

Closer Relations through
"Clarion Service Manual"

Service Manual

Overseas Sales Branch Offices

Clarion Corporation of America 5500 Rosecrans Ave., Lawndale, Calif., 90260 U.S.A. Tel: 213-973-1100 Telex: CLARIONLSA 66-4447
Clarion Shoji (EUROPA) G.m.b.H. Rudolf-Diesel-Strasse 2, 6236 Eschborn 2, West Germany Tel: 06173-61041-42 Telex: 415414
Clarion (HONG KONG) Co., Ltd. 526, Ocean Centre, Canton Road, Tsimshatsui, Kowloon, Hong Kong Tel: 3-690528 Telex: HX64293 CLAHK
Clarion Canada Inc. 1401 Meyerside Dr. Mississauga, Ontario L5T 1G8, Canada Tel: 416-678-1367 Telex: 216968573 CLARION MSGA
Clarion Shoji (U.K.) Ltd. 4-6, Faraday Road, Dorcan Industrial Estate, Dorcan, Swindon, Wiltshire. SN3.5HQ United Kingdom Tel: (0793) 24081 Telex: 44689

Mazda Automobile Genuine Radio

Model RT-481A,C,N



SPECIFICATIONS:

Circuit system:	Superheterodyne
Tuning system:	Manual μ -tuning 5 push button system
Receive range:	AM 530 to 1,610kHz FM 88 to 108MHz
Intermediate frequency:	AM 262.5kHz FM 10.7MHz
Maximum sensitivity:	AM Less than 20dB (at max. output)
Quieting sensitivity:	AM Less than 30dB (at 20dB S/N) FM Less than 18dB (at 30dB S/N)
Selectivity:	AM More than 20dB (at ± 10 kHz detune)
AFC:	FM 400 to 700kHz
Separation:	FM More than 20dB
Fidelity:	AM 100Hz -1 ± 3 dB (bass, treble = flat) 400Hz 0dB 4kHz -17 ± 5 dB
	FM 100Hz -1 ± 3 dB 400Hz 0dB 7kHz -13 ± 5 dB

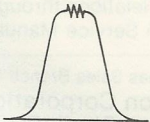
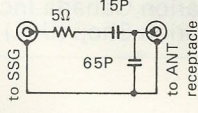
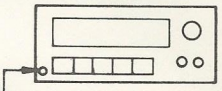
Load impedance:	$4\Omega \times 2$
Power output:	$3W \times 2$ (at 10% distortion) $4W \times 2$ (at max. output)
Power supply voltage:	DC 13.2V (10.8 to 15.6V) Negative ground
Current consumption:	Less than 3A
Semiconductors:	6 ICs, 1 FET, 6 transistors, 8 diodes
Dimensions:	Width 160mm Height 55mm Depth 120mm
Weight:	950g

COMPONENTS:

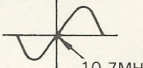
• RT-481A-01	Main unit	1
• RT-481C-01	Main unit	1
• RT-481N-01	Main unit	1

■ ADJUSTMENT:

< AM circuit >

Item	Input	Output	Frequency	Method of adjustment		Instruments required	Note
IF	TP5	TP6	262.5kHz	IFT5,7	Adjust the cores of IFT maximum waveform height with good symmetry	<ul style="list-style-type: none"> Sweep generator Oscilloscope 	
Tracking	Antenna receptacle	Meter across the speaker voice coil	1,620kHz	TC6 (OSC Trimmer) TC4 (ANT Trimmer) TC5 (RF Trimmer)	Adjust the trimmer for maximum indication of V.T.V.M.	<ul style="list-style-type: none"> SSG V.T.V.M. Dummy load (4Ω) Dummy ANT 	 <p>Use dummy antenna between S.S.G. and antenna receptacle</p>
Antenna trimmer	Set the receiver volume control to max., tone control to high, and the dial pointer to around 1,620kHz to receive white noise (hissing noise) and adjust the antenna trimmer (screw) so that the noise output becomes maximum.						 <p>Ant. trimmer</p>

< FM circuit >

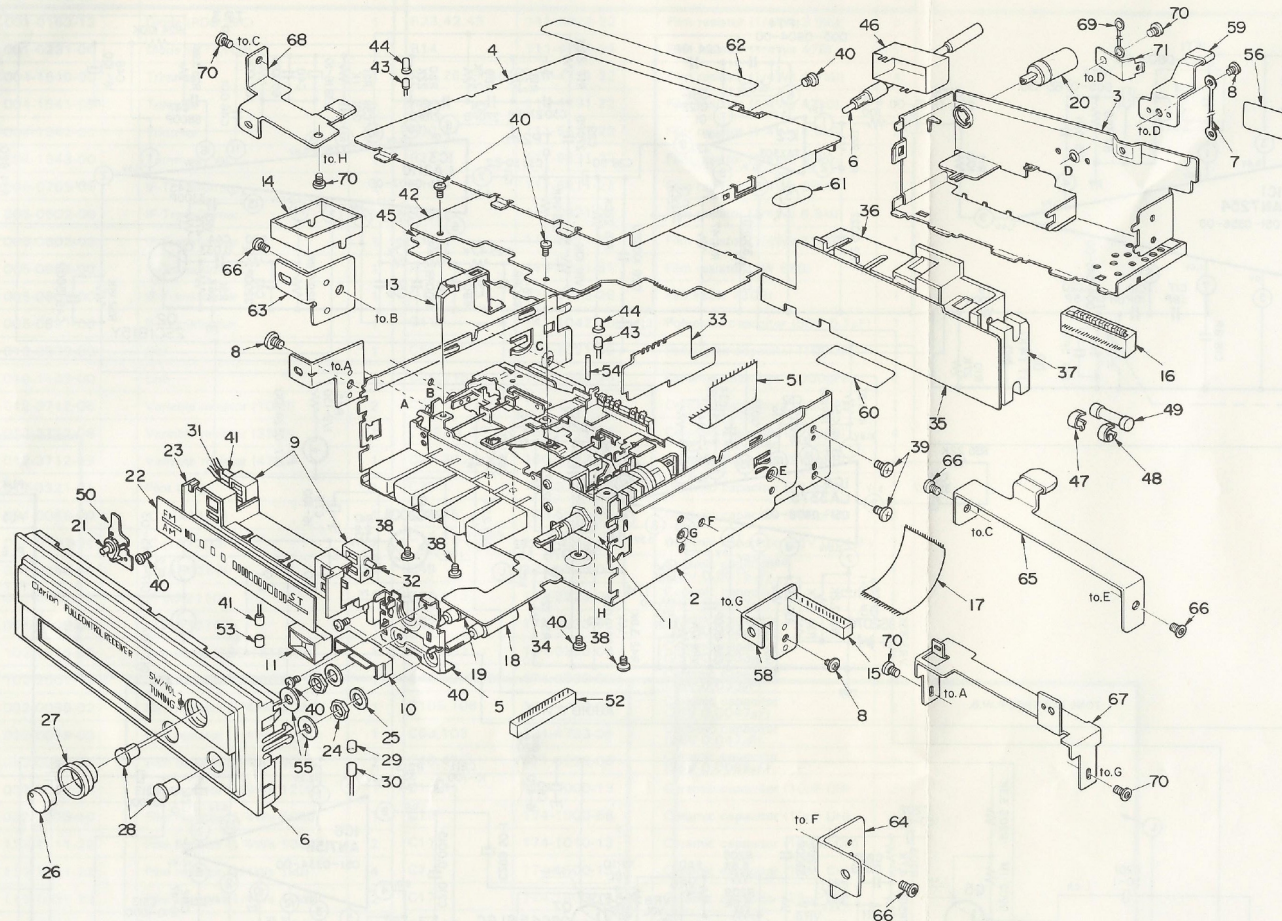
Item	Input	Output	Frequency	Method of adjustment		Instruments required	Note
S curve	TP1	TP2	10.7MHz	IFT1,4	Adjust the core for waveform having good symmetry and good linearity	<ul style="list-style-type: none"> Sweep generator Oscilloscope V.T.V.M. 	
Tracking	Antenna receptacle	Meter across the speaker voice coil	1) 87.5MHz 2) 98MHz	1) TC3 2) TC1 TC2	Adjust the trimmer for maximum indication of V.T.V.M.	<ul style="list-style-type: none"> SSG V.T.V.M. Dummy load (4Ω) Dummy ANT 	
< MPX > VCO	Antenna receptacle	TP4	98MHz 55dB	VR4	Connect a frequency counter to TP4, and adjust VR4 to 76kHz.	<ul style="list-style-type: none"> SSG Frequency counter 	
Separation		Meter across the speaker voice coil	Right or left signal (400Hz)	VR1	Adjust the VR1 for maximum separation	<ul style="list-style-type: none"> Stereo SG SSG V.T.V.M. 	
Pilot canceller			98MHz 55dB	VR2	Adjust the VR2 for minimum indication of V.T.V.M.	<ul style="list-style-type: none"> SSG V.T.V.M. 	
SASC	Set to the specified modulation (30%), assuming an FM SSG output 55dB, modulation frequency 7kHz. (98MHz) Set the output level to 0dB (= 0.775V) using the volume control. Next set the FM SSG output to 38dB and adjust VR3 so that the output level is 3dB down.						

[Note] Center frequency of ceramic filter

Color	Center frequency
Black	10.64MHz ± 30kHz
Blue	10.67MHz ± 30kHz
Red	10.70MHz ± 30kHz
Orange	10.73MHz ± 30kHz
White	10.76MHz ± 30kHz

EXPLODED VIEW:

< Main section >



Ref. No.	Part No. (Order No.)	Description	Q'ty
60	285-1017-00	(481A)	1
	285-1005-00	Guide label (481C)	
	285-1018-00	(481N)	
61	290-2567-00	Label (for 481C)	1
62	290-2957-01	Label (for 481C)	1
63	300-5999-00	Mounting bracket (for 481C)	1
64	300-6000-00	Mounting bracket (for 481C)	1
65	300-6439-00	Mounting bracket (for 481C)	1
66	716-0417-00	Screw (for 481C)	4
67	300-6508-00	Mounting bracket (for 481A)	1
68	300-6509-00	Mounting bracket (for 481A)	1
69	840-0372-02	Bonding wire (for 481A)	1
70	716-0417-00	Screw (for 481A)	5
71	330-7493-00	Terminal (for 481A)	1

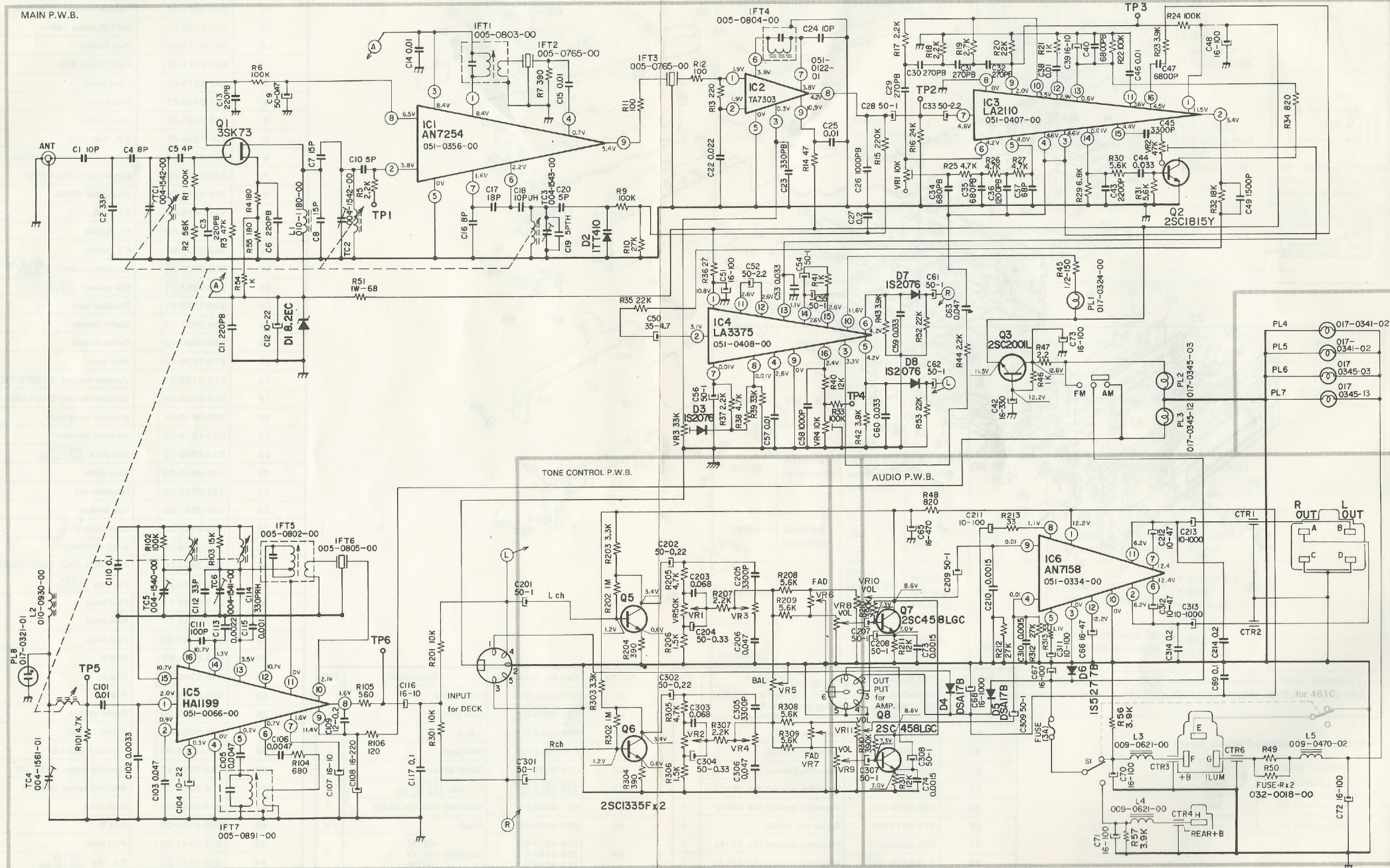
Ref. No.	Part No. (Order No.)	Description	Q'ty
48	077-0081-04	Fuse holder	1
49	120-0030-02	Fuse (3A)	1
50	099-6242-00	P.W.B.	1
51	816-1175-00	Wire lead	1
52	074-0591-14	Outlet socket	1
53	345-2671-04 345-2630-08	P.L. cap (481C) (481A, N)	1
54	821-4008-01	Vanished tube (for 481C)	1
55	353-0189-00	Shade	2
56	286-4817-00 286-4797-00 286-4818-00	(481A) Set plate (381C) (481N)	1
57	300-6415-00	Mounting bracket (for 481N)	1
58	300-6416-00	Mounting bracket (for 481N)	1
59	300-6417-00	Mounting bracket (for 481N)	1

PARTS LIST:

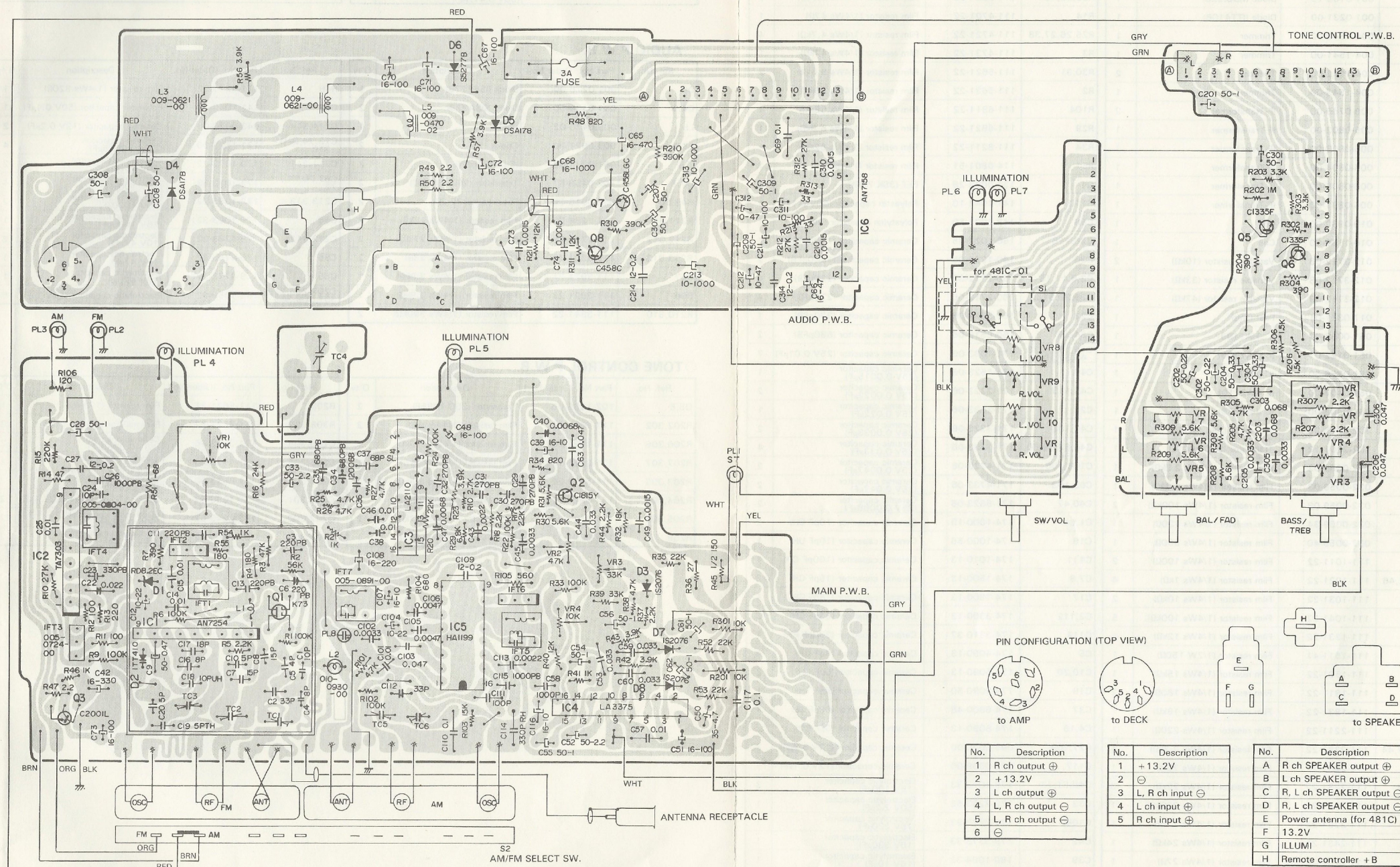
< Main section >

Ref. No.	Part No. (Order No.)	Description	Q'ty
1	937-0156-64	6 coil push button tuner	1
1-1	012-3851-01	Variable resistor (VOL/TUN)	1
1-2	013-3229-01	AM/FM select switch	1
1-3	680-0111-00	Push button	2
1-4	680-0111-01	Push button (FM)	3
2	308-0974-01	Front cover	1
3	307-0346-01	Rear cover	1
4	303-0291-01	Upper cover	1
5	330-7354-01	V.R. mtg. brkt	1
6	093-0781-04	Antenna jumper (for 481N)	1
7	840-0372-00	Bonding wire (for 481N)	1
8	716-0417-00	Screw (for 481N)	3
9	345-3419-00	P.L. holder	2
10	345-3421-00	P.L. holder	1
11	345-3420-00	P.L. holder	1
12	940-2609-05	Escutcheon ass'y (481A, N)	1
06	(481C)		
13	376-0867-00	Dial pointer (481A, C)	1
01	(481N)		
14	330-7355-01	Shielded case	1
15	074-0591-13	Outlet socket	1
16	074-0590-13	Outlet socket	1
17	816-1176-00	Wire lead	1
18	012-3756-01	Variable resistor (BASS/TREB)	1
19	012-3755-00	Variable resistor (BAL/FAD)	1
20	092-0516-01	Antenna receptacle	1
21	004-1516-01	Antenna trimmer	1
22	372-2986-03	Dial plate (481C)	1
04	(481A, N)		
23	374-0810-00	Back plate	1
24	722-0282-00	Hexagon nut	2
25	745-0561-00	Flat washer	2
26	380-3947-00	Knob (SW/VOL)	1
27	380-3948-00	Knob (TUNING)	1
28	380-3949-00	Knob (BAL/FAD, BASS/TREB)	2
29	345-2671-03	P.L. cap (481A, N)	1
05	(481C)		
30	017-0345-13	Pilot lamp	1
31	017-0345-12	Pilot lamp	1
32	017-0324-00	Pilot lamp	1
33	099-6241-01	P.W.B.	1
34	099-6240-01	P.W.B.	1
35	099-6239-02	P.W.B.	1
36	074-0660-00	Outlet socket	1
37	051-0334-00	IC (AN7158N)	1
38	731-3006-80	Tap tight (M3×6)	3
39	714-3010-81	Machine screw (M3×10)	2
40	714-3004-81	Machine screw (M3×4)	7
41	017-0345-03	Pilot lamp	2
42	099-6385-00	P.W.B.	1
43	017-0341-02	Pilot lamp	2
44	345-3477-02	P.L. cap (481C)	2
03	(481A, N)		
45	347-0523-02	Insulator	1
46	330-7356-00	Shielded case	1
47	077-0081-05	Fuse holder	1

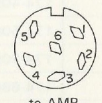
■CIRCUIT DIAGRAM:



PRINTED WIRING BOARD:



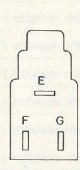
PIN CONFIGURATION (TOP VIEW)



to AMP



to DECK



to SPEAKER

No.	Description
1	R ch output ⊕
2	+13.2V
3	L ch output ⊕
4	L, R ch output ⊖
5	L, R ch output ⊖
6	⊖

No.	Description
1	+13.2V
2	⊖
3	L, R ch input ⊖
4	L, R ch input ⊖
5	R ch input ⊕

No.	Description
A	R ch SPEAKER output ⊕
B	L ch SPEAKER output ⊕
C	R, L ch SPEAKER output ⊖
D	R, L ch SPEAKER output ⊖
E	Power antenna (for 481C)
F	+13.2V
G	ILLUMI
H	Remote controller + B

■PARTS LIST:
< ELECTRICAL SECTION >

○MAIN P.W.B.

Ref. No.	Part No. (Order No.)	Description	Q'ty
D3,7,8	001-0095-00	Diode (1S2076)	3
D1	001-0163-13	Diode (RD8.2EC)	1
D2	001-0231-00	Diode (ITT410B)	1
TC5	004-1540-00	Trimmer	1
TC6	004-1541-00	Trimmer	1
TC1,2	004-1542-00	Trimmer	2
TC3	004-1543-00	Trimmer	1
IFT2,3	005-0765-00	IF-Transformer	2
IFT5	005-0802-00	IF-Transformer	1
IFT1	005-0803-00	IF-Transformer	1
IFT4	005-0804-00	IF-Transformer	1
IFT6	005-0805-00	IF-Transformer	1
IFT7	005-0891-00	IF-Transformer	1
L2	010-0930-00	Coil	1
L1	010-1180-00	Coil	1
VR1,4	012-3712-06	Variable resistor (10kΩ)	2
VR3	012-3712-08	Variable resistor (33kΩ)	1
VR2	012-3712-09	Variable resistor (47kΩ)	1
PL8	017-0321-01	Pilot lamp	1
IC5	051-0066-00	IC (HA1199)	1
IC2	051-0122-01	IC (TA7303)	1
IC1	051-0356-00	IC (AN7254)	1
IC3	051-0407-00	IC (LA2110)	1
IC4	051-0408-00	IC (LA3375)	1
Q2	102-1815-25	Transistor (2SC 1815Y)	1
Q3	102-2001-12	Transistor (2SC 2001L)	1
R5	032-0059-02	Film resistor (1/4Ws 2.2kΩ)	1
R101	032-0059-03	Film resistor (1/4Ws 4.7kΩ)	1
R24,33	032-0059-08	Film resistor (1/4Ws 100kΩ)	2
R106	032-0059-34	Film resistor (1/4Ws 120Ω)	1
R105	032-0059-40	Film resistor (1/4Ws 560Ω)	1
R11,12	111-1011-22	Film resistor (1/4Ws 100Ω)	2
R54,41,21,46	111-1021-22	Film resistor (1/4Ws 1kΩ)	4
R201,301	111-1031-22	Film resistor (1/4Ws 10kΩ)	2
R1,6,9,22,102	111-1041-22	Film resistor (1/4Ws 100kΩ)	5
R40	111-1231-22	Film resistor (1/4Ws 12kΩ)	1
R45	111-1511-41	Film resistor (1/2W 150Ω)	1
R103	111-1531-22	Film resistor (1/4Ws 15kΩ)	1
R4,55	111-1811-22	Film resistor (1/4Ws 180Ω)	2
R32	111-1831-22	Film resistor (1/4Ws 18kΩ)	1
R13	111-2211-22	Film resistor (1/4Ws 220Ω)	1
R17,18,37,44	111-2221-22	Film resistor (1/4Ws 2.2kΩ)	4
R20	111-2231-21	Film resistor (1/4Ws 22kΩ)	1
R35,52,53	111-2231-22	Film resistor (1/4Ws 22kΩ)	3
R15	111-2241-22	Film resistor (1/4Ws 220kΩ)	1
R47	111-2291-22	Film resistor (1/4Ws 2.2Ω)	1
R16	111-2431-21	Film resistor (1/4Ws 24kΩ)	1
R36	111-2701-22	Film resistor (1/4Ws 27Ω)	1
R19	111-2721-22	Film resistor (1/4Ws 2.7kΩ)	1
R10	111-2731-22	Film resistor (1/4Ws 27kΩ)	1
R39	111-3331-22	Film resistor (1/4Ws 33kΩ)	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
R7	111-3911-22	Film resistor (1/4Ws 390Ω)	1
R23,42,43	111-3921-22	Film resistor (1/4Ws 3.9kΩ)	3
R14	111-4701-22	Film resistor (1/4Ws 47Ω)	1
R25,26,27,38	111-4721-22	Film resistor (1/4Ws 4.7kΩ)	4
R3	111-4731-22	Film resistor (1/4Ws 47kΩ)	1
R30,31	111-5621-22	Film resistor (1/4Ws 5.6kΩ)	2
R2	111-5631-22	Film resistor (1/4Ws 56kΩ)	1
R104	111-6811-22	Film resistor (1/4Ws 680Ω)	1
R29	111-6821-22	Film resistor (1/4Ws 6.8kΩ)	1
R34	111-8211-22	Film resistor (1/4Ws 820Ω)	1
R51	114-6801-51	Film resistor (1W 68Ω)	1
Q1	124-0073-28	FET (3SK 73GR)	1
C110	141-1042-10	Polyester capacitor (50V 0.1μF)	1
C58	143-1021-50	Polystylen capacitor (1000pF)	1
C26,115	160-1022-05	Ceramic capacitor (1000pFB)	2
C36	160-1222-05	Ceramic capacitor (1200pFB)	2
C3,6,11,13	160-2212-05	Ceramic capacitor (220pFB)	4
C29,30,31,32	160-2712-05	Ceramic capacitor (270pFB)	4
C23	160-3312-05	Ceramic capacitor (330pFB)	1
C34,35	160-6812-05	Ceramic capacitor (680pFB)	2
C14,15,25,38,46,57,101	171-1033-06	Ceramic capacitor (25V 0.01μF)	7
C49	171-1523-06	Ceramic capacitor (25V 0.0015μF)	1
C43,113	171-2223-06	Ceramic capacitor (25V 0.0022μF)	2
C22	171-2233-06	Ceramic capacitor (25V 0.022μF)	1
C45,102	171-3323-06	Ceramic capacitor (25V 0.0033μF)	2
C44,53,59,60	171-3333-06	Ceramic capacitor (25V 0.033μF)	4
C105,106	171-4723-06	Ceramic capacitor (25V 0.0047μF)	2
C63,103	171-4733-06	Ceramic capacitor (25V 0.047μF)	2
C40,47	171-6823-06	Ceramic capacitor (25V 0.0068μF)	2
C1,24	174-1000-13	Ceramic capacitor (10pF CH)	2
C18	174-1000-56	Ceramic capacitor (10pF UH)	1
C111	174-1010-13	Ceramic capacitor (100pF CH)	1
C7,8	174-1500-13	Ceramic capacitor (15pF CH)	2
C17	174-1800-13	Ceramic capacitor (18pF CH)	1
C2,112	174-3300-13	Ceramic capacitor (33pF CH)	2
C114	174-3310-37	Ceramic capacitor (330pF RH)	1
C5	174-4090-13	Ceramic capacitor (4pF CH)	1
C10,20	174-5090-13	Ceramic capacitor (5pF CH)	2
C19	174-5090-50	Ceramic capacitor (5pF TH)	1
C37	174-6800-46	Ceramic capacitor (68pF SL)	1
C4,16	174-8090-13	Ceramic capacitor (8pF CH)	2
C27,109	043-0020-00	Ceramic capacitor (12V 0.2μF)	2
C117	043-0039-00	Ceramic capacitor (12V 0.1μF)	1
C48,51,73	179-1073-33	Electrolytic capacitor (16V 100μF)	3
C33	179-2253-62	Electrolytic capacitor (50V 2.2μF)	1
C108	179-2273-33	Electrolytic capacitor (16V 220μF)	1
C42	179-3373-33	Electrolytic capacitor (16V 330μF)	1
C39	180-1064-32	Electrolytic capacitor (16V 10μF)	1
C28,54,55,56,61,62	182-1053-62	Electrolytic capacitor (50V 1μF)	6
C107,116	182-1063-32	Electrolytic capacitor (16V 10μF)	2
C52	182-2253-62	Electrolytic capacitor (50V 2.2μF)	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
C12,104	182-2263-22	Electrolytic capacitor (10V 22 μ F)	2
C9	182-4743-62	Electrolytic capacitor (50V 0.47 μ F)	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
C50	182-4753-52	Electrolytic capacitor (35V 4.7 μ F)	1

○AUDIO P.W.B.

Ref. No.	Part No. (Order No.)	Description	Q'ty
D6	001-0276-00	Diode (IS5277B)	1
D4,5	001-0334-00	Diode (DSA17B)	2
L5	009-0470-02	Choke	1
L3,4	009-0621-00	Choke	2
IC6	051-0334-00	IC (AN7158N)	1
Q7,8	102-0458-87	Transistor (2SC458LGC)	2
R49,50	032-0018-00	Fuse resistor (2.2 Ω)	2
R211,311	111-1231-22	Film resistor (1/4Ws 12k Ω)	2
R212,312	111-2731-22	Film resistor (1/4Ws 27k Ω)	2
R213,313	111-3301-22	Film resistor (1/4Ws 33 Ω)	2
R57	111-3921-21	Film resistor (1/4Ws 3.9k Ω)	1
R56	111-3921-22	Film resistor (1/4Ws 3.9k Ω)	1
R210,310	111-3941-22	Film resistor (1/4Ws 390k Ω)	2

Ref. No.	Part No. (Order No.)	Description	Q'ty
R48	111-8211-22	Film resistor (1/4Ws 820 Ω)	1
C69	141-1042-10	Polyester capacitor (50V 0.1 μ F)	1
C214,314	043-0020-00	Ceramic capacitor (12V 0.2 μ F)	2
C73,74,210 310	171-1523-06	Ceramic capacitor (25V 0.0015 μ F)	4
C211,311	179-1073-22	Electrolytic capacitor (10V 100 μ F)	2
C67,70,71 72	179-1073-33	Electrolytic capacitor (16V 100 μ F)	4
C213,313	179-1083-22	Electrolytic capacitor (10V 1000 μ F)	2
C68	179-1083-32	Electrolytic capacitor (16V 1000 μ F)	1
C212,312	179-4763-22	Electrolytic capacitor (10V 47 μ F)	2
C66	179-4763-32	Electrolytic capacitor (16V 47 μ F)	1
C65	179-4773-33	Electrolytic capacitor (16V 470 μ F)	1
C207,208,209 307,308,309	182-1053-62	Electrolytic capacitor (50V 1 μ F)	6

○TONE CONTROL P.W.B.

Ref. No.	Part No. (Order No.)	Description	Q'ty
Q5,6	102-1335-06	Transistor (2SC 1335F)	2
R202,302	111-1051-22	Film resistor (1/4Ws 1M Ω)	2
R206,306	111-1521-22	Film resistor (1/4Ws 1.5k Ω)	2
R207,307	111-2221-11	Film resistor (1/8W 2.2k Ω)	2
R203,303	111-3321-22	Film resistor (1/4Ws 3.3k Ω)	2
R204,304	111-3911-22	Film resistor (1/4Ws 390 Ω)	2
R205,305	111-4721-22	Film resistor (1/4Ws 4.7k Ω)	2
R209	111-5621-11	Film resistor (1/8W 5.6k Ω)	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
R208	111-5621-21	Film resistor (1/4Ws 5.6k Ω)	1
R308,309	111-5621-22	Film resistor (1/4Ws 5.6k Ω)	2
C205,305	171-3323-06	Ceramic capacitor (25V 0.0033 μ F)	2
C206,306	171-4733-06	Ceramic capacitor (25V 0.047 μ F)	2
C203,303	171-6833-06	Ceramic capacitor (25V 0.068 μ F)	2
C201,301	179-1053-62	Electrolytic capacitor (50V 1 μ F)	2
C202,302	182-2243-62	Electrolytic capacitor (50V 0.22 μ F)	2
C204,304	182-3343-62	Electrolytic capacitor (50V 0.33 μ F)	2