

ALIGNMENT INSTRUCTIONS

EQUIPMENT REQUIRED

1. AM Signal Generator
2. AC Voltmeter
3. Oscilloscope

TUNER FRONT END COIL & TRIMMER LOCATIONS

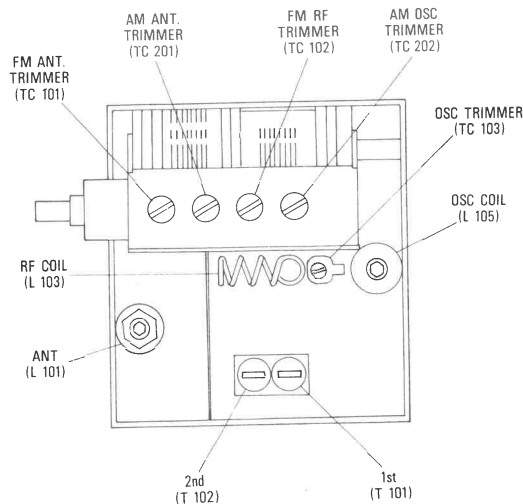


Fig-1

AM IF & RF ALIGNMENT

NOTES ● Signal generator output should be no higher than necessary to obtain an output reading. ● Maintain line voltage at 120 volts. ● Set Selector Switch to AM.						
STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	Fashion loop of several turns of wire and radiate signal into the loop antenna	455 kHz (400 Hz, 30% MOD)	Point of non-interference (near 600 kHz)	AC Voltmeter to TAPE OUT JACK	T 202 (1st IFT) T 203 (2nd IFT) T 205 (3rd IFT)	Adjust for maximum reading
2	Same as above	600 kHz (400 Hz, 30% MOD)	600 kHz	Same as above	T 201 (OSC Coil) AM ANT Coil	Adjust for maximum reading
3	Same	1400 kHz (400 Hz, 30% MOD)	1400 kHz	Same	TC 202 (OSC Trimmer) TC201 (ANT Trimmer)	Adjust for maximum reading
4	Repeat steps 2 and 3 until no further change is noticed.					
5		1000 kHz (400 Hz, 30% MOD) Output level = 100 mV/m	1000 kHz	AM strength Meter	R217, 218 (AM Level Meter)	Adjust so Meter Pointer is between 80% ~ 90% of full scale on the Signal Meter

AM ALIGNMENT SET-UP

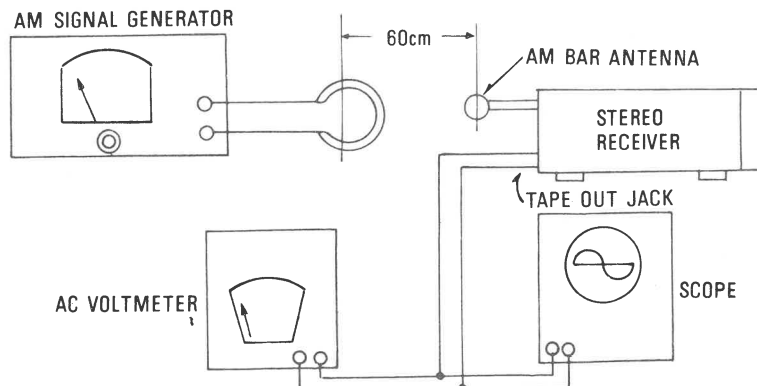


Fig. 2

FM RF & IF ALIGNMENT

EQUIPMENT REQUIRED

- 1 FM Signal Generator Output Level 60 dB (1 mV)
- 2 Sweep Generator
- 3 AC Voltmeter
- 4 Oscilloscope
- 5 Distortion Meter

NOTES						
● Signal generator output should be no higher than necessary to obtain an output reading.						
● Set SELECTOR Switch to FM.						
● Maintain line voltage at 120 volts.						
STEP	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	Sweep Generator to "IN" terminal on FM Front end board.	10.7 MHz (1400 kHz sweep)	Any dial setting where no noise or interference exists	Scope to R-260 (MPX input) AM/FM/IF 8 MPX Board	T204 T206 T207 T209 (Primary) FM IFT	Adjust for maximum amplitude and proper linearity between ± 150 KHz markers Refer to Fig. 3A
2	Sweep Generator to FM Antenna Terminal thru FM Dummy Antenna (300 Ω).				T101 T102 FM IFT	
3	Same as above				T209 Primary and Secondary	
4	Signal Generator to FM Antenna Terminal thru FM Dummy antenna (300 Ω).	90 MHz	90 MHz	AC Voltmeter and Scope to TAPE OUT Jack	L105 (FM OSC) L103 (FM RF) L101 (FM ANT)	Adjust for Maximum reading on meter
5	Same as above	106 MHz	106 MHz		TC103 (FM OSC Trimmer) TC102 (FM RF Trimmer) TC101 (FM ANT Trimmer)	
6	Repeat steps 1 ~ 5 until no further improvement is noticed.					
7	Same	98 MHz (400 Hz 100% MOD)	98 MHz Tune to Signal (SIGNAL GENERATOR'S output level = 100 mV)		T208 R274	Adjust T208 for maximum and adjust so Meter Pointer is full scale on Signal Strength Meter
8	Same	Same as above	Same as above		R255 20 KB Semi-fixed Resistor	Adjust to center point of Center Tuning Meter
9	Signal Generator to FM antenna terminal thru FM Dummy antenna (300 Ω).	98 MHz	98 MHz		R246	"MUTING" Switch "ON" Antenna input 10 μ V Adjust R246 to point where Signal is muted

FM ALIGNMENT SET-UP

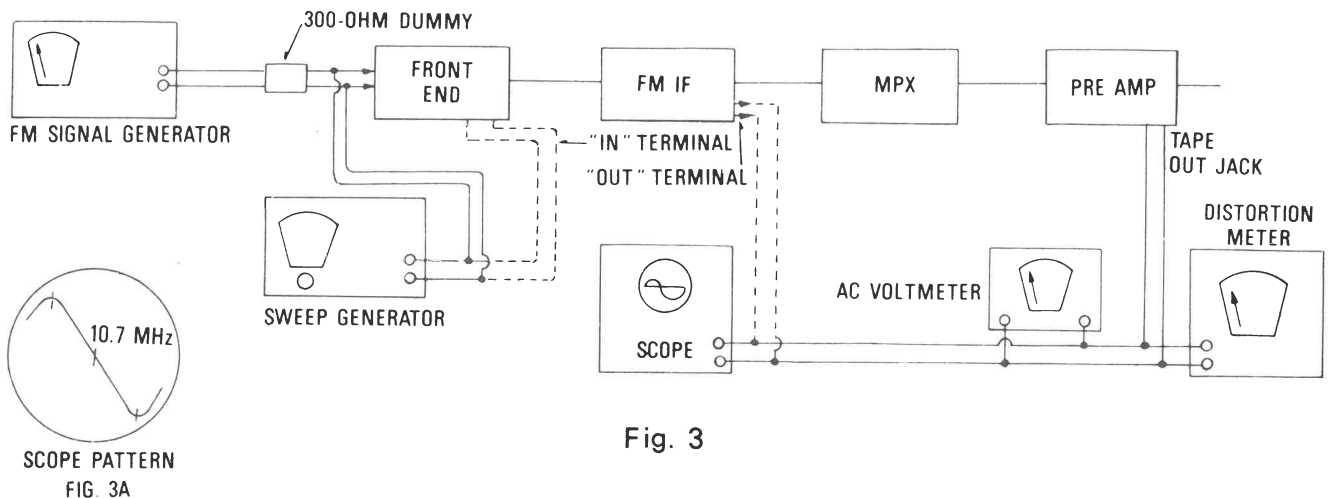


Fig. 3

FM STEREO ALIGNMENT

EQUIPMENT REQUIRED

1. Stereo Modulator.....Connect Stereo Modulator to EXT Mod. terminal of FM signal generator.
Modulation Level of 19 kHz Pilot Signal.....8 ~10%
2. FM Signal Generator.....Output Level60 dB(1 mV)
Frequency.....Approximately 98 MHz.
Deviation75 kHz at 100% modulation of composite signal.
3. Audio Generator
4. AC Voltmeter
5. Oscilloscope
6. Distortion Meter

PRELIMINARIES

- Set SELECTOR Switch to "FM" Dial setting at approximately 98 MHz.

MULTIPLEX & SEPARATION ALIGNMENT

STEP	SIGNAL GENERATOR COUPLING	STEREO MODULATOR	INDICATOR	ADJUSTMENT	REMARKS
1	Connect to FM Antenna Terminal thru FM Dummy antenna (300Ω)	Composite MPX signal 1 kHz on left channel ONLY	AC Voltmeter and scope connected to IC2 NO. 1 pin	T 211 (19 kHz trans)	Adjust for maximum reading
2	Same as above	Same as above	Distortion Meter connected to TAPE OUT jack of left channel	T 210 (38 kHz trans)	Adjust for minimum distortion reading
3	Same	Same	AC Voltmeter connected to TAPE OUT jack of right channel	R 264 (Separation Control)	Adjust for minimum reading— at least 30 dB below the reading obtained in step 1
4	Same	Composite MPX signal 1 kHz on right channel ONLY	AC Voltmeter connected to TAPE OUT jack of left channel	R 264 (Separation Control)	Same as above

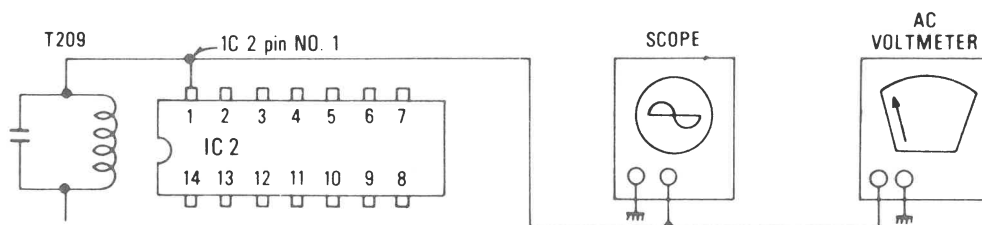


Fig. 4

STEP	SIGNAL GENERATOR COUPLING	STEREO MODULATOR	INDICATOR	ADJUSTMENT	REMARKS
5	Connect to FM Antenna Terminal thru FM Dummy antenna as shown below	Composite MPX signal 1 kHz on right channel ONLY	AC Voltmeter connected To TAPE OUT jack of right channel		Same AC Voltmeter reading as obtained in Step 1. The reading may vary 12 dB
6	Same as above	Composite MPX signal 1 kHz on left channel ONLY	Same as above		Minimum AC Voltmeter reading — at least 30 dB below the reading obtained in Step 1/5

MPX ALIGNMENT SET-UP

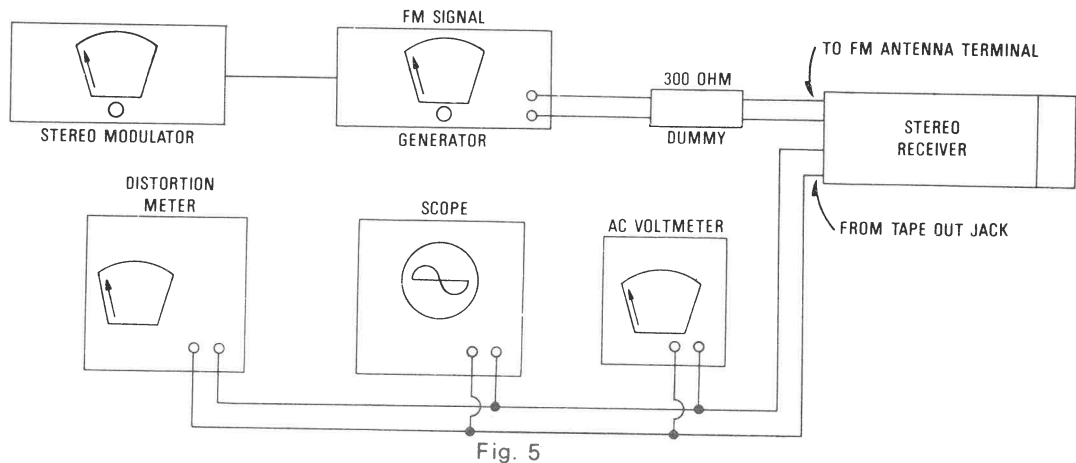


Fig. 5

MAIN AMPLIFIER AND RESET CIRCUIT ADJUSTMENT

- NOTES
- Maintain line voltage at 120 volts.
 - Set SELECTOR Switch to AUX-1.

- Set MODE Switch to STEREO.
- See P.C.B. illustrations for alignment points/adjustments.

MAIN AMPLIFIER

STEP	ADJUSTMENT	EQUIPMENT	CONNECTION	AUDIO FREQ.	SETTING	LEVEL	ADJUSTMENT
1	Balance output power level	Audio Osc. Oscilloscope V.T.V.M.	See Fig. 1	1,000 Hz TREBLE	VOL: Max. BASS, TREBLE, BALANCE at center	Check for symmetrical clipping. See Fig. 2	
2	Idling current adjustment	DC Volt Meter	See Fig. 3	No signal	Input 0 dB	Adjust voltage across Emitter resistors R543 and R544 to 15 mV (8Ω Load)	R529 R530

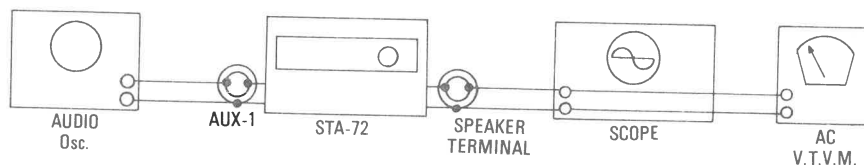


Fig-1

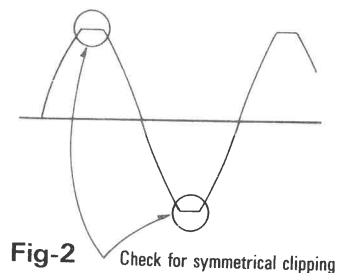


Fig-2 Check for symmetrical clipping

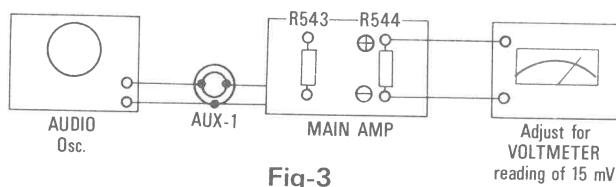


Fig-3

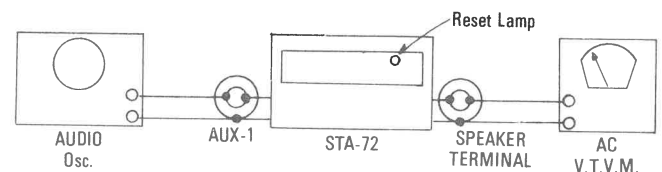
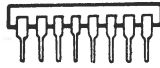
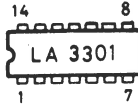
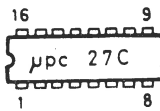


Fig-4

RESET CIRCUIT

STEP	ADJUSTMENT	EQUIPMENT	CONNECTION	AUDIO FREQ.	SETTING	LEVEL	ADJUSTMENT
1	Turn semi-fixed Resistor R603 counterclockwise (minimum resistance)						
2		Audio Osc. V.T.V.M.	Fig. 4	1,000 Hz	VOL: Max. BASS, TREBLE, BALANCE at center	Adjust input to AUX-1 for output level of about 1.5 V. (8 ohm load)	
3	Reset circuit adjustment	Audio Osc. V.T.V.M.	Fig. 4	1,000 Hz	VOL: Max. BASS, TREBLE, BALANCE at center	Adjust R603 to light Reset lamp when output is shorted (do not adjust too far)	R603

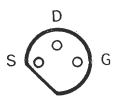
INTEGRATED CIRCUIT CONNECTIONS



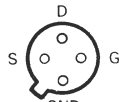
TRANSISTOR CONNECTIONS



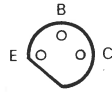
2SK19



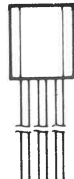
TE 500-3



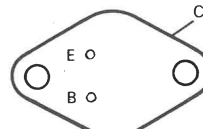
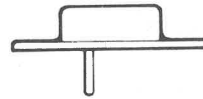
SF 8193-1



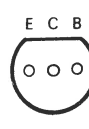
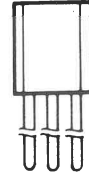
NJ 100B
NJ 202A
NJ 202B



2SC 900
2SC 923
2SC 1359
2SC 1047
2SC 1675
2SC 945
2SC 828



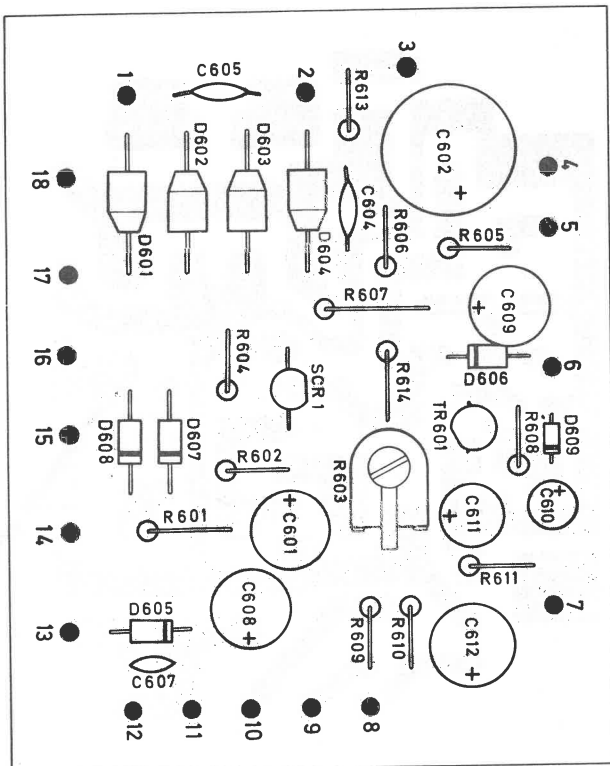
2SD 180
(or ED 260)



2SC 1384
2SA 684

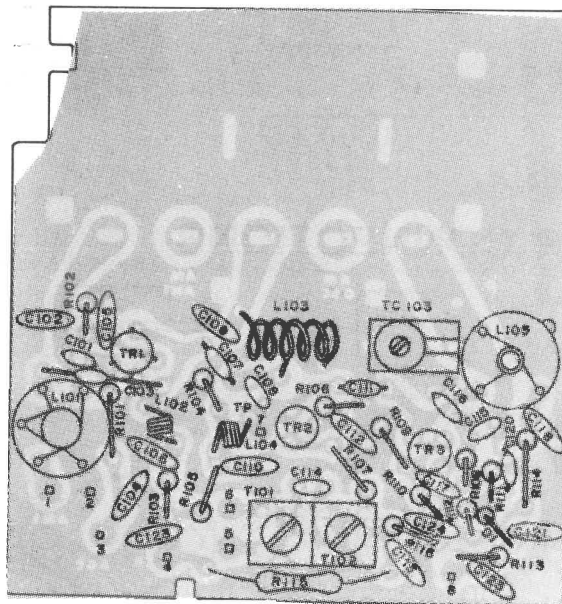
POWER SUPPLY ASSEMBLED BOARD

TOP VIEW



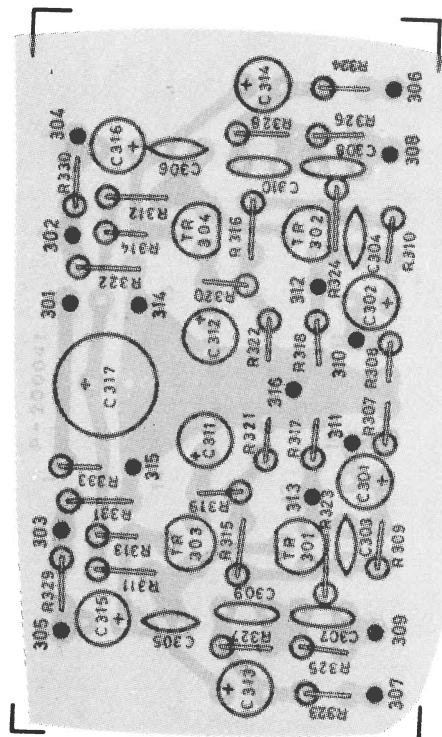
AM/FM FRONT END ASSEMBLED BOARD

TOP VIEW

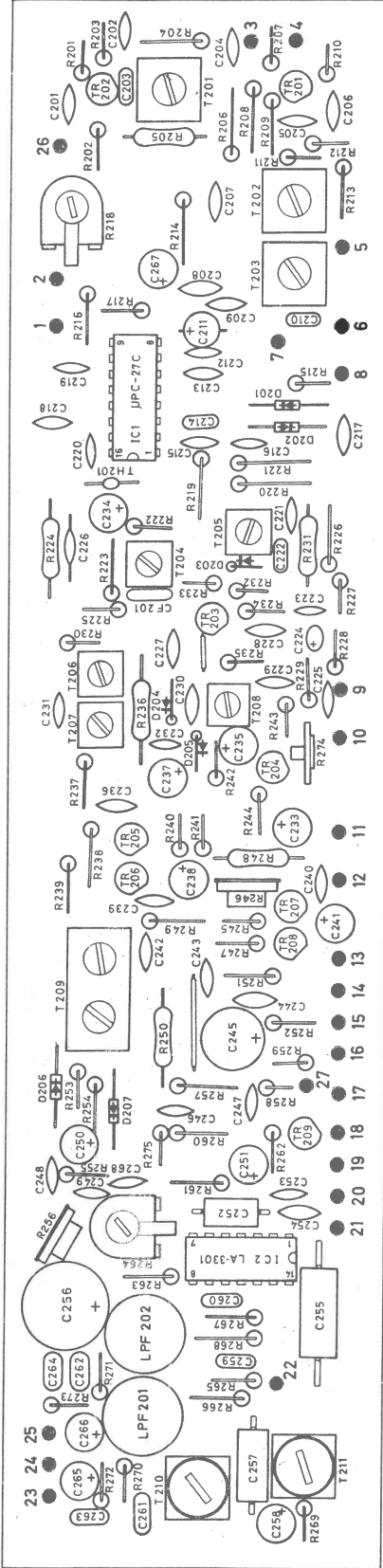


PRE AMP BOARD ASSEMBLED BOARD

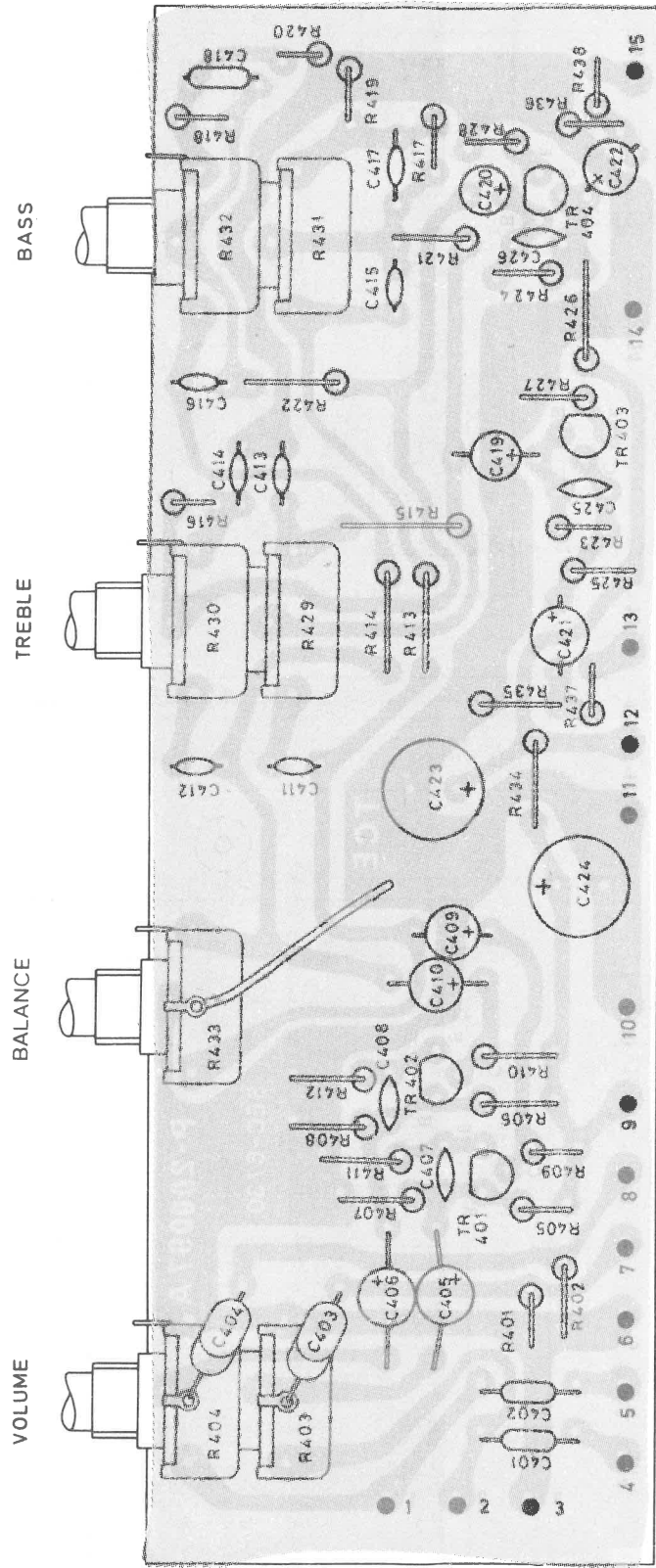
TOP VIEW



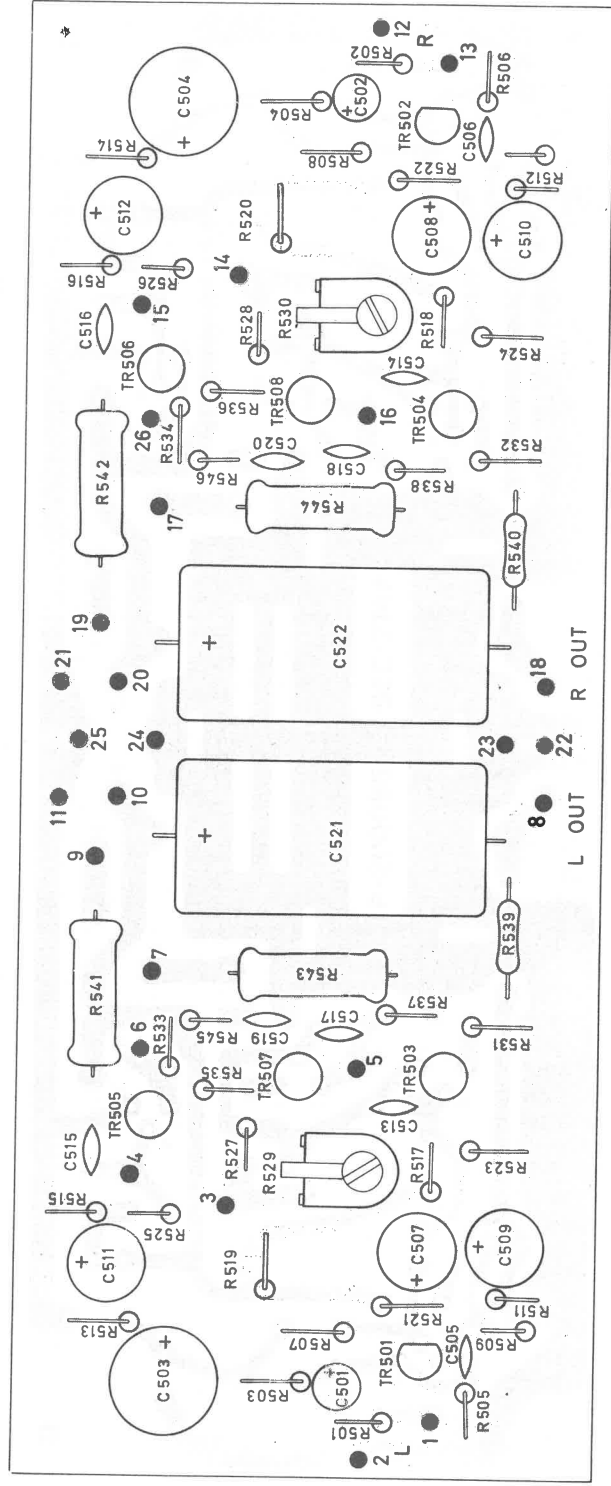
AM/FM-IF and MPX BOARD
ASSEMBLED BOARD
TOP VIEW



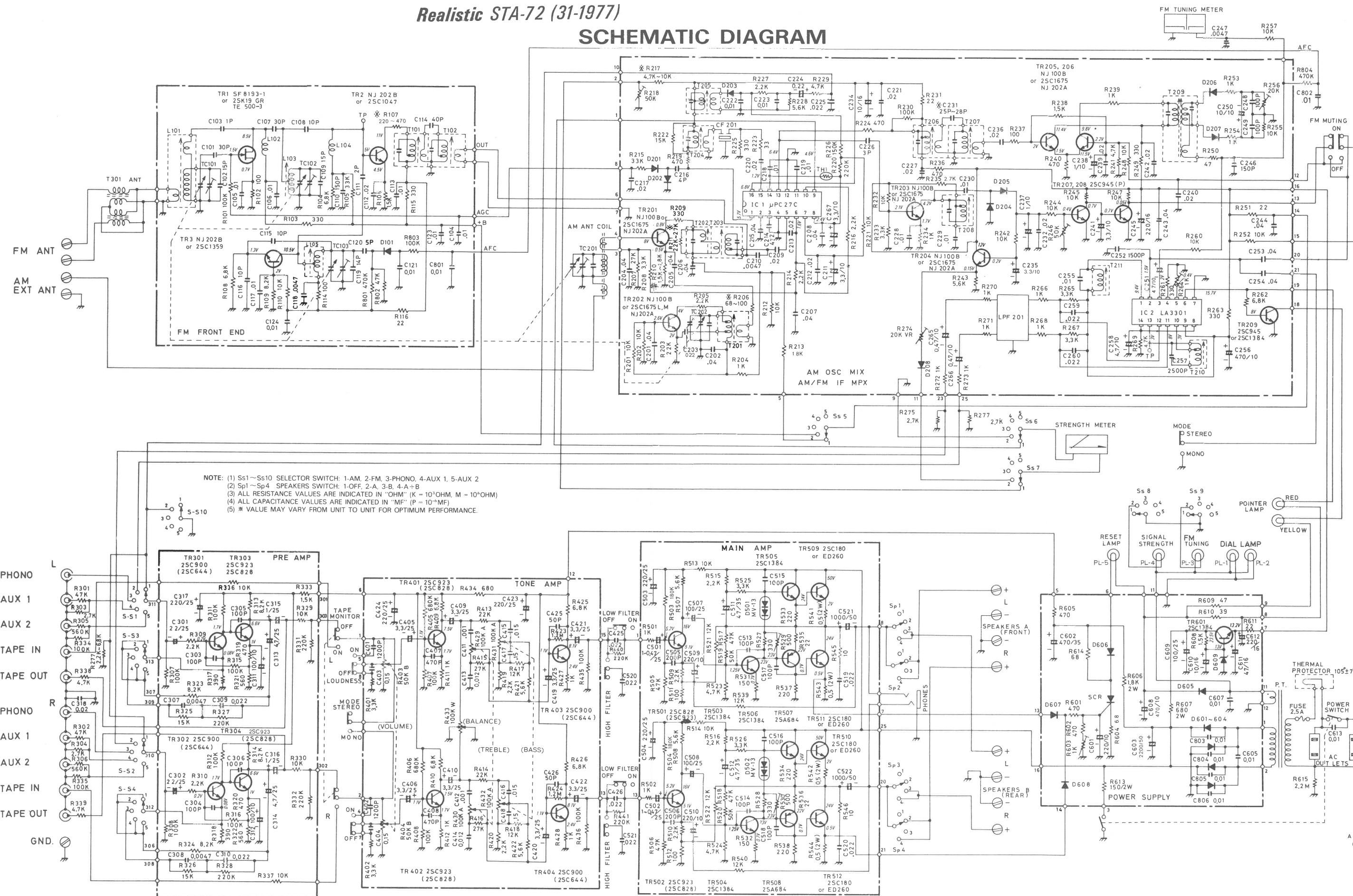
TONE CONTROL ASSEMBLED BOARD
TOP VIEW



MAIN AMP. ASSEMBLED BOARD
TOP VIEW



SCHEMATIC DIAGRAM



ELECTRICAL PARTS LIST

RS PART NO.	REF. NO.	DESCRIPTION	Q'ty
TRANSISTORS			
TR-1		F.E.T. SF8193-1, TE500-3 or 2SK19 (G,R)	1
TR-2		Transistor NJ202B or 2SC1047 (C,D)	1
TR-201,202,203,204,205,206		Transistor NJ202A, NJ100B or 2SC1675 (L,M)	6
TR-204,207,208		Transistor 2SC945 (P)	3
TR-209,503,504,505,506,601		Transistor 2SC1384 (Q,R)	6
TR-301,302,403,404		Transistor 2SC644 (R,S,T) or 2SC900 (E,U)	4
TR-303,304,401,402,501,502		Transistor 2SC828 (R,S,T) or 2SC923 (E,U)	6
TR-507,508		Transistor 2SA684 (Q,R)	2
TR-509,510,511,512		Transistor 2SD180D or ED260	4
TR-209		Transistor 2SC945 (P) or 2SC1384 (Q,R)	1
TR-3		Transistor 2SC1359 (B,C) or NJ202B	1
DIODES			
D-101		Vari-Cap ITT210 or 410	1
D-201,202,203,204,205,206,207		Diode 1S188FM or 1N60P	7
D-501,502		Varistor MV13	2
D-601,602,603,604		Diode P-300B (3A200V)	4
D-605,606,607,608		Diode SR-1K-2 or 1N4001	4
D-609		Zener Diode ZPD13 or WZ130	1
SILICON CONTROLLED RECTIFIER			
SCR		S.C.R. 02AM-1 or 2SF657	1
THERMISTOR			
TH-1		Thermistor D12S or 5D-100	1
INTEGRATED CIRCUITS			
IC-201		IC #PC27C	1
IC-202		IC LA3301	1
RESISTORS			
R-116,231,251		Carbon Resistor RD $\frac{1}{4}$ UZ 22 ohm K	3
R-223		Carbon Resistor RD $\frac{1}{4}$ UZ 33 ohm K	1
R-250		Carbon Resistor RD $\frac{1}{4}$ PZ 47 ohm K	1
*R-206		Carbon Resistor RD $\frac{1}{4}$ UZ 68,82 or 100 ohm K	1
R-102,114,237		Carbon Resistor RD $\frac{1}{4}$ UZ 100 ohm K	3
R-103,209,225,249,261,263		Carbon Resistor RD $\frac{1}{4}$ UZ 330 ohm K	6
R-115		Carbon Resistor RD $\frac{1}{4}$ PZ 330 ohm K	1
R-224,236		Carbon Resistor RD $\frac{1}{4}$ PZ 470 ohm K	2
R-219,240		Carbon Resistor RD $\frac{1}{4}$ UZ 470 ohm K	2
R-317,318		Carbon Resistor RD $\frac{1}{4}$ UZ 390 ohm J	2
R-319,320		Carbon Resistor RD $\frac{1}{4}$ UZ 470 ohm J	2
R-321,322		Carbon Resistor RD $\frac{1}{4}$ UZ 560 ohm J	2
R-434		Carbon Resistor RD $\frac{1}{4}$ UZ 680 ohm J	1
R-411,412,427,428		Carbon Resistor RD $\frac{1}{4}$ UZ 1 K ohm J	4
R-204,234,239,253,254,266,268		Carbon Resistor RD $\frac{1}{4}$ UZ 1 K ohm K	11
270,271,272,273			
R-106,238		Carbon Resistor RD $\frac{1}{4}$ UZ 1.5 K ohm K	2
R-333		Carbon Resistor RD $\frac{1}{4}$ UZ 1.5 K ohm J	1
R-213		Carbon Resistor RD $\frac{1}{4}$ UZ 1.8 K ohm K	1
R-203,205,214,216,227		Carbon Resistor RD $\frac{1}{4}$ UZ 2.2 K ohm K	5
R-309,310,419,420		Carbon Resistor RD $\frac{1}{4}$ UZ 2.2 K ohm J	4
R-235,275,277		Carbon Resistor RD $\frac{1}{4}$ UZ 2.7 K ohm K	3
R-303,304		Carbon Resistor RD $\frac{1}{4}$ PZ 2.7 K ohm J	2
R-208,233,265,267		Carbon Resistor RD $\frac{1}{4}$ UZ 3.3 K ohm K	4
R-401,402		Carbon Resistor RD $\frac{1}{4}$ UZ 3.3 K ohm J	2
*R-210		Carbon Resistor RD $\frac{1}{4}$ UZ 1.5 K or 1.8 K ohm K	1

ELECTRICAL PARTS LIST

RS PART NO.	REF. NO.	DESCRIPTION	Q'ty
VARIABLE RESISTORS			
P-6148	R-529,530	Semi-Fixed Resistor 500-B	2
P-6152	R-264,603	Semi-Fixed Resistor 1K-B	2
P-6154	R-256,274	Semi-Fixed Resistor 20K-B	2
P-6153	R-218,519,520,246	Semi-Fixed Resistor 50K-B	4
P-1637	R-429,430,431,432	Variable Resistor 100KA × 2 11D	2
P-1635	R-403,404	Variable Resistor 50KBS × 2CT	1
P-1636	R-433	Variable Resistor 100KW CTCC	1
CAPACITORS			
	C-261,262	Mylar Capacitor CQ92M1H 332M	2
	C-210,214,247	Mylar Capacitor CQ92M1H 472M	3
	C-263,264	Mylar Capacitor CQ92M1H 682M	2
	C-222,223	Mylar Capacitor CQ92M1H 103M	2
	C-203,225,259,260,519,520	Mylar Capacitor CQ92M1H 223M	6
	C-411,412	Mylar Capacitor CQ92M1H 102K	2
	C-401,402	Mylar Capacitor CQ92M1H 122K	2
	C-252	Mylar Capacitor CQ92M1H 152K	1
	C-524,525	Mylar Capacitor CQ92M1H 103K	2
	C-413,414	Mylar Capacitor CQ92M1H 123K	2
	C-415,416	Mylar Capacitor CQ92M1H 153K	2
	C-309,310,426,425	Mylar Capacitor CQ92M1H 223K	4
	C-403,404,417,418	Mylar Capacitor CQ92M1H 154K	4
	C-307,308	Mylar Capacitor CQ92M1H 472K	2
	C-224	Solid Aluminum Capacitor 0.22/15V	1
	C-265,266	Electrolytic Capacitor CE04W 0.47/10V	2
	C-237,238	Electrolytic Capacitor CE04W 1/10V	2
	C-211,235,241	Electrolytic Capacitor CE04W 3.3/10V	3
	C-251,258	Electrolytic Capacitor CE04W 4.7/10V	2
	C-250	Electrolytic Capacitor CE04W 10/10V	1
	C-311,312	Electrolytic Capacitor CE04W 100/10V	2
	C-509,510,601,612	Electrolytic Capacitor CE04W 220/10V	4
	C-256,608	Electrolytic Capacitor CE04W 470/10V	2
	C-234,610	Electrolytic Capacitor CE04W 10/16V	2
	C-611	Electrolytic Capacitor CE04W 47/16V	1
	C-245	Electrolytic Capacitor CE04W 220/16V	1
	C-501,502	Electrolytic Capacitor CE04W 0.47/25V	2
	C-405,406,409,420,421,422,410,419	Electrolytic Capacitor CE04W 3.3/25V	8
	C-313,314	Electrolytic Capacitor CE04W 4.7/25V	2
	C-507,508,609	Electrolytic Capacitor CE04W 100/25V	3
	C-317,423,424,504,503	Electrolytic Capacitor CE04W 220/25V	5
	C-511,512	Electrolytic Capacitor CE04W 47/35V	2
	C-602	Electrolytic Capacitor CE04W 470/35V	1
	C-521,522	Electrolytic Capacitor CE04W 1000/50V	2
	C-315,316	Electrolytic Capacitor CE04W 1/25V	2
	C-603	Electrolytic Capacitor (Lug-type) 2200/50V	1
	C-103	Ceramic Capacitor CC45-25VF 010D	1
	C-111	Ceramic Capacitor CC45-25VF 020D	1
	C-226	Ceramic Capacitor CC45-25VF 030D	1
	C-216	Ceramic Capacitor CC45-25VF 040D	1
	C-108	Ceramic Capacitor CC45-25VF 100J	1
	C-101,107,114	Ceramic Capacitor CC45-25VF 300J	3
	C-248,249	Ceramic Capacitor CC45-25VF 101J	2
	C-110,246	Ceramic Capacitor CC45-25VF 151J	2
	C-425,426	Ceramic Capacitor CC45-25VF 500K	2
	C-407,408	Ceramic Capacitor CC45-25VF 471K	2
	C-104,105,106,113,121,123,124; 218,219,228,229,230,604,605,607 801,802	Ceramic Capacitor CC45-25VF 103Z	17
	C-112,209,212,213,217,220,221,227, ※ C-231	Ceramic Capacitor CC45-25VF 203Z Ceramic Capacitor CC45-25VF 25P,26P, 27P or 28P	13 1

※ Value may vary from unit to unit for optimum performance.

Realistic STA-72 (31-1977)

RS PART NO.	REF. NO.	DESCRIPTION	Q'ty
	232,236,239,240,242,523 C-201,202,204,205,206,207,208,215, 243,244,253,254 C-118,117 C-120 C-115,116 C-119 C-102,109 C-303,305,306,513,514,515,516,517, 518,304 C-505,506 C-318,523 C-613 C-803,804,805,806	Ceramic Capacitor CC45-25VF 403Z Ceramic Capacitor CC45-25VF 472Z Ceramic Capacitor CH45-25VF 050D Ceramic Capacitor CH45-25V 100J (NPO) Ceramic Capacitor CH45-25V 140J (NPO) Ceramic Capacitor CH45-25V 150J (NPO) Ceramic Capacitor CH451H 101K Ceramic Capacitor CH451H 201K Ceramic Capacitor CH451H 203Z Ceramic Capacitor AC150V DC1.4KV 0.01 Ceramic Capacitor CH45, 500V 103Z	12 2 1 2 1 2 10 2 1 1 4
TRIMMER AND VARIABLE CAPACITORS			
C-4305	TC-103	Trimmer Capacitor 1T-8 Variable Capacitor C751-J116	1 1
TRANSFORMERS AND COILS			
CA-2938 CB-2171 CA-4445 CA-4446 CA-7265 CA-7266 CA-7285 CA-7286 CA-0261 CB-0122 CA-4447 CA-7281 CA-7428 CA-7282 CA-3168 CA-2942	L-101 L-102,104 L-103 L-105 T-101,206 T-102,207,208 T-204 T-209 T-211 T-210 CF-201 T-201 T-202 T-203 T-205 LPF-201	FM Antenna Coil FM Choke Coil FM RF Coil FM OSC Coil FM IFT 7F-007 FM IFT 7F-008 FM IFT 7F-020 FM IFT 10F-014 FM MPX Coil OM-009 38kHz FM MPX Coil OM-008 19kHz Ceramic Filter SFE-10.7MAS AM OSC Coil OC-012 AM IFT OA-011 AM IFT OA-010 AM IFT 7A-014 C L Filter Power Supply Transformer Balum Coil	1 2 1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1
SWITCHES			
S-0675 S-3033 S-0675 S-5036 S-5035	62 53 (Ss-1 ~ Ss-10) 56 (Sp-1 ~ Sp-4) 54 10	Power Switch (TV-3) Rotary Switch (5-10-5) Rotary Switch (2-4-4) Lever Switch (Non-Shorting) Lever Switch (Shorting)	1 1 1 5 1
PILOT LAMPS			
L-0443 L-0647 L-0444	42 (PL-1, PL-2) 34 (PL-3, PL-4) 46 (PL-5)	Lamp 8V 300 mA (F) Lamp 8V 150 mA (S) Lamp 6V 30 mA (L)	2 2 1
METERS			
		Tuning Meter Signal Meter	1 1
CIRCUIT BOARDS (COMPLETE)			
C-4557 X-7111	4 51	FM Tuner Unit IF and MPX Unit	1 1

ELECTRICAL PARTS LIST

RS PART NO.	REF. NO.	DESCRIPTION	Q'ty
X-4964	28	Pre-Amp. Unit	1
X-7113	27	Main Amp. Unit	1
X-7112	29	Power Supply Unit	1
X-7114	61	Tone Control Unit	1
THERMAL PROTECTOR			
HB-4538	73	Thermal Protector 105°C ± 7°C JP8 × 5Y-C	1

DIAL STRINGING DIAGRAM

