIGH FILTER . . . . . OFF
MODE . . . . . STEREO
DE-EMPHA . . . . . NORMAL
LOUDNESS . . . . . OFF
MUTING LOCK . . . . . OFF
TAPE 1, 2 . . . . . OFF (SOURCE)

(1) IDLING CURRENT ADJUSTMENT

Connect the DC Voltmeter between ID and CT terminals.
Adjust the voltage to 40±10mV with R517 (Left channel)
Adjust the voltage to 40±10mV with R617 (Right channel)
NOTES: Adjust after switching on for 10 minutes.
Open load VOLUME . . . . . Minimum TAPE MONITOR–1 . . . . . ON

(2) CURRENT DETECTOR CIRCUIT CHECK



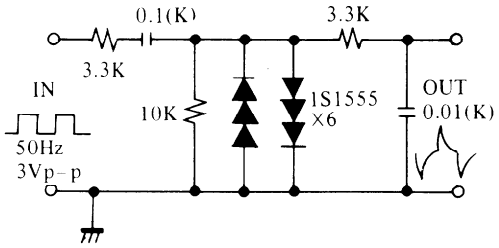


Fig. 8 Differentiation Circuit

Apply a tone burst signal to the TAPE-1 terminals. Connect a 2Ω hollow resistor to the speaker terminals. Confirm the relay is operated at maximum volume. Connect a 3Ω hollow resistor to the speaker terminals. Confirm the relay is not operated at maximum volume.

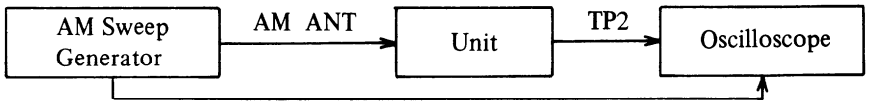
NOTES: Adjust after switching on for 10 minutes.
VOLUME–Maximum

(3) CENTER VOLTAGE CHECK

When the transistor of the differential amp of the power amplifier or the constant current circuit has been replaced, check the center voltage.
Connect a DC VTVM between the CT-E terminals and check if the reading of the DC VTVM is within ±50mV.
Perform this check 10 minutes after the power switch has been set to ON.

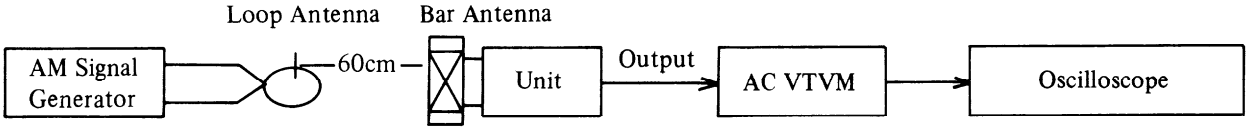
(4) AM IF ALIGNMENT

1. Set SELECTOR switch to AM.
2. Set radio dial to quiet point.



Set signal	Adjust	Oscilloscope	Remarks
455kHz	X103	Maximum Symmetrical Response	Usually not necessary to adjust

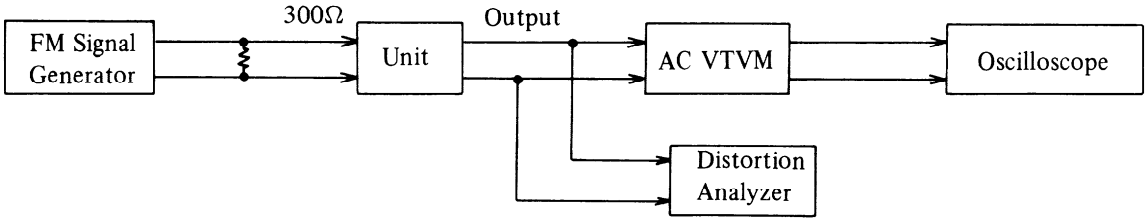
(5) AM RF ALIGNMENT



Step	Set Signal	Set Radio Dial	Adjust	VTVM reading	Remarks
1	515kHz 400Hz 30%	Lower end (515kHz)	L107	Maximum	Repeat step 1 and 2 as necessary
2	1680kHz 400Hz 30%	Upper end (1680kHz)	TC5	Maximum	
3	600kHz 400Hz 30%	600kHz	L001	Maximum	Repeat step 3 and 4 as necessary
4	1400kHz 400Hz 30%	1400kHz	TC2	Maximum	

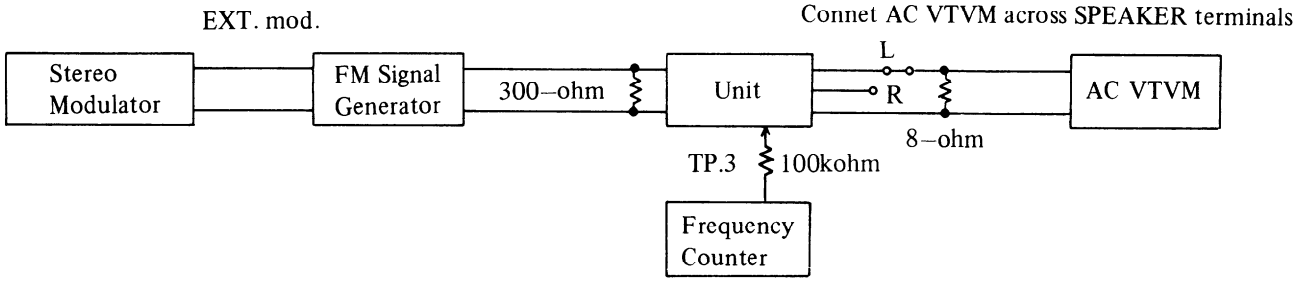
(6) FM FRONT END ALIGNMENT

1. Set SELECTOR switch to FM.
2. Connect FM Signal Generator to 300–ohm antenna terminals.



Step	FM Signal Generator	Dial to set	Adjust	Output Indicator	Adjust for	Remarks
1	No signal	Quiet Point	T101 Bottom	Tuning Indicator	Center	Repeat Steps 1 and 2 as necessary
2	98MHz 65dBf (60dB) 1kHz 75kHz div.	98MHz	T101 Top	Distortion Analyzer	Minimum	
3	90MHz 65dBf (60dB) 1kHz 75kHz div.	90MHz	L7	Tuning Indicator	Center	Repeat Steps 3 and 4 as necessary
4	106MHz 65dBf (60dB) 1kHz 75kHz div.	106MHz	TC6		Center	
5	90MHz 20dBf (15dB) 1kHz 75kHz div.	90MHz	L1 L2 L3	AC VTVM or Oscilloscope	Maximum	Repeat Steps 5 and 6 as necessary
6	106MHz 20dBf(15dB) 1kHz 75kHz div.	106MHz	TC1 TC3 TC4		Maximum	
7	98MHz 65dBf(60dB) 1kHz 75kHz div.	98MHz	L5	Distortion Analyzer	Minimum	

(7) MULTIPLEX ALIGNMENT



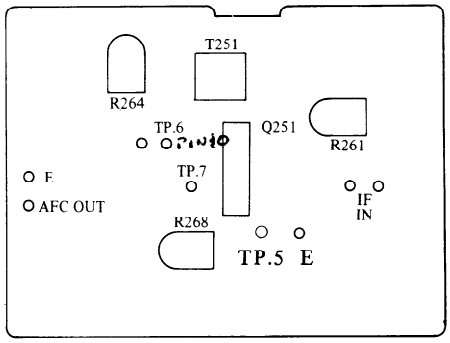
Step	FM Signal Generator	Stereo Modulator	Dial to set	Adjust	Output Indicator	Adjust for	Remarks
1	98MHz no mod. 65dBf (60dB)	–	98MHz	R125	Frequency Counter	19000±19Hz	
2	STEREO INDICATOR should light up when stereo program is being received.						
3	98MHz EXT. Mod. 65dBf (60dB)	Pilot Sig. 9% Main & Sub Sig. 1KHz Lch 91%	98MHz	R142	AC VTVM Right ch.	Minimum	Repeat Steps 3 & 4 as necessary
4	Same as above	Pilot Sig. 9% Main & Sub Sig. 1KHz Rch 91%	98MHz	R142	AC VTVM Left ch.	Minimum	

(8) QUARTZ LOCKED CIRCUIT ALIGNMENT

1. Connect the signal generator to the ANTENNA terminals and the DC voltmeter to the detector output (pin nos. 10).
2. Set the SG output to 98MHz, 1kHz, 75kHz div. 65dBf (60dB).
3. Tune the receiver to 98MHz.
4. Adjust the voltage to 3.5V with a detector coil of T251.

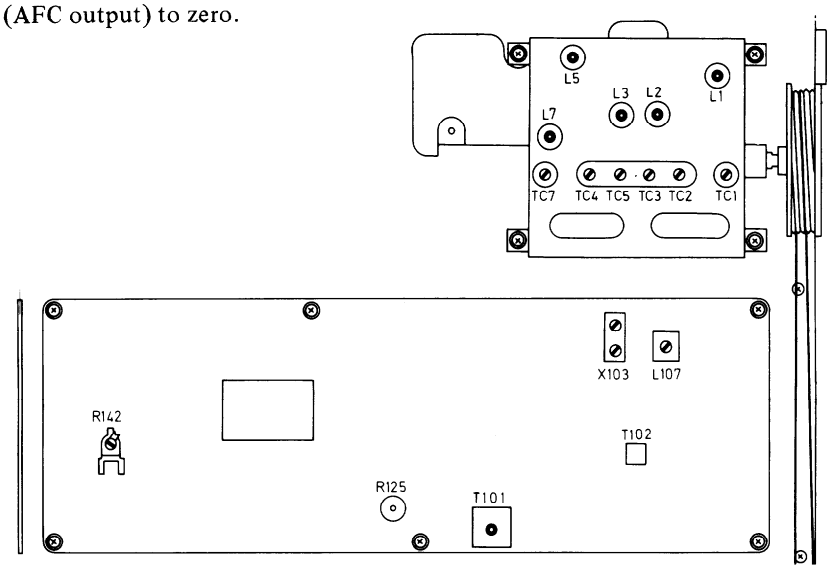
(9) TUNING METER CENTER ADJUSTMENT

1. Connect the signal generator to the ANTENNA terminals and the DC voltmeter to the detector output (pin nos. 10).
2. Set the SG output to 98MHz, 1kHz, 75kHz div. 65dBf (60dB).
3. Tune the receiver to 98MHz.
4. Place a short circuit across TP6 (pin nos. 10 and 11).
5. Adjust the semi-fixed resistor R261 to bring the tuning meter needle to dead center.
6. Then adjust the semi-fixed resistor R268 to bring the TP7 (pin no. 14) output voltage (AFC output) to zero.



Adjustment point

Fig. 10



Adjustment point

Fig. 9

(10) SYNCHRONIZING THE LOCKED FREQUENCY WITH THE IF FREQUENCY

Adjust the semi-fixed resistor R264 to bring the TP7 output voltage to zero.

STRINGING DIAGRAM

1. Close the variable capacitor complete and tie the dial cord to the spring of the drum.
2. Thread the dial cord in the direction of arrow from (1) to (3) and wind the dial cord three turns around the tuning shaft clockwise.
3. Wind the dial cord 1½ turns around the dial drum.
4. Thread the dial cord to the dial pulley 3.

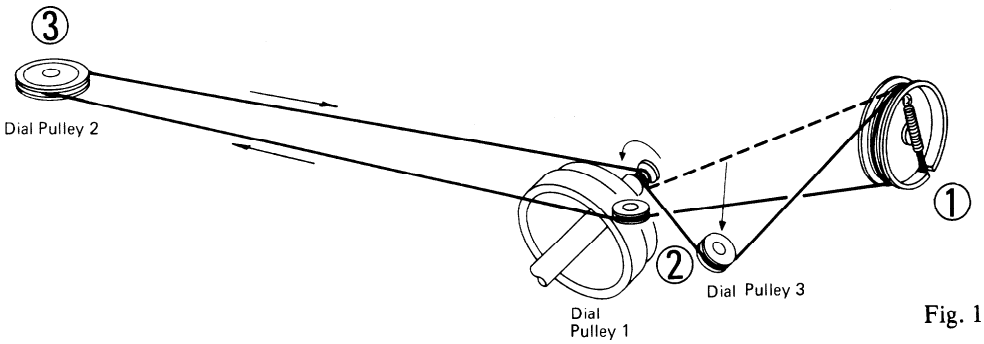


Fig. 11

EXPLODED VIEW

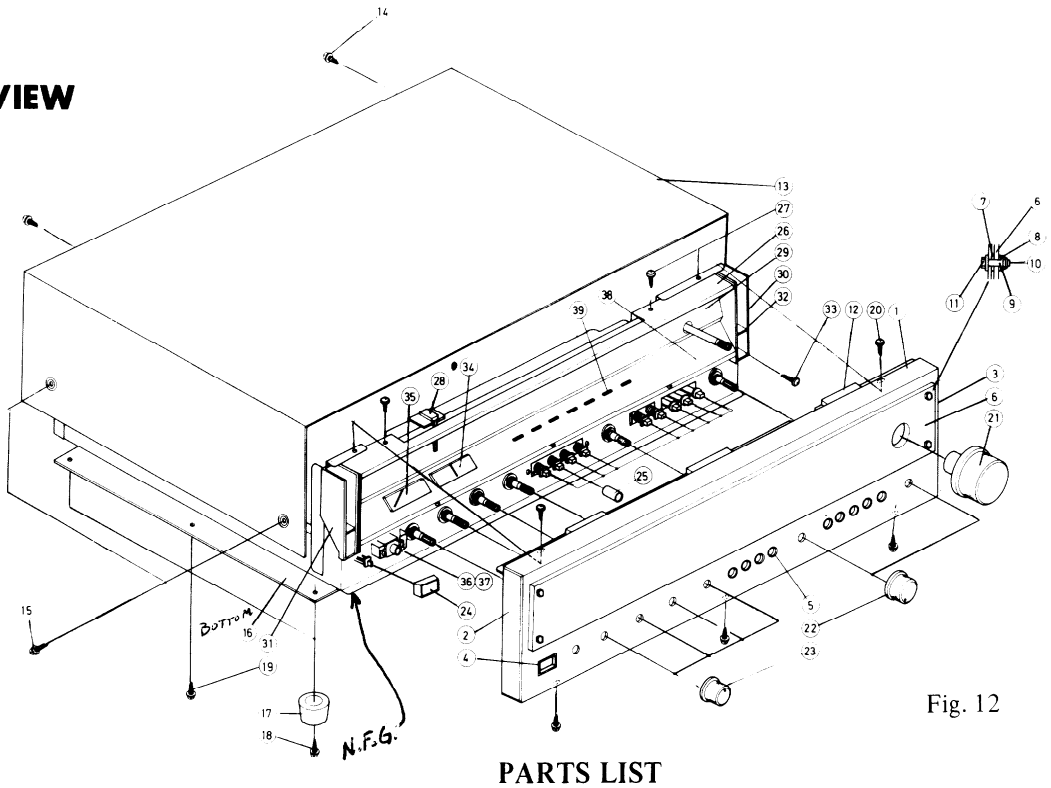


Fig. 12

PARTS LIST
U.S.A. MODEL

Ref. No.	Parts No.	Description
	13709121-1	Front panel ass'y (1-5)
1	27210097	Front panel
2	28125049	End cap L
3	28125048	End cap R
4	27267027	Guide for power switch
5	27267026	Guide for push switch
6	28191027	Dial glass
7	870051	Cushion
8	870052	Cushion
9	27270014	Spacer
10	27300038	Screw
11	86213010	WN3x10FN, Washer
12	28140105	Cushion
13	28184038	Top cover
14	834430062	3STS+6BQ(BC), Screw
15	838440109	4TTB+10C(BC), Screw
16	27170043	Bottom board
17	280889	Leg
18	831130162	3STW+16BQ, Screw
19	831130082	3STW+8BQ, Screw
20	834130062	3STS+6BQ, Screw
21	28320241	Tuning knob
22	28320238	Volume knob
23	28320237	Tone knob
24	28320235	Power knob
25	28320239	Push knob
26	27240016A	Illumination bracket
27	834130062	3STS+6BQ, Screw
28	13719131	Pointer ass'y
29	28130064	Dial plate
30	27215030A	Lamp case R
31	27215031A	Lamp case L
32	27140203	Bracket
33	831130082	3STW+8BQ, Screw
34	243087	NIND-0250S87, Center meter
35	243086	NIND-0500S86, Strength meter
36	25045018	LJ-100-H, Headphone jack
37	441623314	330Ω, 1W, Metal oxide film resistor
38	28133009	Back plate
39	28198512	Facet

PARTS LIST
UNIVERSAL MODEL

Ref. No.	Parts No.	Description
	13709121-1	Front panel ass'y (1-5)
1	27210097	Front panel
2	28125049	End cap L
3	28125048	End cap R
4	27267027	Guide for power switch
5	27267026	Guide for push switch
6	28191027	Dial glass
7	870051	Cushion
8	870052	Cushion
9	27270014	Spacer
10	27300038	Screw
11	86213010	WN3x10FN, Washer
12	28140105	Cushion
13	28184039	Top cover
14	834430062	3STS+6BQ(BC), Screw
15	838240109	4TTB+10C(Ni), Screw
	87624012	W4x12F(Ni), Washer
16	27170043	Bottom board
17	280889	Leg
18	831130162	3STW+16BQ, Screw
19	831130082	3STW+8BQ, Screw
20	834130062	3STS+6BQ, Screw
21	28320241	Tuning knob
22	28320238	Volume knob
23	28320237	Tone knob
24	28320235	Power knob
25	28320239	Push knob
26	27240016A	Illumination bracket
27	834130062	3STS+6BQ, Screw
28	13719131	Pointer ass'y
29	28130064	Dial plate
30	27215030A	Lamp case R
31	27215031A	Lamp case L
32	27140203	Bracket
33	831130082	3STW+8BQ, Screw
34	243087	NIND-0250S87, Center meter
35	243086	NIND-0500S86, Strength meter
36	25045018	LJ-100-H, Headphone jack
37	441623314	330Ω, 1W, Metal oxide film resistor
38	28133009	Back plate
39	28198512	Facet

COMPONENT LOCATION

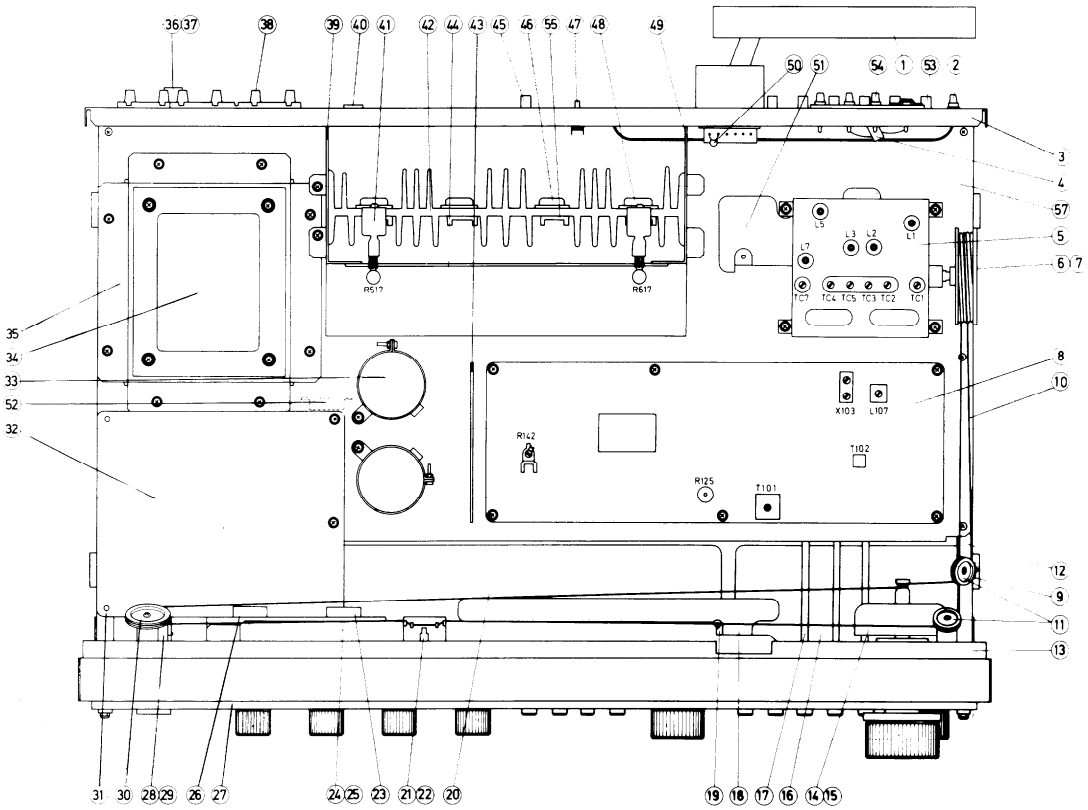


Fig. 13

PARTS LIST
U.S.A. MODEL

Ref. No.	Circuit No.	Parts No.	Description
1.	L001	232066	NMA-3012, AM bar antenna
2.	P811	25060008	Ground terminal
	P811a	87613010	W3X10F, Washer
3.	A080	27120117	Back panel
4.	T001	233026	NBLN-1, Balun transformer
5.		240038	FAT-51EJ-41, Front end
6.	A008	27200020	Dial drum
7.	A009	273803	SP-14A, Spring for dial drum
8.		13709575	NAIM-475, FM/AM tuner p.c.b.
9.	A032	27140213	Bracket, dial pulley
10.	A010	273903	Dial string
11.	A033, A042	27185002	DP-16N, Dial pulley
12.	A031	27115013A	Side bracket
13.	A501	27210097	Front panel
14.	A039	27205012	Drive shaft ass'y
15.	A040	27300071	Bearing
16.		13709578	NAEQ-478, Equalizer ampli. p.c.b.
17.	A012	27260015	Shaft
18.		13709582	NAPL-482, Indicator lamp. p.c.b.
19.	A044	27190031	Lamp holder
20.		13709579	NAAF-479, Tone ampli. p.c.b.
21.	PL813	210044	PL8V0.15AW-3, Pointer lamp
22.	A050	27220009	Pointer slider ass'y
23.	M802	243087	NIND-0250S87, Center meter
24.	PL811, PL812	210041	PL8V0.15AW-2, Meter illumination lamp
25.	A045	27300114	Lamp rubber
26.	M801	243086	NIND-0500S86, Strength meter

PARTS LIST
UNIVERSAL MODEL

Ref. No.	Circuit No.	Parts No.	Description
1.	L001	232066	NMA-3012, AM bar antenna
2.	P811	2506008	Ground terminal
	P811a	87613010	W3X10F, Washer
3.	A080	27120118	Back panel
4.	T001	233026	NBLN-1, Balun transformer
5.		240038	FAT-51EJ-41, Front end
6.	A008	27200020	Dial drum
7.	A009	273803	SP-14A, Spring for dial drum
8.		13709575	NAIM-475, FM/AM tuner p.c.b.
9.	A032	27140213	Bracket, dial pulley
10.	A010	273903	Dial string
11.	A033, A042	27185002	DP-16N, Dial pulley
12.	A031	27115013A	Side bracket
13.	A501	27210097	Front panel
14.	A039	27205012	Drive shaft ass'y
15.	A040	27300071	Bearing
16.		13710578A	NAEQ-478a, Equalizer ampli. p.c.b.
17.	A012	27260015	Shaft
18.		13709582	NAPL-482, Indicator lamp. p.c.b.
19.	A044	27190031	Lamp holder
20.		13709579	NAAF-479, Tone ampli. p.c.b.
21.	PL813	210044	PL8V0.15AW-3, Pointer lamp
22.	A050	27220009	Pointer slider ass'y
23.	M802	243087	NIND-0250S87, Center Meter
24.	PL811, PL812	210041	PL8V0.15AW-2, Meter illumination lamp
25.	A045	27300114	Lamp rubber
26.	M801	243086	NIND-0500S86, Strength meter

Ref. No.	Circuit No.	Parts No.	Description
27.	S801	25030058	NRS-226-30Y, Speaker selector switch
28.	S901	25035047	NPS-111-L12P, Power switch
29.	C901	3504012	UL125V103M, UL capacitor
30.	A041	27185001	DP-26N, Dial pulley
31.	A013	27190009	Holder
32.		13709581	NAPS-481, Rectifier and speaker protection circuit p.c.b.
33.	C931, C932	3504108	12,000μF, 50V, Elect. capacitor
34.	T901	230239	NPT-640D, Power transformer
35.	A002	27130077B	Bracket for transformer
36.	F901	252050	5A (ST-6), Fuse
37.	F901a	250080	S-N1301, Fuse holder
38.		25060029	NTM-4PRMN05, Speaker terminal
39.	A005	27130129	Bracket for radiator
40.	P901-P903	25050032	S-I6444-01, AC outlet
41.	A006	27140085A-1	Transistor bracket
42.	A003	27160037	Radiator
43.		13709576	NAXL-476, Quartz locked circuit p.c.b.
44.		13709580	NADA-480, Power ampli. p.c.b.
45.	P806	250256A	NTM-1WPBL-E1, FM detector output terminal
46.	Q506, Q606	2200812 or 2200813	2SB681 (R) or 2SB681 (O) Power ampli. transistor
47.	S812	25065016	NSS-2327, Senser switch
48.	Q505, Q605	2200802 or 2200803	2SD551 (R) or 2SD551 (O) Power ampli. transistor
49.	A004	27130128	Bracket for radiator
50.	L002	233105 or 233024	NCH-1005 or NCCH-1501 Choke coil
51.		13709577	NATM-477, Tape monitor p.c.b.
52.		25060025	7P terminal
53.	P801	25045044	NPJ-4PRB-L21, Phono input terminal
54.	P809	25060021B	NTM-3PUM1, Antenna terminal
55.	Q505a, Q506a, Q605a, Q606a	250249	M-1614, Transistor socket
57.	A001	27100029A	Chassis
	W901	253072	AS-UC, Power supply cord
	F801	252059	4A (SS-2), Fuse
	W901a	270025	SR-3P-4, Strainrelief

Ref. No.	Circuit No.	Parts No.	Description
27.	S801	25030058	NRS-226-30Y, Speaker selector switch
28.	S901	25035034	NPS-121-L, Power switch
29.	C901, C902	3500052	PME271Y510CEE, IS capacitor
30.	A041	27185001	DP-26N, Dial pulley
31.	A013	27190009	Holder
32.		13709581	NAPS-481, Rectifier and speaker protection circuit p.c.b.
33.	C931, C932	3504108	12,000μF, 50V, Elect. capacitor
34.	T901	230243	NPT-640ADGQ, Power transformer
35.	A002	27130077B	Bracket for transformer
36.	F901	252014	4A-T, Fuse
37.	F901a	250080	S-N1301, Fuse holder
38.		25060029	NTM-4PRMN05, Speaker terminal
39.	A005	27130129	Bracket for radiator
40.			
41.	A006	27140085A	Transistor bracket
42.	A003	27160037	Radiator
43.		13709576	NAXL-476, Quartz locked circuit p.c.b.
44.		13710580A	NADA-480a, Power ampli. p.c.b.
45.	P806	250256A	NTM-1WPBL-E1, FM detector output terminal
46.	Q506, Q606	2200202 or 2200203	2SA747 (R) or 2SA747 (O) Power ampli. transistor
47.	S812	25065016	NSS-2327, Senser switch
48.	Q505, Q605	2200192 or 2200193	2SC1116 (R) or 2SC1116 (O) Power ampli. transistor
49.	A004	27130128	Radiator bracket
50.	L002	233105 or 233024	NCH-1005 or NCH-1501 Choke coil
51.		13710577A	NATM-477a, Tape monitor p.c.b.
52.		25060025	7P terminal
53.	P801	25045044	NPJ-4PRB-L21, Phono input terminal
54.	P809	25060021B	NTM-3PUM1, Antenna terminal
55.	Q505a, Q506a, Q605a, Q606a	250249	M-1614, Transistor socket
57.	A001	27100029	Chassis
		13710584	NADS-484, Din socket p.c.b.
	P901	25050018	PA-125, 3P plug
	P902	250227	SFO30A3, PS plug
	P903	25050021	X-I7240, VS socket
	W901	253092	AS-CEE-2, Power supply cord
	F901	252014	4A-T, Fuse
		27140217	Bracket for DIN socket p.c.b.

AM/FM TUNER PC BOARD (NAIM-475) - PARTS LIST

Circuit No.	Parts No.	Description
ICs		
Q101	222407	TA-7060P, FM IF ampli.
Q102	222421	HA-1137, IF ampli. and Quadrature detector
Q103	222419	HA-1156W, Multiplex
Q106	222418	HA-1151, AM
Q113	222468	BA-402, FM IF ampli.
Q115	222423	TA-7136P, Hum sensor ampli.
Transistors		
Q104, Q105	2210136	2SC1312 (F), AF ampli.
Q107	2210747	2SC945AQ1, Mono/Stereo switch
Q108, Q109	2210943	2SC1317(R), Muting switch
Q111, Q112	2210086	2SC733(BL), Noise ampli.
Q114	2210747	2SC945AQ1, T.K.C.
Q116, Q117	2211254	2SC1815(Y)
	2210943 or	2SC1317(R) or Schmitt trigger
Q118	Same as above	Same as above, Gate circuit
Q119	Same as above	Same as above, Tuned lamp switch
Q120	2210943	2SC1317(R), Locked lamp switch
Q121	2210943	2SC1317(R), AFC switch
Diodes		
D102	223103	1N60
D103, D101	223105	1S1555
D104, D105	223103	1N60
D106-D108	223105	1S1555
D112	223105	1S1555
D113, D119	4000022	VD-1212, Varistor
D114-D116	223103	1N60
D117	224011	YZ-047, Zener
D118	224012	WZ-052, Zener
D120	223105	1S1555
D121, D122	223103	1N60
Coils		
L101	233105	NCH-1005
	233024 or	NCCH-1501 or Choke
L102	233121	NCH-3012, Choke
L103	233114	NCH-1009, Choke
L104	233122	NCH-3013, Choke
L105	233031	NMC-9-1
L106	233104	NMC-5001, Low pass filter
L107	232065	NMO-2002, AM oscillator

Circuit No.	Parts No.	Descri
Transformers		
T101	233101	NFIF-6003
	233083 or	NIT-351[illegible]6
T102	232041	NIT-050[illegible],
Ceramic filters		
X101	3010018	SFJ10.7MA
X102	3010006	SFE-10.7MA
X103	3010012	CFT-455B
Capacitors		
C105	352750471	4.7μF, 25V,
C106	352784791	0.47μF, 50V
C110	352780101	1μF, 50V, E
C114, C115	352741001	10μF, 16V,
C116	352744711	470μF, 16V
C117, C118	352780221	2.2μF, 50V,
C119	352742211	220μF, 16V
C120, C122	392884797	0.47μF, 50V
C121	392880107	1μF, 50V, L
C123	372325114	510pF± 5%,
C125, C126	352780101	1μF, 50V, E
C131, C132	392882297	0.22μF, 50V
C135	352744711	470μF, 16V
C139	392883397	0.33μF, 50V
C141	352741001	10μF, 16V,
C143, C144	352741011	100μF, 16V
C148	352780101	1μF, 50V, E
C151, C154	352741001	10μF, 16V,
C153	352784791	0.47μF, 50V
C162, C164	352780101	1μF, 50V, E
C163	352780331	3.3μF, 50V,
C165, C166	352743301	33μF, 16V,
C205	372323614	360pF± 5%,
C209	352741001	10μF, 16V,
C210	352741011	100μF, 16V
C213	352780331	3.3μF, 50V,
C214	352780101	1μF, 50V, E
C217	374124737	0.047μF±20
C218	352751001	10μF, 25V,
Resistors		
R125	5225019	N10HR4.7K
R142	5225018	N10HR1KB

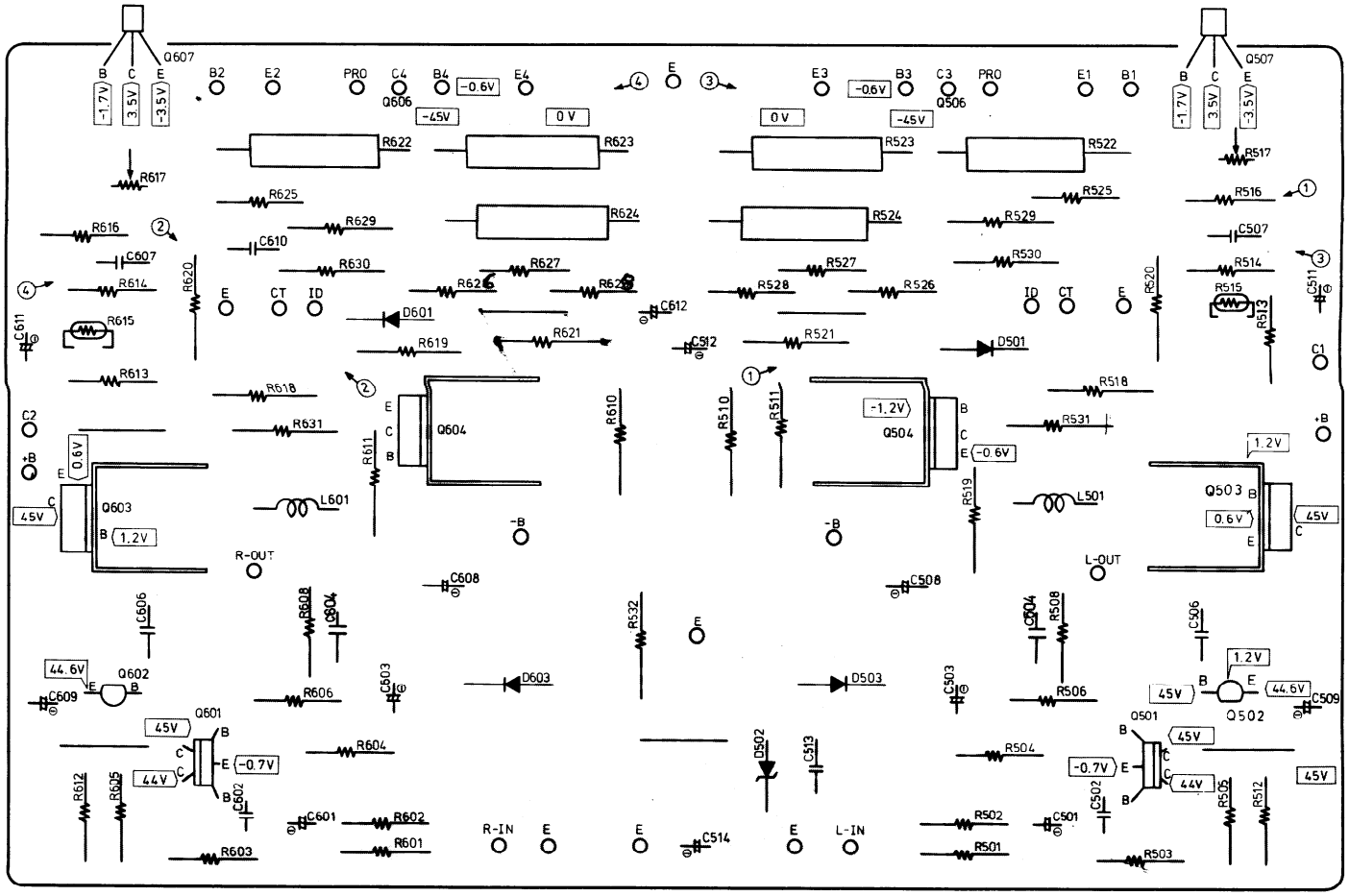
QUARTZ LOCKED CIRCUIT PC BOARD (NAXL-476) - PARTS LIST

Circuit No.	Parts No.	Description
	IC	
Q251	222469	BA-661, Quartz locked
	Transistors	
Q252	2210123	2SC380(0), Quartz oscillator
Q253	2210943	2SC1317(R), Tuning meter switch
Q254	2210747	2SC945AQ1
	Diodes	
D251-D253	223105	1S1555
	Coil	
L251	233105	3.3μH, NCH-1005
	Transformer	
T251	233120	NFIF-6006, Detector
	X'tal	
X251	3010015	XTL-10.7M
	Ceramic filter	
X252	3010006	SFE10.7MA (RED)
	Capacitors	
C251	352744701	47μF, 16V, Elect.
C256	352741001	10μF, 16V, Elect.
C260	352721011	100μF, 6.3V, Elect.
C269	352742201	22μF, 16V, Elect.
C270	352741001	10μF, 16V, Elect.
C271	352741011	100μF, 16V, Elect.
C272	352723311	330μF, 6.3V, Elect.
	Resistors	
R261	5225055	N10HR2KBC
R264	5225089	N10HR30KBC
R268	5225056	N10HR5KBC

NOTES:
1. DC voltage (<V) are mesured with V.T.V.M. to chassis at no signal applied.
2. Capacitor
   LL: Low leakage current type electrolytic capacitor
   ST: Polyetyren film capacitor
   DE: Non-inductive polyester film capacitor

POWER AMPLI.PC BOARD VIEW FROM BOTTOM SIDE

U.S.A.model



POWER AMPLI. PC BOARD(NADA-480)-PARTS LIST

U.S.A. Model

Circuit No.	Parts No.		Description
Transistors			
Q501, Q601	2211371	or	2SC2259(0-001) or Differen-
	2211372		2SC2259(0-002) tial ampli.
Q502, Q602	2211353	or	2SA949(0) or Driver
	2211354		2SA949(Y)
Q503, Q603	2200393	or	2SC1625(0) or Complement
	2200394		2SC1625(Y)
Q504, Q604	2200403	or	2SA815(0) or Complement
	2200404		2SA815(Y)
Q505, Q605	2200802	or	2SD551(R) or Power ampli.
	2200803		2SD551(0)
Q506, Q606	2200812	or	2SB681(R) or Power ampli.
	2200813		2SB681(0)
Q507, Q607	2210743	or	2SC945L(P) or Thermo
	2210746		2SC945A(P)
Diodes			
D501, D503 D601, D603	223105		1S1555
D502	223921		WZ-210, Zener
Coils			
L501, L601	231001		S1.3B
Capacitors			
C501, C601	392851007		10μF, 25V, LL
C503, C603	352723311		330μF, 6.3V, Elect.
C508, C608	352771011		100μF, 63V, Elect.
C509, C609	352780101		1μF, 50V, Elect.
C510, C610	374124735		0.047μF±10%, 50V, DE
C511, C512 C611, C612	352780331		3.3μF, 50V, Elect.
C514	352780471		4.7μF, 50V, Elect.
Resistors			
R510, R610	441622424		2.4kΩ, 1W, Metal oxide film

POWER AMPLI. PC BOARD (NADA-480a) - PARTS

Universal Model

Circuit No.	Parts No.		Description
Transistors			
Q501, Q601	2211371	or	2SC2259(0-001) or Differen-
	2211372		2SC2259(0-002) tial ampli.
Q502, Q602	2211353	or	2SA949(0) or Driver
	2211354		2SA949(Y)
Q503, Q603	2200393	or	2SC1625(0) or Complement
	2200394		2SC1625(Y)
Q504, Q604	2200403	or	2SA815(0) or Complement
	2200404		2SA815(Y)
Q505, Q605	2200192	or	2SC1116(R) or Power ampli.
	2200193		2SC1116(0)
Q506, Q606	2200202	or	2SA747(R) or Power ampli.
	2200203		2SA747(0)
Q507, Q607	2210743	or	2SC945L(P) or Thermo
	2210746		2SC945A(P)
Diodes			
D501, D503 D601, D603	223105		1S1555
D502	223921		WZ-210, Zener
Coils			
L501, L601	231001		S1.3B
Capacitors			
C501, C601	392851007		10μF, 25V, LL
C503, C603	352723311		330μF, 6.3V, Elect.
C508, C608	352771011		100μF, 63V, Elect.
C509, C609	352780101		1μF, 50V, Elect.
C510, C610	374124735		0.047μF±10%, 50V, DE
C511, C512 C611, C612	352780331		3.3μF, 50V, Elect.
C514	352780471		4.7μF, 50V, Elect.
Resistors			
R510, R610	441622424		2.4kΩ, 1W, Metal oxide film

EQUALIZER AMPLI. PC BOARD VIEW FROM BOTTOM SIDE

U.S.A.model

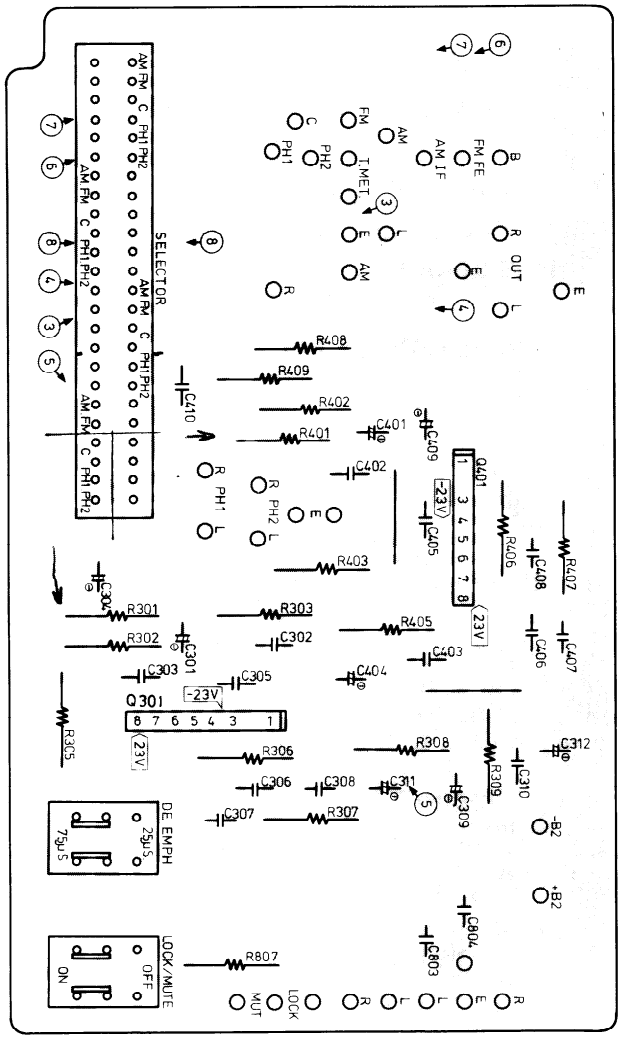


Fig. 26

TAPE MONITOR PC BOARD VIEW FROM BOTTOM SIDE.

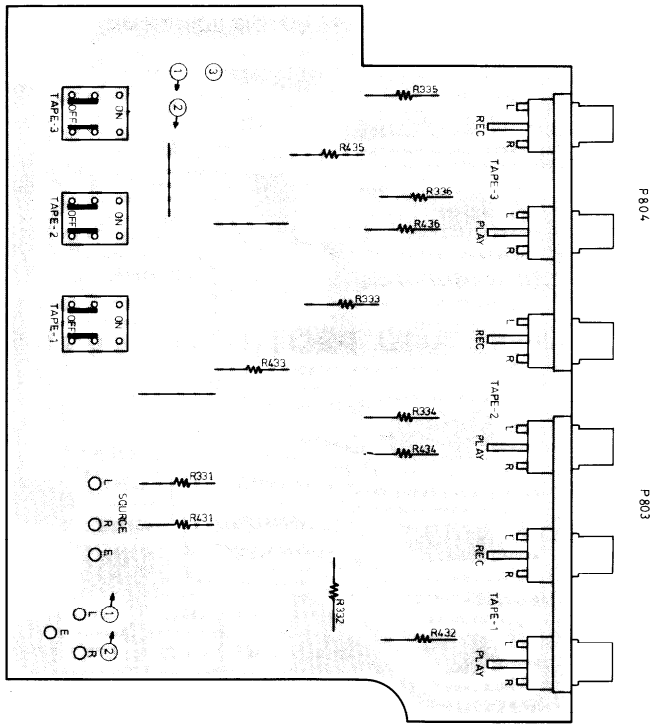


Fig. 27

EQUALIZER AMPLI. PC BOARD (NAEQ-478)-PARTS LIST

Circuit No.	Parts No.	Description
ICs		
Q301, Q401	222471	HA-1457, Equalizer ampli.
Capacitors		
C301, C401	392880227	2.2μF, 50V, LL
C304, C404	352734701	47μF, 10V, Elect.
C306, C406	372326814	680pF±5%, 50V, ST
C309, C409	392884797	0.47μF, 50V, LL
C311, C312	352780101	1μF, 50V, Elect.
Switches		
S806	25030061	NRS-184-30K, Source selector
S807, S808	25035070	NPS-222-L35, Muting/ De-emphasis

TAPE MONITOR PC BOARD (NATM-477)-PARTS LIST

Circuit No.	Parts No.	Description
Switches		
S809-S811	25035072	NPS-322-L37, Tape monitor
Terminals		
P803, P804	25045041	NPJ-6PDBL18, Tape input/output

TAPE MONITOR PC BOARD (NATM-477a) - PARTS LIST Universal Model

Circuit No.	Parts No.	Description
Switches		
S809-S811	25035068	NPS-322-L33, Tape monitor
Terminals		
P803, P804	25045041	Tape input/output

EQUALIZER AMPLI. PC BOARD (NAEQ-478a) -PARTS LIST Universal Model

Circuit No.	Parts No.	Description
ICs		
Q301, Q401	222471	HA-1457, Equalizer ampli.
Capacitors		
C301, C401	392880227	2.2μF, 50V, LL
C304, C404	352734701	47μF, 10V, Elect.
C306, C406	372326814	680pF±5%, 50V, ST
C309, C409	392884797	0.47μF, 50V, LL
C311, C312	352780101	1μF, 50V, Elect.
Switches		
S806	25030061	NRS-184-30K, Source selector
S807, S808	25035070	NPS-222-L35
S813	250142	NSS-2225, De-emphasis

Circuit No.	Parts No.	Description
R515, R615	4000003	D22A, Themistor
R517, R617	5221019	N10HR470BE, Idling current adjustment
R522, R523 R622, R623	48114795	0.47Ω, 5W, Cement
R524, R624	48192795	0.27Ω, 3W, Cement
R529, R530 R629, R630	451631004	10Ω, 1W, Metal
R532	441622224	2.2kΩ, 1W, Metal oxide film
Radiator		
	27160029	RAD07
Pan head screw		
	82113008	3P+8F–N

Circuit No.	Parts No.	Description
R515, R615	4000003	D22A, Thermistor
R517, R617	5221019	N10HR470BE, Idling current adjustment
R522, R523 R622, R623	48114795	0.47Ω, 5W, Cement
R524, R624	48192795	0.27Ω, 3W, Cement
R529, R530 R629, R630	451631004	10Ω, 1W, Metal
R532	441622224	2.2kΩ, 1W, Metal oxide film
Radiator		
	27160029	RAD07
Pan head screw		
	82113008	3P+8F–N

RECTIFIER AND PROTECTION CIRCUIT PC BOARD VIEW FROM BOTTOM SIDE

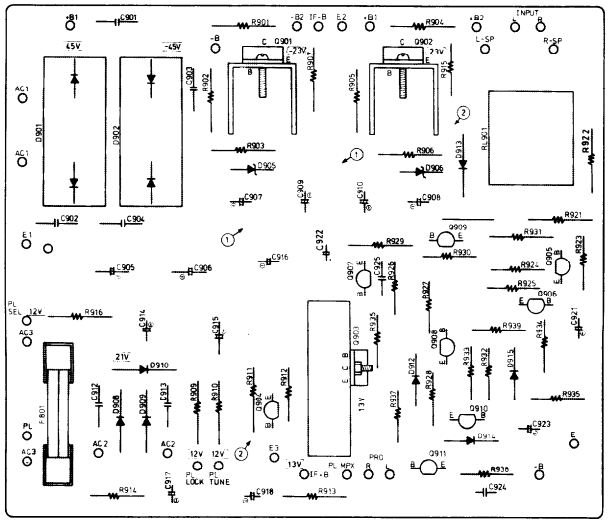


Fig. 25

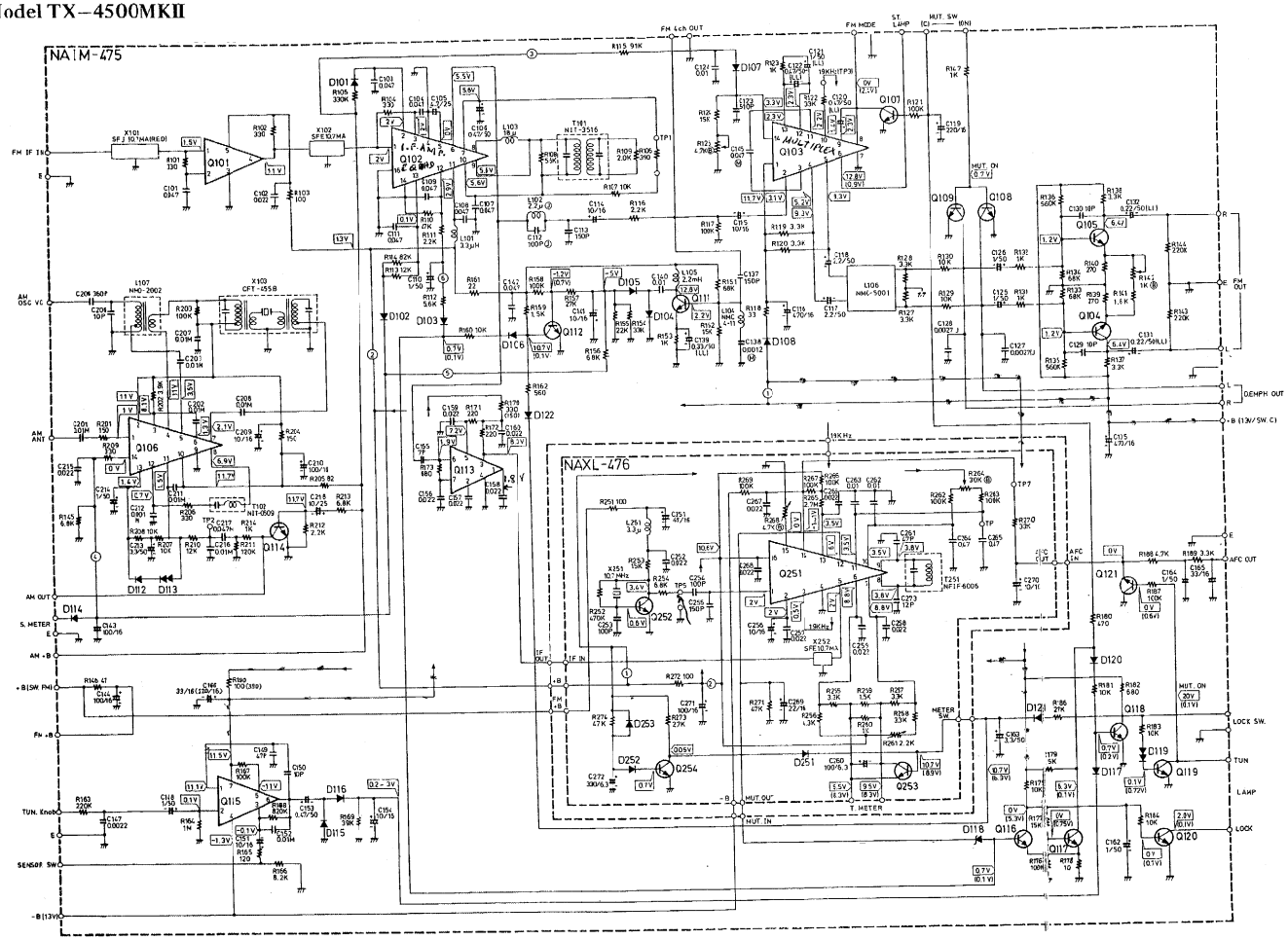
RECTIFIER AND PROTECTION CIRCUIT PC BOARD (NAPS-481) - PARTS LIST

Circuit No.	Parts No.		Description
Transistors			
Q901	2200673	2SA816(0) or	Lipple
	2200674	2SA816(Y)	filter
Q902	2200663	2SC1626(0) or	Lipple
	2200664	2SC1626(Y)	filter
Q903	2200013	2SD235(0) or	Lipple
	2200014	2SD235(Y)	filter
Q904	2211254	2SC1815(Y) or	Lipple
	2211255	2SC1815(GR)	filter
Q905, Q906	2210743	2SC945L(P) or	Voltage
	2210746	2SC945A(P)	detector
Q907	2210803	2SA733(P) or	Protection
	2210665	2SA841(GR)	circuit switch
Q908	2210743	2SC945L(P) or	Schmitt
	2210746	2SC945A(P)	trigger
Q909	2211163	2SC2120(0) or	Schmitt
	2211164	2SC2120(Y)	trigger
Q910	2210746	2SC945L(P) or	Hold
	2210743	2SC945A(P)	circuit
Q911	2210795	2SC1890(A)E or	Current
	2211246	2SC2088(BL)	detector
Diodes			
D901, D903	223819	S5151	
D902, D904	223820	S5151R	
D905, D906	224079	WZ-220, Zener	
D908, D909 D910, D913	223802	1S1885	
D914, D915 D912	223105	1S1555	
Capacitors			
C905, C906	352782211	220μF, 50V, Elect.	
C907, C908	352751011	100μF, 25V, Elect.	
C909, C910	352752211	220μF, 25V, Elect.	
C914	352752211	220μF, 25V, Elect.	
C915	352751021	1,000μF, 25V, Elect.	
C916	352753311	330μF, 25V, Elect.	
C917	352744701	47μF, 16V, Elect.	
C918	352741011	100μF, 16V, Elect.	
C921	352724711	470μF, 6.3V, Elect.	
C922	352752201	22μF, 25V, Elect.	
C923	352741011	100μF, 6.3V, Elect.	
Resistor			
R931	441621214	120Ω, 1W, Metal oxide film	
Fuse			
F801	252059	4A (SS-2)	
Fuseholder			
F801a	250113	SN5051	
Relay			
RL901	250166	NRL2P5A-DC12	
	25065037	or NRL2P5A-DC12-02	or
Radiators			
	27160011	RAD-05	
	27160029	RAD-07	
Pan head screws			
	82113008	3P+8F–N	
Nut			
	863130	N-3F-N	

NOTES:
1. DC voltage (<V>) are mesured with V.T.V.M. to chassis at no signal applied.
2. Capacitor
   LL: Low leakage current type electrolytic capacitor
   DE: Non-inductive polyester film capacitor
3. When replacing differential amplifier or push-pull amplifier transistors, be sure that transistors of one channel have the same h_{FE} ratings.

AM/FM TUNER SCHEMATIC DIAGRAM

Model TX-4500MKII

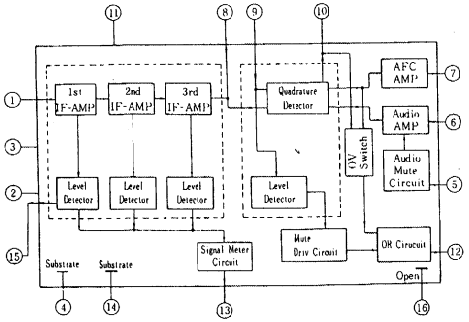


Q101----------TA7060P
Q102----------HA1137
Q103----------HA1156W
Q104,Q105------2SC1312(F)
Q106----------HA1151
Q107,Q114,Q254---2SC945Ⓛ or 2SC945Ⓐ
Q108,Q109,Q120---2SC1317(R)
Q121,Q253------2SC733(BL)
Q111,Q112------2SC733(BL)
Q113----------BA402
Q115----------TA7136P
Q116,Q117,Q118---2SC1317(R) or 2SC1815(Y)
Q119----------
Q251----------BA661
Q252----------2SC380(O)

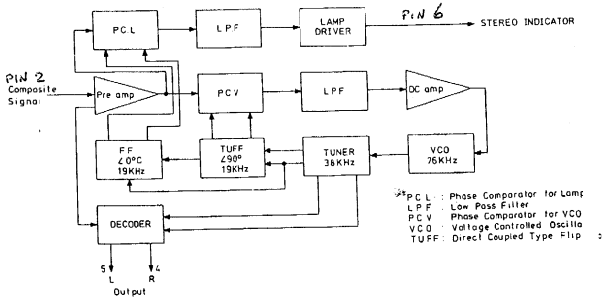
D101,D103,D106,
D107,D108,D112,
D120,D251,D252,
D253----------1S1555
D102,D104,D105,
D114,D115,D116,
D121,D122------1N60
D113,D119------VD1212
D117----------YZ047
D118----------WZ052

NOTES:
- ALL RESISTORS ARE IN OHMS, ¼ WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN μF, 50OOWV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (+B−) ARE IN μF/WV.
- VOLTAGE (MEASURED WITH V.T.V.M.).
  (V) DC VOLTAGE (NO INPUT SIGNAL).
  (V) DC VOLTAGE (FM STEREO). LOCK/MUT SW. ON

HA-1137 BLOCK DIAGRAM Q102



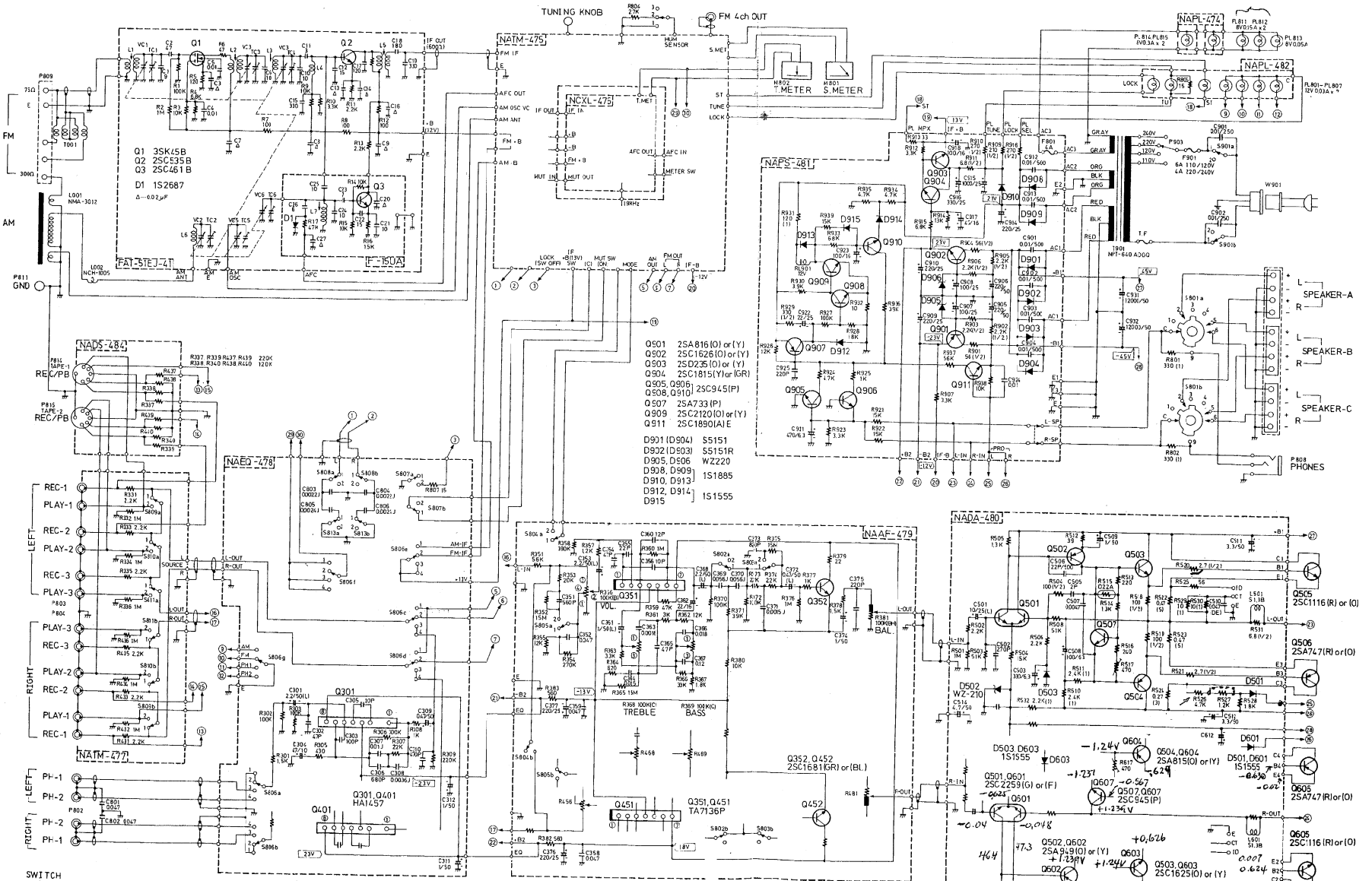
HA-1156 BLOCK DIAGRAM



ONKYO

DIAGRAM

TX–4500MKII



SWITCH

S801 (SPEAKERS)	1-OFF, 2-A, 3-B, 4-C, 5-A+B, 6-A+C	S809 (TAPE MONITOR-1)	1-OFF, 2-ON
S802 (LOW FILTER)	1-OFF, 2-ON	S810 (TAPE MONITOR-2)	1-OFF, 2-ON
S803 (HIGH FILTER)	1-OFF, 2-ON	S811 (TAPE MONITOR-3)	1-OFF, 2-ON
S804 (MODE)	1-STEREO, 2-MONO	S812 (HUM SENSOR)	1-HIGH, 2-NORMAL, 3-LOW
S805 (LOUDNESS)	1-OFF, 2-ON	S813 (DE EMPH)	1-75μsec., 2-50μsec.
S806 (SELECTOR)	1-AM, 2-FM, 3-PHONO-1, 4-PHONO-2	S901 (POWER)	1-ON, 2-OFF
S807 (MUTING/LOCK)	1-OFF, 2-ON		
S808 (DE EMPH)	1-75μsec., 2-25μsec.		

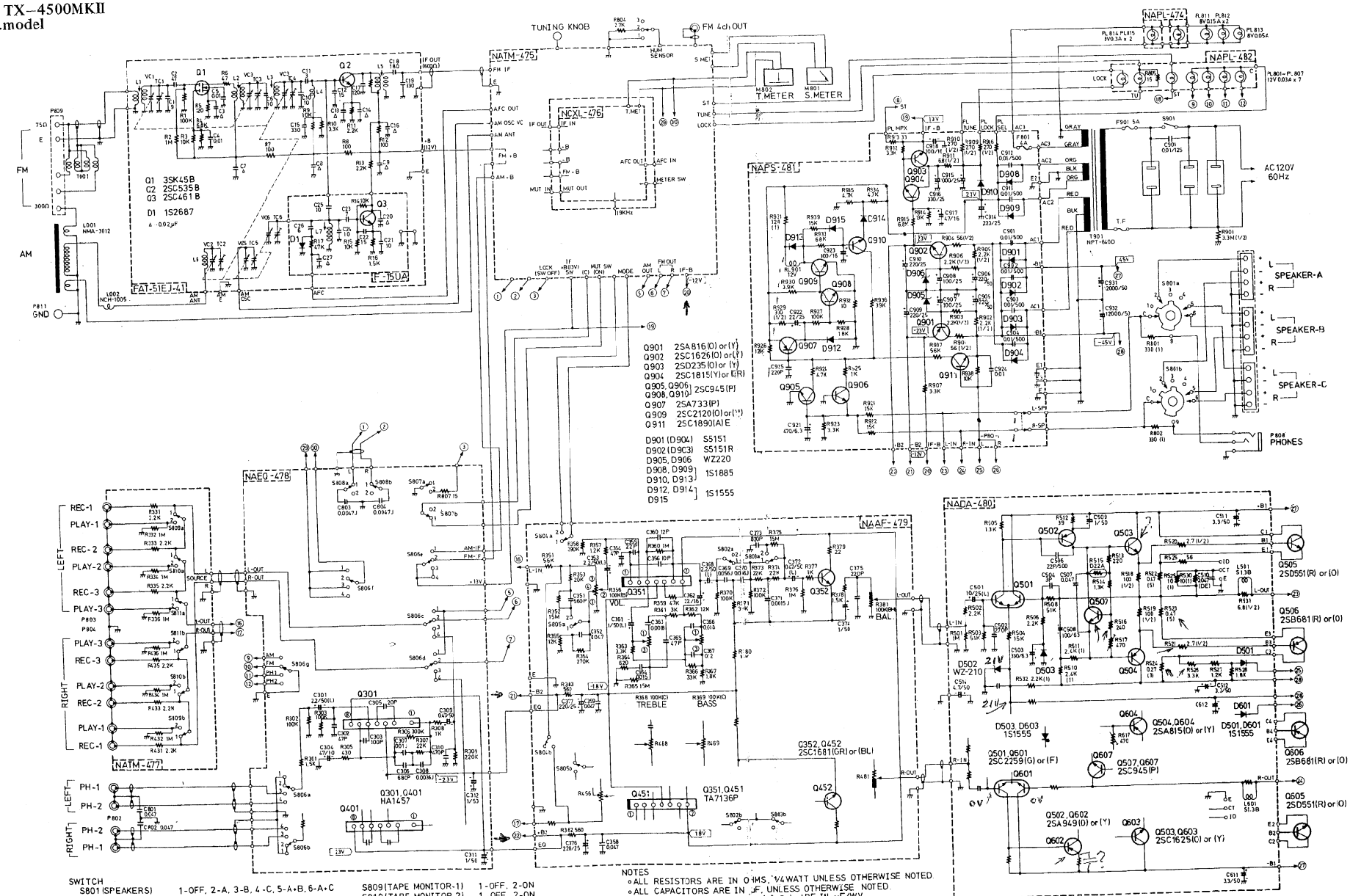
NOTES

- ALL RESISTORS ARE ... OHMS 1/4WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE ... μF, UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (+B–) ARE IN μF/WV.
- VOLTAGE (MEASURED WITH V.T.V.M) (NO INPUT SIGNAL).

ONKYO CORPORATION

SCHEMATIC DIAGRAM

Model TX-4500MKII
U.S.A.model



Q901 2SA816(O) or (Y)
Q902 2SC1626(O) or (Y)
Q903 2SD235(O) or (Y)
Q904 2SC1815(Y) or (GR)
Q905, Q906 2SC945(P)
Q908, Q910 2SA733(P)
Q907 2SA733(P)
Q909 2SC2120(O) or (Y)
Q911 2SC1890(A)E

D901 (D904) S5151
D902 (D903) S5151R
D905, D906 WZ220
D908, D909 1S1885
D910, D913 1S1885
D912, D914 1S1555
D915 1S1555

SWITCH

S801 (SPEAKERS)	1-OFF, 2-A, 3-B, 4-C, 5-A+B, 6-A+C	
S802 (LOW FILTER)	1-OFF, 2-ON	
S803 (HIGH FILTER)	1-OFF, 2-ON	
S804 (MODE)	1-STEREO, 2-MONO	
S805 (LOUDNESS)	1-OFF, 2-ON	
S806 (SELECTOR)	1-AM, 2-FM, 3-PHONO-1, 4-PHONO-2	
S807 (MUTING/LOCK)	1-OFF, 2-ON	
S808 (DE EMPH)	1-75μsec., 2-25μsec.	
S809 (TAPE MONITOR-1)	1-OFF, 2-ON	
S810 (TAPE MONITOR-2)	1-OFF, 2-ON	
S811 (TAPE MONITOR-3)	1-OFF, 2-ON	
S812 (HUM SENSOR)	1-HIGH, 2-NORMAL, 3-LOW	
S901 (POWER)	1-ON, 2-OFF	

NOTES
- ALL RESISTORS ARE IN OHMS, 1/4 WATT UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN μF, UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (—⊕—) ARE IN μF/WV.
- VOLTAGE (MEASURED WITH V.T.V.M) (NO INPUT SIGNAL).

ONKYO

PREAMPLI. PC BOARD (NAAF-479)–PARTS LIST

Circuit No.	Parts No.		Description
ICs			
Q301, Q401	222423		TA-7136P, Preampli.
Transistors			
Q302, Q402	2210675	or	2SC1681 (GR) or Preampli.
	2210676		2SC1681 (BL)
Capacitors			
C352, C452	374124735		0.047μF±10%, 50V, DE
C353, C453	392880227		2.2μF, 50V, LL
C361, C461	392880107		1μF, 50V, LL
C362, C462	352742201		22μF, 16V, Elect.
C367, C467	374121245		0.12μF±10%, 50V, DE
C368, C468	392880227		2.2μF, 50V, LL
C372, C472	392884797		0.47μF, 50V, LL
C373, C473	372328214		820pF±5%, 50V, ST
C374, C474	352780101		1μF, 50V, Elect.
C376, C377	352752211		220μF, 25V, Elect.
Resistors			
R356, R456	5172050		N24RGL100KBTP30, Volume control
R368, R468	5148022		N16RGM11C100KC030, Treble control
R369, R469	5148023		N16RGM11C100KCS30, Bass control
R381, R481	5172043		N24RGP100KMN30C, Balance control
Switches			
S802-S805	25035071		NPS-422-L36, Loudness/Mode/Hi-cut filter/Low cut filter

INDICATOR LAMP PC BOARD (NAPL-482) - PARTS LIST

Circuit No.	Parts No.	Description
Lamps		
PL801-PL807	210042	30mA, 12V, Locked/Tuned/Stereo/ AM/FM/PHONO 1 /PHONO 2

DIAL ILLUMINATION LAMP PC BOARD (NAPL-474) - PARTS LIST

Circuit No.	Parts No.	Description
Lamp		
P801	210039A	300mA, 8V, Dial illumination

DIN SOCKET PC BOARD (NADS-484) - PARTS LIST
Universal Model

Circuit No.	Parts No.	Description
P814, P815	250199	S-I3316, DIN socket

NOTES:
1. DC voltage (< V) are mesured with V.T.V.M. to chassis at no signal applied.
2. Capacitor
   - LL: Low leakage current type electrolytic capacitor
   - ST: Polystyren film capacitor
   - DE: Non-inductive polyester film capacitor

BLOCK DIAGRAM

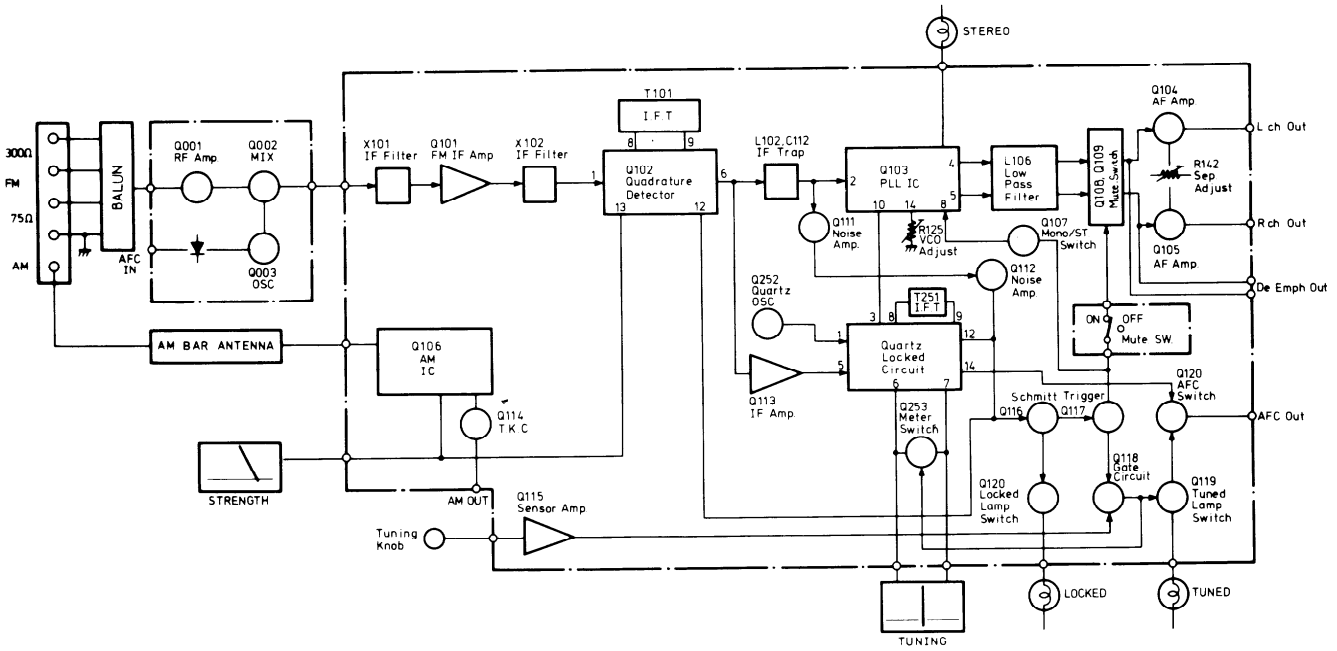


Fig. 36

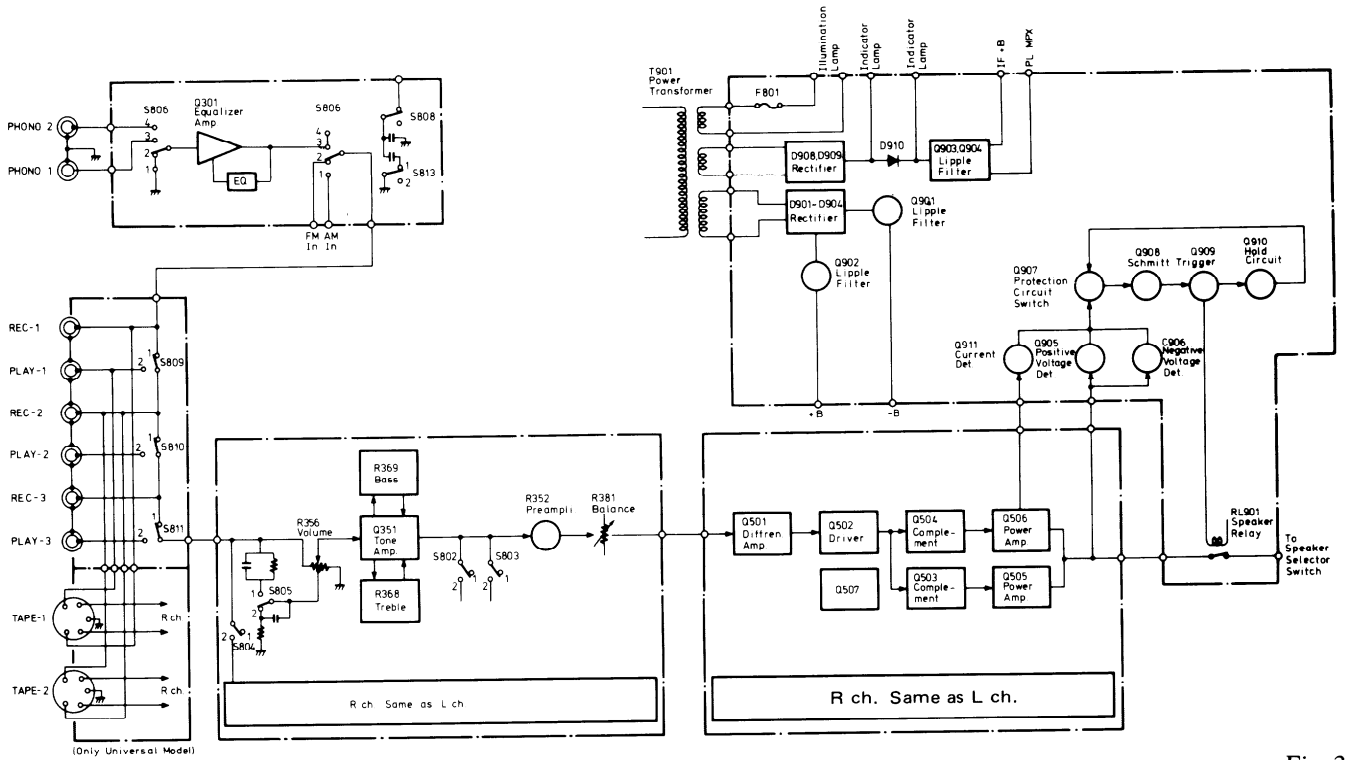


Fig. 37

SWITCH

S801 (SPEAKERS)	1-OFF, 2-A, 3-B, 4-C, 5-A+B, 6-A+C
S802 (LOW FILTER)	1-OFF, 2-ON
S803 (HIGH FILTER)	1-OFF, 2-ON
S804 (MODE)	1-STEREO, 2-MONO
S805 (LOUDNESS)	1-OFF, 2-ON
S806 (SELECTOR)	1-AM, 2-FM, 3-PHONE-1, 4-PHONE-2
S807 (MUTING/LOCK)	1-OFF, 2-ON
S808 (DE EMPH)	1-75μsec., 2-25μsec.
S809 (TAPE MONITOR-1)	1-OFF, 2-ON
S810 (TAPE MONITOR-2)	1-OFF, 2-ON
S811 (TAPE MONITOR-3)	1-OFF, 2-ON
S812 (HUM SENSOR)	1-HIGH, 2-NORMAL, 3-LOW
S901 (POWER)	1-ON, 2-OFF

PACKING PROCEDURES

U.S.A. Model

Universal Model

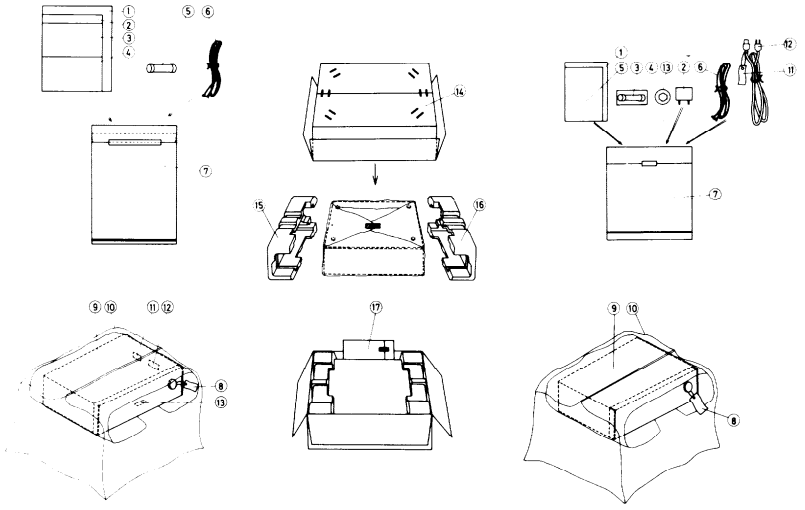


Fig. 38

1. Four shorted pins are inserted in the phono terminals.
2. All printed materials and accessory items are placed in the poly bag and taped.
3. The sensor tag is attached to the tuning knob.

PARTS LIST
U.S.A. Model

Ref. No.	Parts No.	Description
1	29340258	Instruction manual
2	29358001	Service station list
3	29355046	Caution card for 4
4	29365003	Warranty card
5	252050	5A (ST-6), Fuse
6	292064	5059-01, FM antenna
7	29100006A	250 x 350mm, Poly bag
8	29355045	Sensor tag
9	290093	500 x 1,200mm, Protection sheet
10	29100020	720 x 1,020mm, Poly bag
11	282969	Caution card A
12	29360197	Cabinet composite label
13	293041	Caution label
14	2950192	Carton box
15	29090280	Pad R
16	29090281	Pad L
17		Accessory bag complete
	250153	PO-107, Shorted pin

PARTS LIST
Universal Model

Ref. No.	Parts No.	Description
1	29340259	Instruction manual
2	25055018	CV-K-1, Convertion plug (U)
3	252055	6A-T, Fuse (U)
4	29100002	80 x 150mm, Poly bag (U)
5	29380034	Sticker (U)
6	292064	5059-01, FM antenna
7	29100006	250 x 350mm, Poly bag
8	29355045	Sensor tag
9	290093	500 x 1,200mm, Protection sheet
10	29100020	720 x 1,020mm, Poly bag
11	29380038	Voltage tag
12	13710703	Power supply cord (U)
	293089	Power supply cord (G)
13	292075	Metal
14	2950192	Carton box
15	29090280	Pad R
16	29090281	Pad L
17	13710119	Accessory bag complete
	250153	PO-107, Shorted pin
	29365005	Warranty card (G)

(U): Only universal model
(G): Only German model

ONKYO CORPORATION
International Division: No. 24 Mori Bldg., 23-5, 3-chome, Nishi-Shinbashi, Minato-ku, Tokyo, Japan
Telex: 2423551 ONKYO J. Phone: 03-432-6981

ONKYO U.S.A. CORPORATION
Eastern Office
43-07 20th Avenue, Long Island City, New York 11105, U.S.A. Phone: (212) 728-4639
Midwest Office
935 Sivert Drive, Wooddale, Illinois 60191, U.S.A. Phone: (312) 595-2970

ONKYO DEUTSCHLAND GMBH, ELECTRONICS
8034 München-Germering, Industriestrasse 18, West Germany. Telex: 521726 Telefon: (089)-84-5041

N804 Printed in Japan