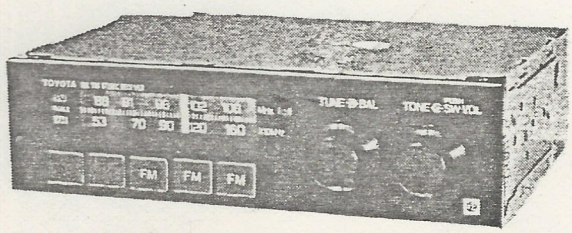
WILSON + HALL

AR-3021
AR-3022

AUTO RADIO SERVICE MANUAL

AM/FM STEREO AUTO RADIO

TOYOTA PART No.	FUJITSU TEN MODEL No.	VEHICLE
86120-14450	AR-3021	CELICA CELICA SUPRA COROLLA (Produced after August 1981)
86120-14460	AR-3022	



86120-14450 (AR-3021)

86120-14460 (AR-3022)

GENERAL

The model AR-3021 (AR-3022) is an AM/FM MPX 5-pushbutton auto radio designed for TOYOTA CELICA and COROLLA.

* Newly-designe ICs, μPC1216V2 and AN7254 are adopted in AM and FM high frequency circuits.
* Dial light on-off switch for safer drive at night.
* ATC (Automatic Tone Control) function built-in.
* ASC (Automatic Separation Control) function built-in.
* Noise blanker function built-in.
* B.T.C.L circuit is adopted in output circuit.

NOTE: For volume control in case of combined use with cassette player, set volume of cassette player at a desired level and then set volume of radio at the same level of player by control of radio.

TOYOTA MOTOR SALES CO., LTD.

Illus. No. (Fig. 19)	Stock No.	Description	Q'ty
MECHANICAL			
1	RN-MTD-1038	Chassis, top	1
2	RN-MTD-1039	Chassis, bottom	1
3	RN-MTD-1031	Chassis, main	1
4	RN-MRE-1012A	Radiator	1
5	RN-MBP-1011	Backplate	1
6	RN-MFP-1022B	Escutcheon (includes dialplate) AR-3022 only	1
	RN-MFP-1041	Escutcheon (includes dialplate) AR-3021 only	1
7	RN-MIB-1010	Pointer, dialplate	1
8	RN-MHE-1070A	Holder, PC board, main	1
9	RN-MHE-1122	Holder, PC board, main	1
10	RN-MHE-1072	Holder, PL1	1
11	RN-MHE-1067	Holder, backplate	1
12	RN-MLC-1021A	Insulator, AM/FM	1
13	RN-MLC-1022A	Insulator, ST	1
14	RN-MPC-1138A	PC board, main	1
15	RN-MPC-1098A	PC board, volume	1
16	RN-MPC-1099A	PC board, power	1
17	RN-MHE-1071	Holder, shield plate	1
18	RN-MHE-1068A	Holder, IC7, 8	1
19	RN-MHE-1076B	Holder, shield plate	1
20	RN-MYC-1006	Knob, tuning	1
21	RN-MYN-1022A	Knob, volume	1
22	RN-MYD-1013	Knob, tone and balance	2
30	RN-MHE-1093	Holder, shield plate	1
ASSEMBLY MATERIAL			
25	RN-MET-168	Special screw, 3×6mm	18
26	RN-MET-253	Special screw, 3×8mm	2
27	F6-SBD-3×10S	Screw, 3×10mm	4
28	RN-MSN-1	Nut, M9	2

NOTE: Specifications subject to change without prior notice.

HOW TO ORDER REPLACEMENT PARTS FROM THIS SERVICE MANUAL

(For countries other than North America. Europe and Australia)

Please order from EXPORT PARTS DEPT., TOYOTA MOTOR SALES CO., LTD.

When ordering, write down the part and its stock number you wish toreferring to the replacement parts list in this service manual.

EXAMPLE: RN-EIC-MB3730M, Semiconductor

Manufactured for TOYOTA by

FUJITSU TEN LIMITED

Kobe, Japan

Printed in Japan
108DE0.85Y

SPECIFICATIONS

TUNING RANGE ····· AM : 525～1605 kHz FM : 88～108 MHz

INTERMEDIATE FREQUENCY ····· AM : 455 KHz FM : 10.7 MHz

SENSITIVITY ····· AM : 26 dB or less FM : 18 dB or less

LIMITING SENSITIVITY ····· 10±3 dB

SIGNAL TO NOISE RATIO ····· AM : 21 dB or better (at 35 dB input)
FM : 30 dB or better (at 18 dB input)

ELECTRICAL FIDELITY ····· AM : −4±3 dB or better at 100 Hz
−13±5 dB or better at 4 kHz
FM : 0±3 dB or better at 100 Hz
−15±5 dB or better at 10 kHz

SEPARATION ····· 25 dB or better

ATC OPERATION LEVEL ····· 40±5 dB (NOTE 1)

POWER OUTPUT ····· 7 watts or better (10 watts max.)
RMS (at T.H.D.=10%) per channel

SPEAKER IMPEDANCE ····· 4 ohm, per channel

POWER INPUT ····· 12–volt car battery, negative terminal to ground

Voltage ····· 13.2 VDC

Current ····· Approx. 0.8 amperes (at 0.5 watt output)

SEMICONDUCTOR ····· 3 Transistors, 1 FETs, 8 ICs, 2 Diode

DIMENSIONS ····· 180(W)×50(H)×130(D)mm (7–3/32″, 2–31/32″, 5–1/8″)

WEIGHT ····· Radio receiver 1.1 kg (2.5 lbs)

NOTE 1: Refer to ATC working sensitivity adjustment.

CONNECTIONS

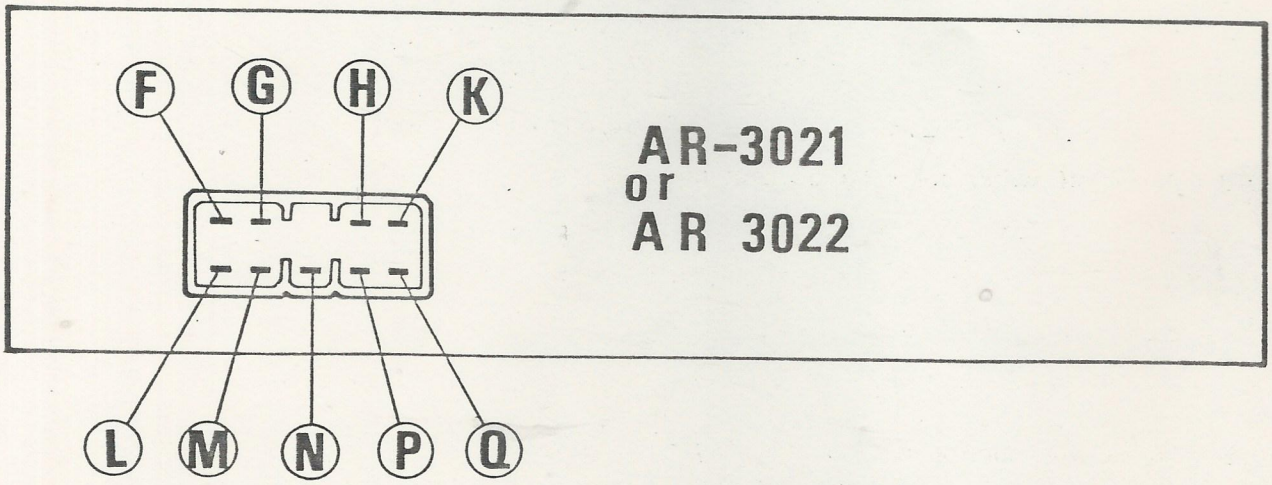


Fig. 1 (C23073021)

F	Power supply (ANT. AMP.)	G	Power supply +13.2 VDC			H	Front speaker (Left. +)	K	Front speaker (Right. +)
L	NC	M	Power supply (speaker AMP.)	N	Ground	P	Front speaker (Left. −)	Q	Front speaker (Right. −)

COMBINATIONS (C32073021)

[AR-3021]
[AR-3022]

∘ CELICA, SUPRA

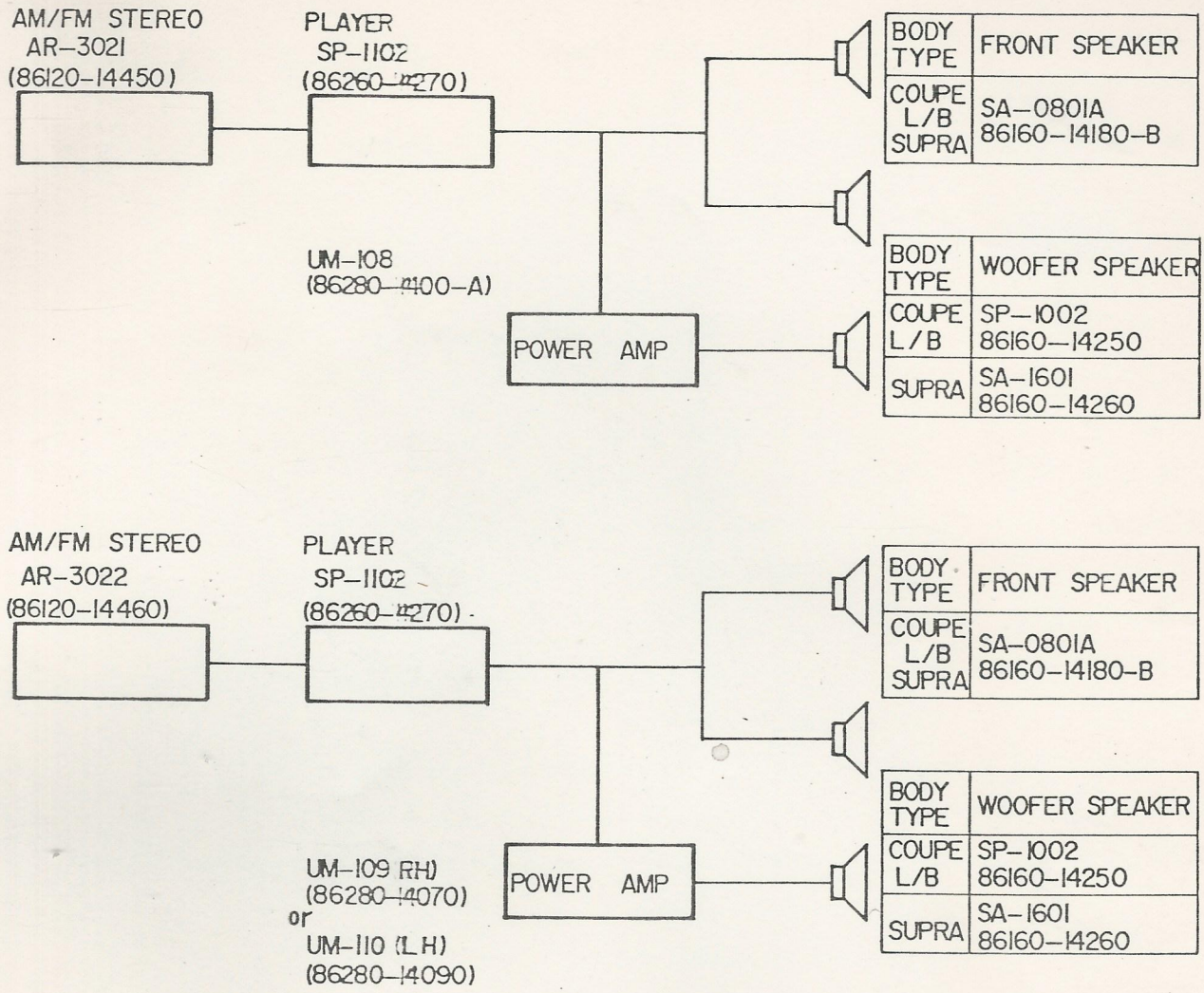


Fig. 2

∘ COROLLA

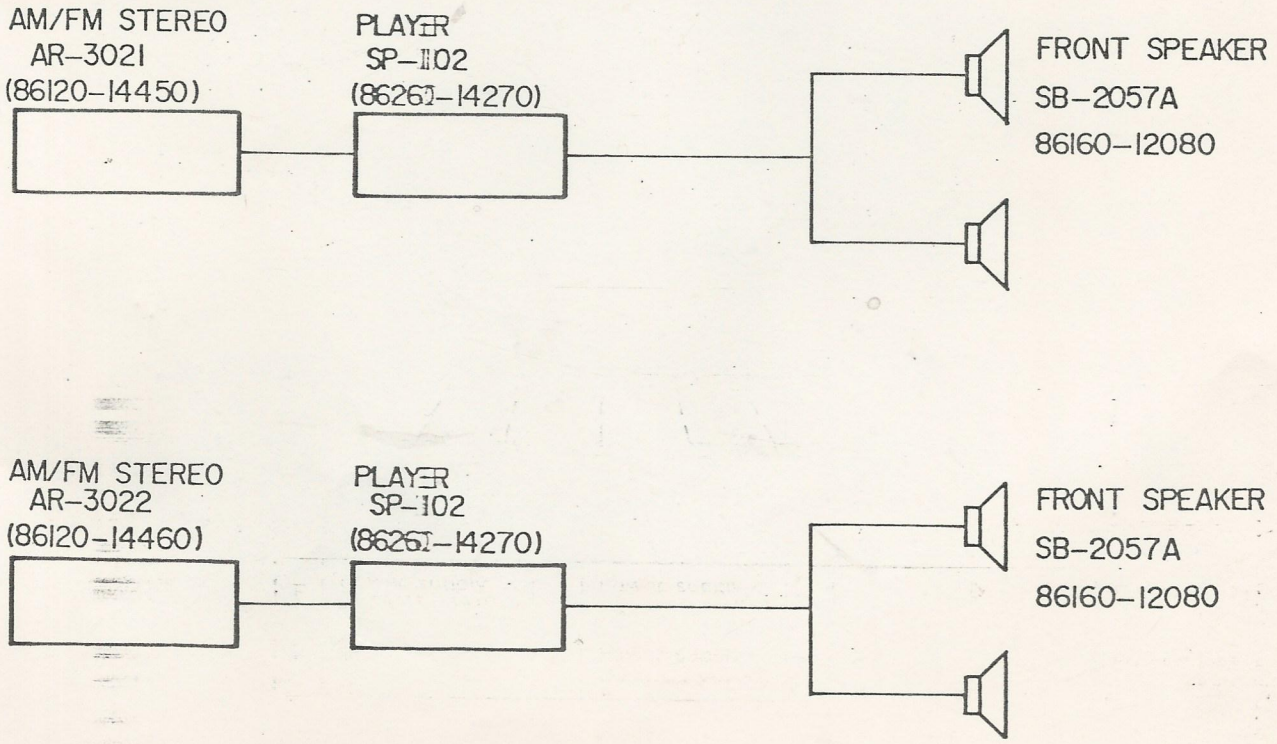


Fig. 3

HOOK-UP (C32073021)

◦ CELICA, SUPRA

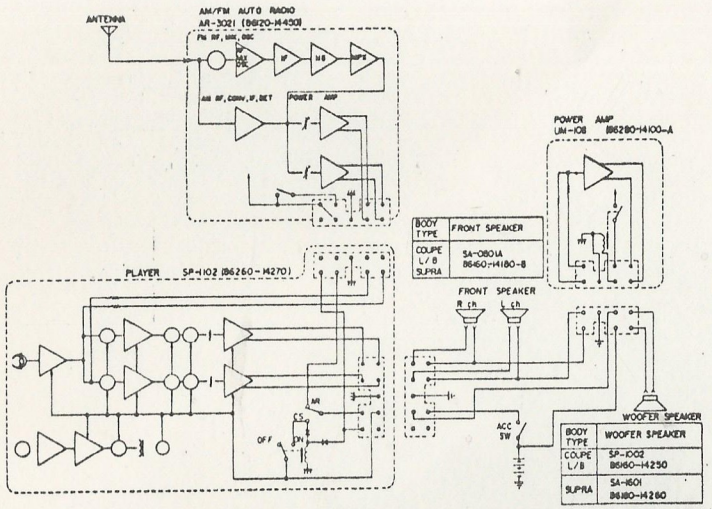


Fig. 4

◦ COROLLA

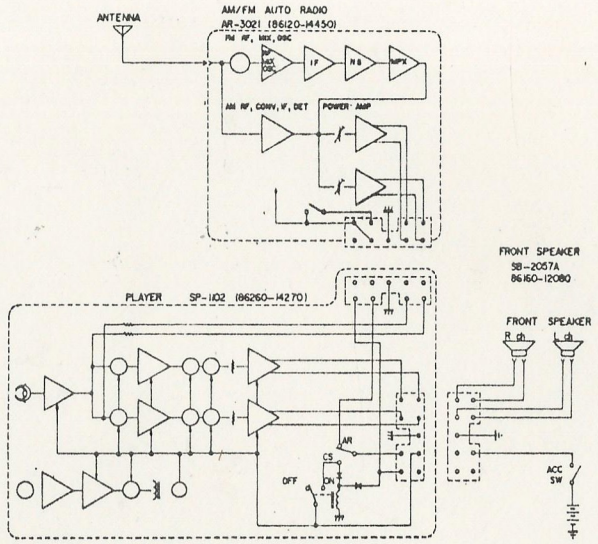


Fig. 5

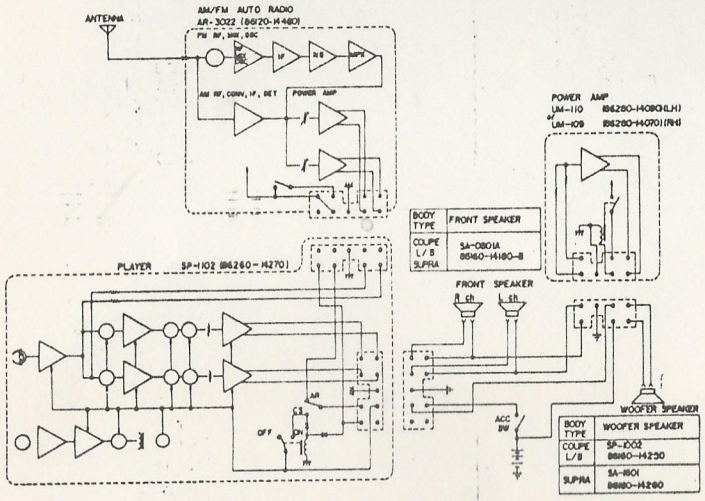


Fig. 6

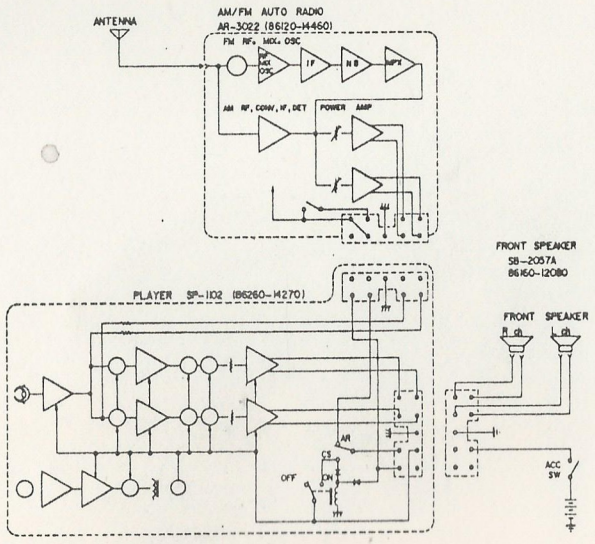


Fig. 7

DC VOLTAGE

〔AR-3021〕
〔AR-3022〕

IC No. / Pin No.	IC 1	IC 2	IC 3	IC 4	IC 5	IC 6	IC 7 IC 8
1	8.2V	3.75V	3.85V	8.7V	2.8V	—	2.9V
2	3.8V	3.75V	3.2V	1.7V	2V	—	2.9V
3	8.2V	3.75V	3.2V	—	.1V	—	2.9V
4	.7V	0V	3.55V	3V	12V	12V	—
5	0V	3.8V	3.55V	3V	1.2V	—	6.3V
6	2.2V	2.9V	4.7V	13V	2V	7.2V	5.9V
7	1.6V	2.9V	3.55V	0V	12.5V	—	13V
8	6.6V	2.9V	3.7V	.8V	12V	2.3V	
9	5.2V	4.65V	2.5V	2.3V	0V	2.3V	
10		8.7V	8.7V	1.65V	0V	2.5V	
11		4.65V	0V	1.65V	3.5V	2.5V	
12		4V	7.6V	—	2.6V	2.5V	
13		4.65V	7.3V	1.65V	1.5V	2.5V	
14		9.9V	2.6V	1.7V	10.6V	2.5V	
15		5V	2V	1.9V	1.6V	2.5V	
16		9.25V	2V	2.1V	3V	—	
17		3.4V	1.55V		1.5V	—	
18		0V	0V		11.5V	0V	
19					13V		

Q No. / Pin No.	Q 1	Q 2	Q 3
E	.35V	8.5V	0V
C	8.8V	12V	0V
B	1V	9V	0V (0.6V at FM position)

AM ALIGNMENT

* Standard adjustment condition
  a. Power supply ····· 13.2 VDC
  b. AM/FM changing switch ····· AM
  c. Balance and tone control ····· Center
  d. Volume ····· Adjust to get 1V output level.
  e. Connections

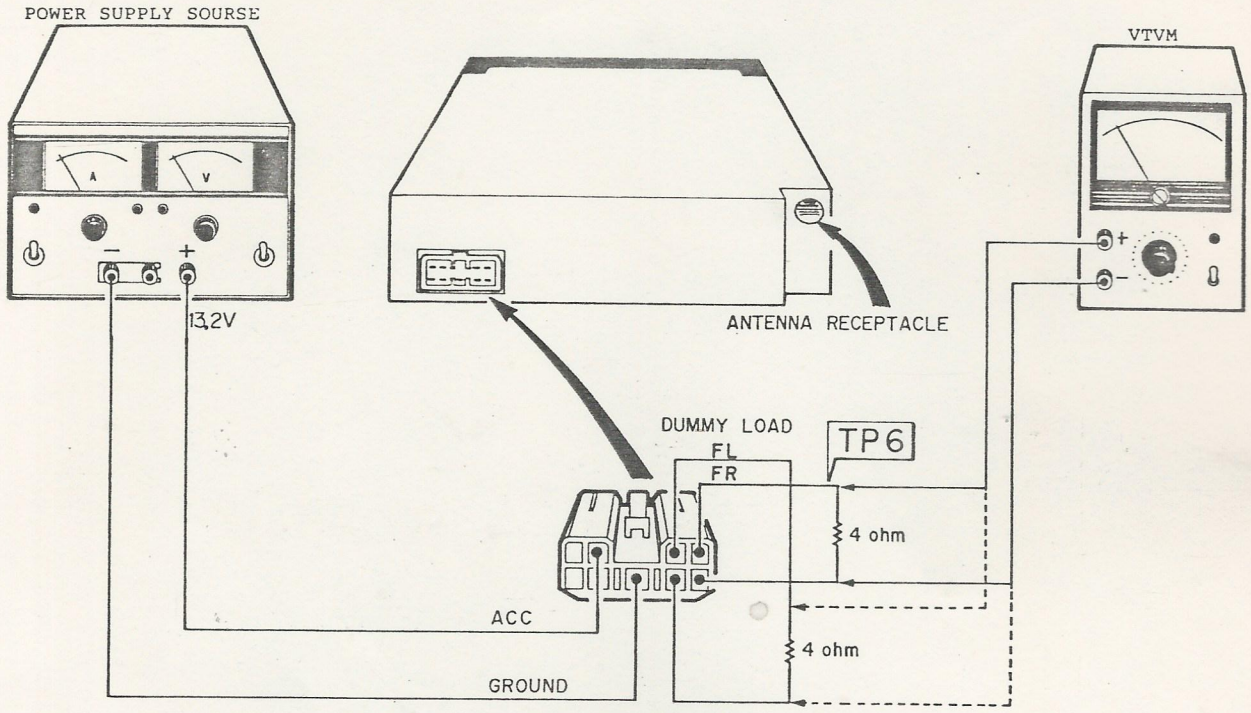


Fig. 8 (C33073021)

〔1〕 IF Alignment

(1) Connection

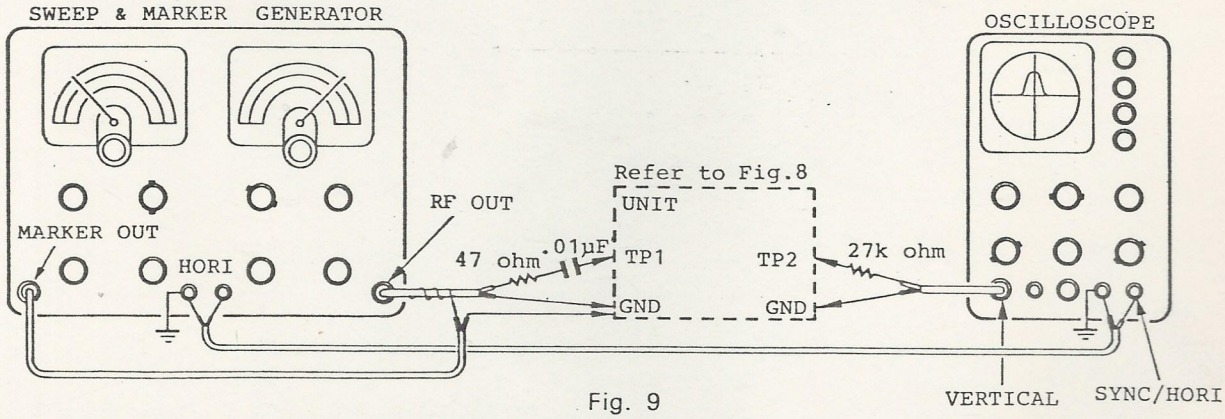


Fig. 9

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect TP 1 in Fig. 18 through 0.01 μF capacitor & 47 ohm resistor	Connect TP 2 in Fig. 18 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF	455 kHz	Near 1,000 kHz no signal exists	T 4	Get maximum IF curve and best symmetry on both sides.
2	Repeat STEP 1 until no further gain in output can be obtained.				

〔2〕 Tuning bias and tracking alignment

(1) Connections

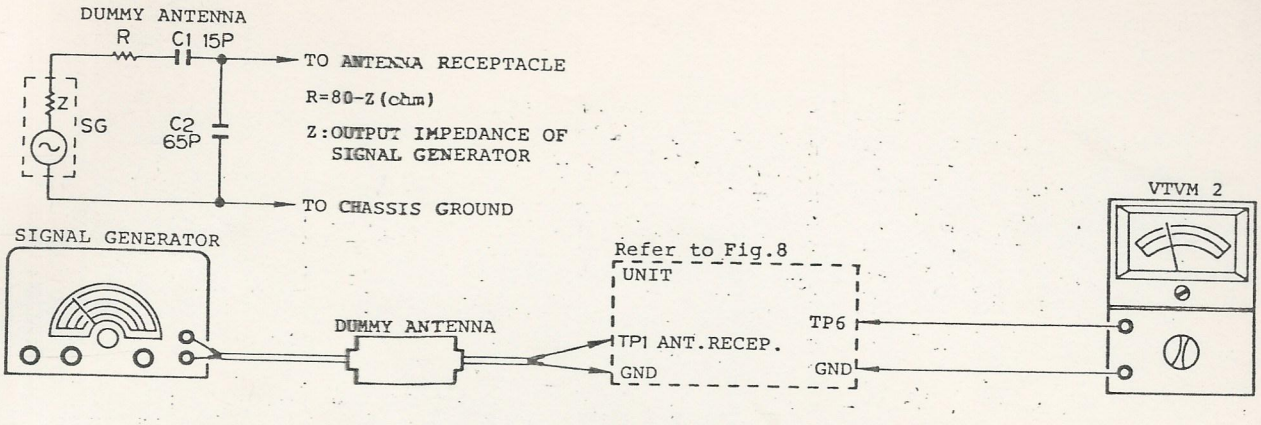


Fig. 12

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS.)

STEP	PURPOSE	GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	Tuning range	1,635 kHz (400 Hz, 30% AM)	High-end stop	CV 5	Adjust for maximum meter indication.
2		505 kHz (400 Hz, 30% AM)	Low-end stop	T 2	
3	Repeat STEP 1 and 2 until no further gain in output can be obtained.				
4	Tracking	1,400 kHz (400 Hz, 30% AM)	Just tune in SG frequency	CV 1	Adjust for maximum meter indication.
5				CV 6	

NOTE: Always readjust antenna trimmer CV6 when radio or antenna is reinstalled, tuning in a weak station around 1,400 kHz and get maximum volume.

FM ALIGNMENT

* Standard Adjustment Condition

FM adjustment should be the same as in AM standard adjusting condition. (AM/FM selector switch is, however, in FM position.)

〔1〕 IF Alignment

(1) Connections

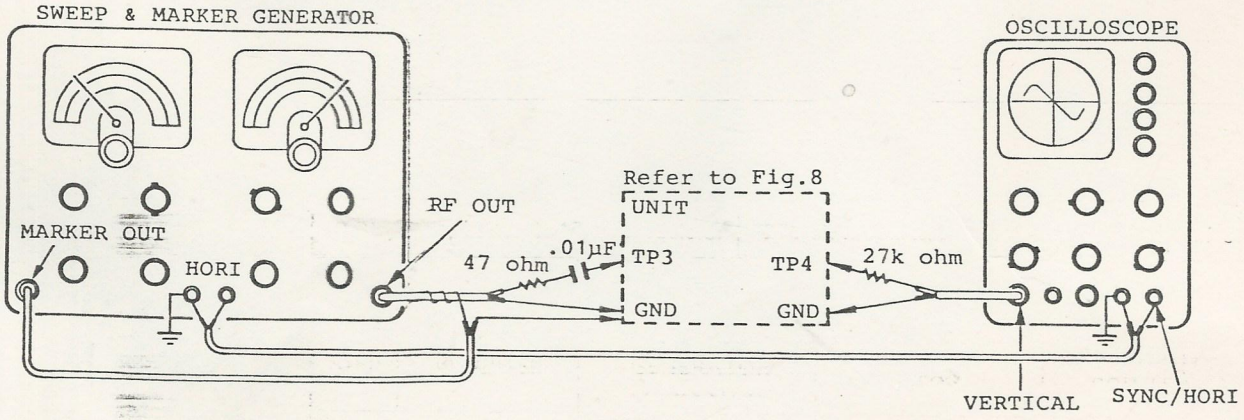


Fig. 13

SWEEP GENERATOR OUTPUT	OSCILLOSCOPE VERTICAL INPUT	OSCILLOSCOPE HORIZONTAL INPUT
Connect TP 3 in Fig. 18 through 0.01 μF capacitor & 47 ohm resistor	Connect TP 4 in Fig. 18 through 27k-ohm resistor	Connect with HORIZONTAL terminal of sweep generator

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS.)

STEP	PURPOSE	SWEEP GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	IF circuit	Center frequency varies according to the color of the ceramic filter (Refer to chart given below)	Near 98 MHz no signal exists	T 1	S-curve adjust for full gain and length of at linears. (See Fig. 15)
2					
3	Detector circuit			T 2	Keep S-curve straight at the center, and adjust waveform for best symmetry of S-curve against the axis as much as possible. (See Fig. 15)
4	Repeat STEP 1 to 3 until no further gain output can be obtained.				

COLOR	CENTER FREQUENCY
Black	10.64 MHz ± 30 kHz
Blue	10.67 MHz ± 30 kHz
Red	10.70 MHz ± 30 kHz
Orange	10.73 MHz ± 30 kHz
White	10.76 MHz ± 30 kHz

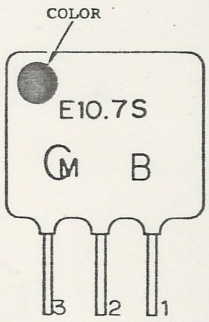


Fig. 14

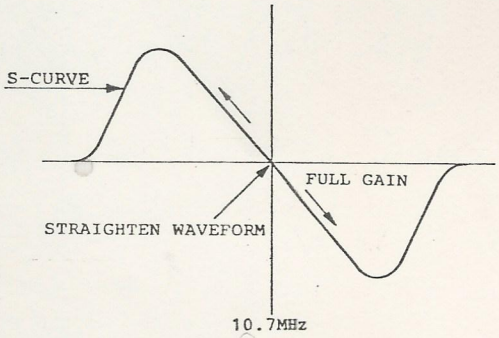


Fig. 15

NOTE: S curve center can be adjusted in the same manner by receiving local FM broadcast near 98.1 MHz.

◎Points to watch in replacing ceramic filter

In the FM circuit there are two ceramic filters. It is important that both filters have the same color. (i.e the same center frequency).

a. Readjustment is not necessary if a defective ceramic filter is replaced with one of the same color.

b. Both filters should be changed to the same color if one of them must be replaced with a different colored filter. Readjustment will be necessary because of the changed center frequency.

〔2〕 Tuning range alignment (Refer to Fig. 18 for ADJUSTMENT POINTS.)

(1) Connections

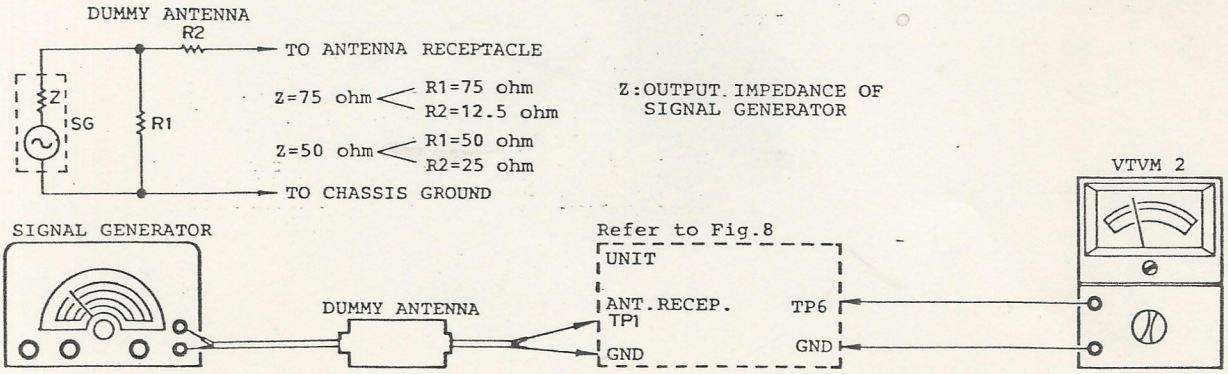


Fig. 16

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS)

STEP	PURPOSE	GENERATOR FREQUENCY	SET TUNER TO	ADJUSTMENT POINTS	PROCEDURE
1	Tuning range	87 MHz (400 Hz, 30% FM)	Low-end stop	CV 3	Adjust for maximum meter indication.
2		109.5 MHz (400 Hz, 30% FM)	High-end stop	—	109.5 MHz must be received.
3	Tracking	98 MHz (400 Hz, 30% FM)	Just tune in SG frequency	CV 1	Adjust for maximum meter indication.
4				CV 2	

〔3〕 Limiting Sensitivity

◎ Limiting sensitivity is defined as the antenna input voltage measured in the undermentioned procedure.

(a) Apply the antenna input voltage of 54 dB/μV to the receiver and adjust the volume control to get 0.5W output.

(b) Decrease the antenna input gradually so that the output gets 3 dB down, then read the input voltage. This is limiting sensitivity.

(1) Connections Refer to Fig. 16

(2) Adjustment (Refer to Fig. 18 for ADJUSTMENTS POINTS)

This model is so designed as to be 10 ± 3 dB limiting sensitivity in standard specifications.

(a) Set the output of the SSG to 54 dB (400 Hz, 30% modulated). (In case the level indicator of the SSG shows an open terminal voltage, set the level to 60 dB.)

(b) Adjust the volume control to get 0.5W (1.4V) output with the tone control at extreme treble.

(c) Reset the SSG level to 10 dB (to 16 dB in case of an open terminal indicator).

(d) Adjust the RV1 to get −3 dB (1V) of output reading.

NOTE: The receiver will not operate with the RV1 turned fully counterclockwise.

〔4〕 Noise blanker alignment

(1) Connections a. Stereo signal generator·····Connect the TP 1

b. Oscilloscope ·····Connect the TP 4

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS)

STEP	STEREO SIGNAL GENERATOR		ADJUSTMENT POINT	PROCEDURE
	FREQUENCY	OUTPUT LEVEL		
1	98.1 MHz (No modulation, Stereo mode)	60 dBμ	LT 1	After making sure of "STEREO" display, adjust the pilot signal wave (19 kHz) for minimum.

〔5〕 PLL VOC alignment

(1) Connections a. Frequency counter·····Connect the TP 5

(2) Adjustment (Refer to Fig. 18 for ADJUSTMENT POINTS)

Adjust RV4 so that the counter frequency become 19 kHz±100 Hz.

〔6〕 Separation alignment

(1) Connections a. Stereo signal generator·····Connect the TP 1

b. Oscilloscope ·····Connect the TP 6

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS)

STEP	STEREO SIGNAL GENERATOR		ADJUSTMENT POINT	PROCEDURE
	FREQUENCY	OUTPUT LEVEL		
1	98.1 MHz (Lch: 400 Hz, 30% Rch: no modulation)	60 dBμ	RV 5	Adjust R-ch. output level for minimum.

〔7〕 ATC Working sensitivity adjustment

ATC working sensitivity is expressed in terms of antenna input voltage value when the output is 3 dB down (1V) as the antenna input voltage is lowered after the volume control is adjusted so that 1V standard voltage may be obtained at 60 dBμ (10 kHz, 30% FM) specified antenna input voltage.

(1) Connections Same as separation alignment

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS)

STEP	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINT	PROCEDURE
1	98.1 MHz (10 kHz, 30%)	60 dBμ	———	Adjust volume control until the output voltage is 1.4V.
2		46 dBμ (±4 dBμ)	RV 3	Adjust the output voltage for −3 dB (1V).

〔8〕 C/N Alignment

(1) Connections Same as in Section 〔7〕

(2) Alignment (Refer to Fig. 18 for ADJUSTMENT POINTS)

STEP	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR OUTPUT LEVEL	ADJUSTMENT POINT	PROCEDURE
1	98.1 MHz (400 Hz, 30%)	60 dBμ	———	Adjust volume control so that the output voltage may be 1V.
2	Disconnect the signal generator		RV 2	Adjust the output voltage (residual noise) for 32mV.

ADJUSTMENT POINTS

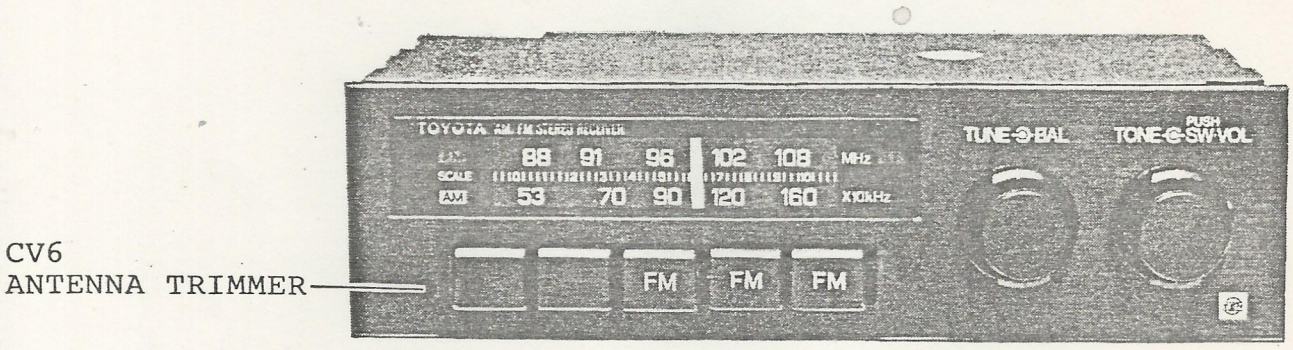


Fig. 17 (C33073021)

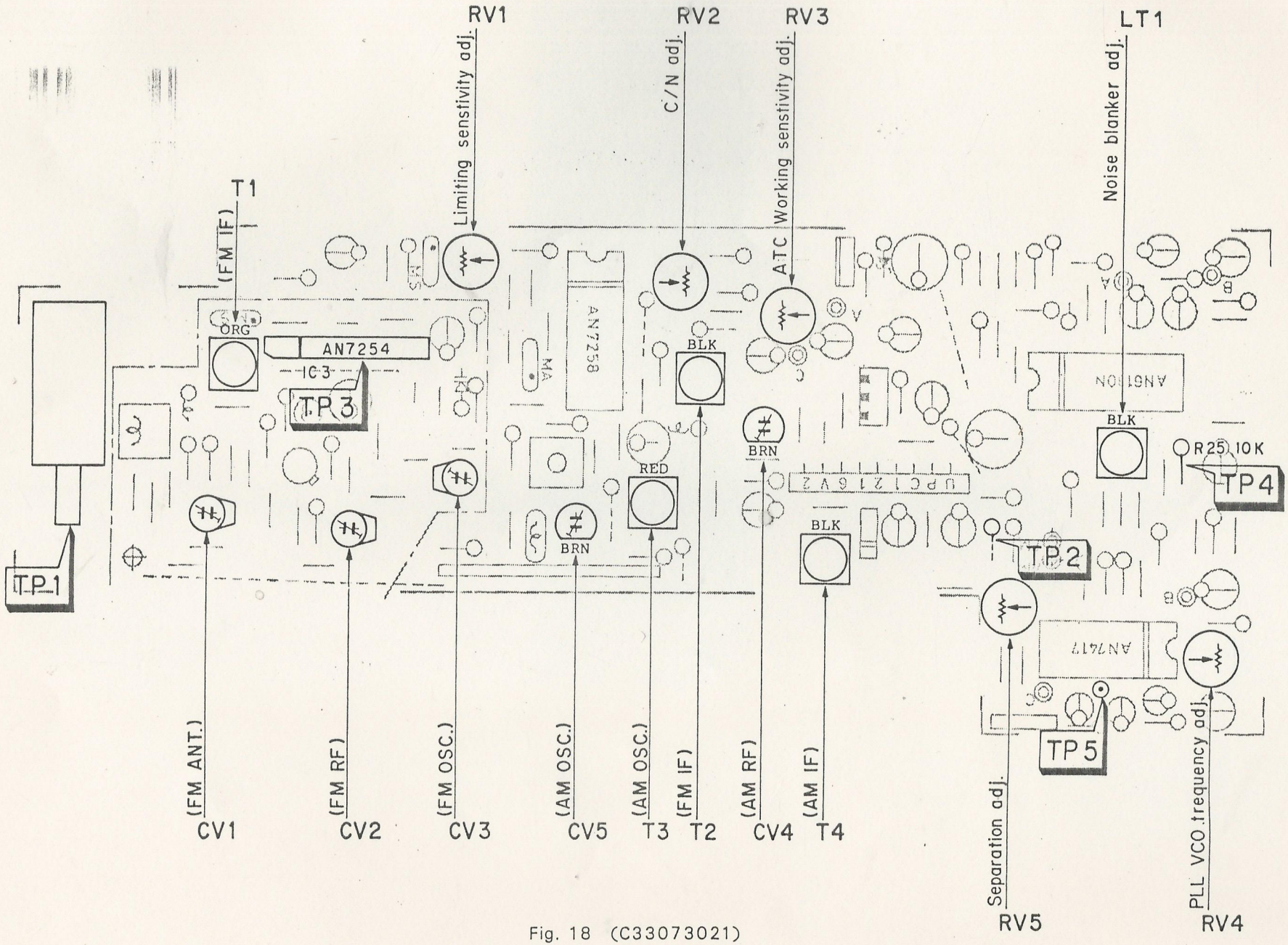


Fig. 18 (C33073021)

EXPLODED VIEW

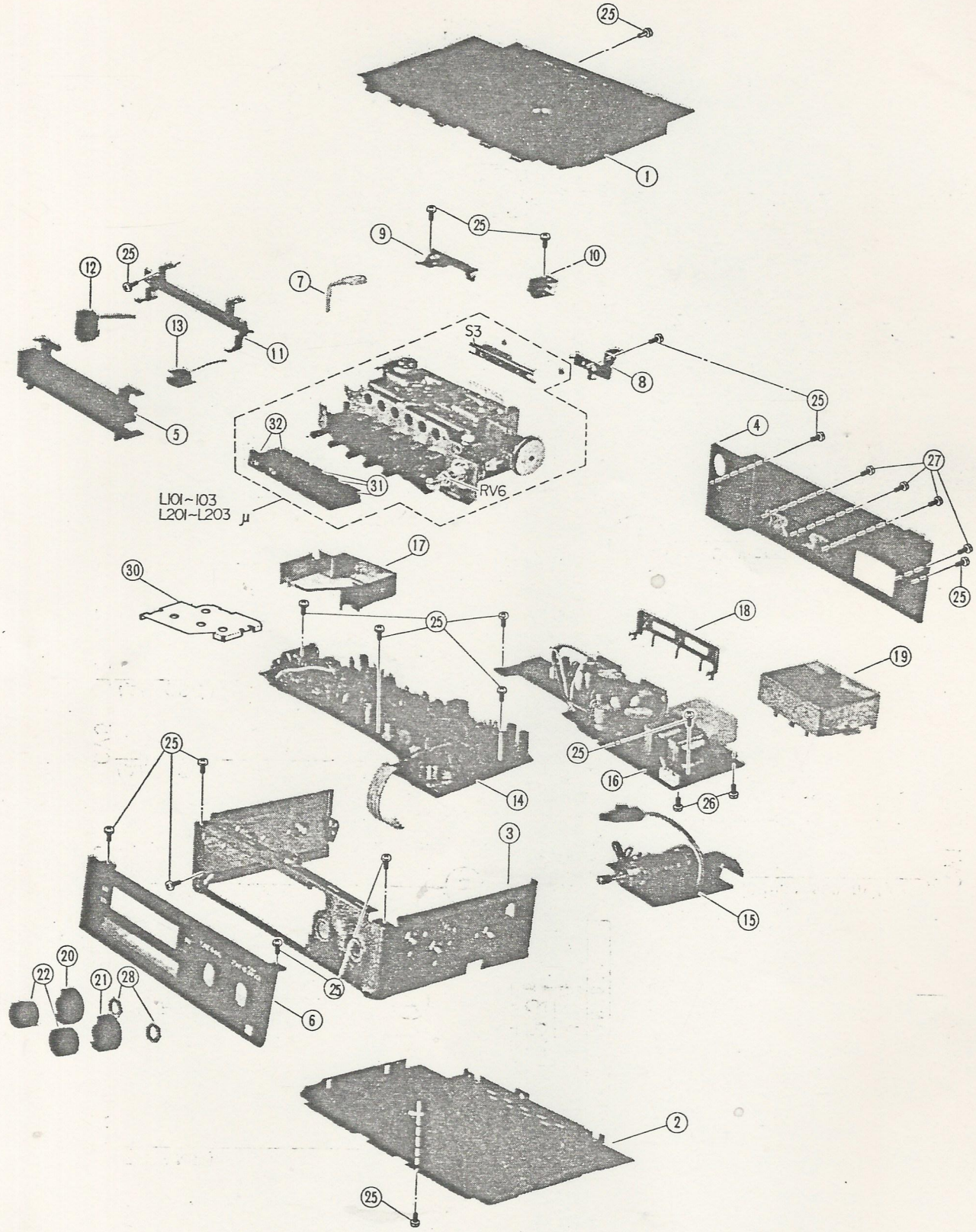


Fig. 19 (C28073021)

REPLACEMENT PARTS LIST

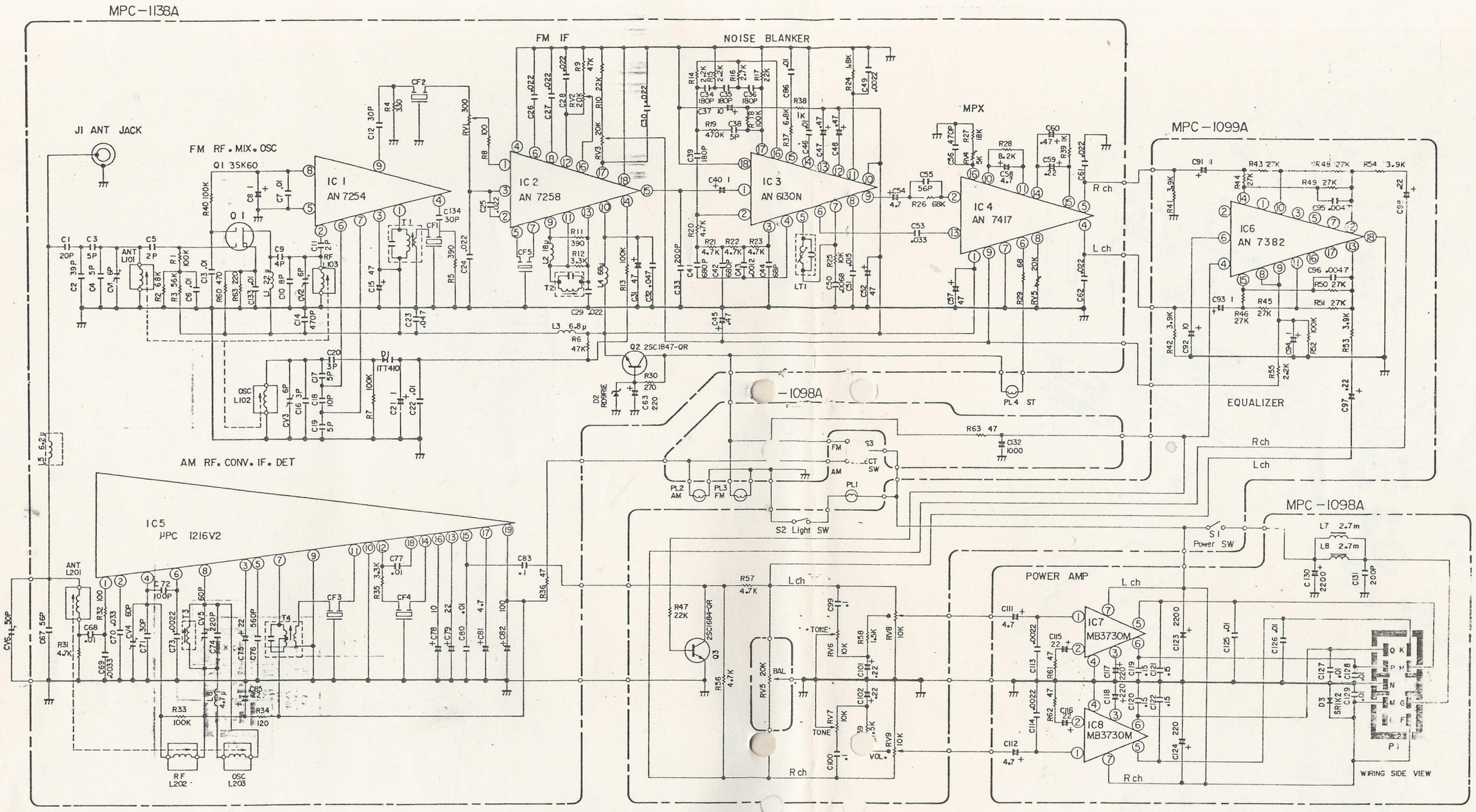
〔AR-3021〕
〔AR-3022〕

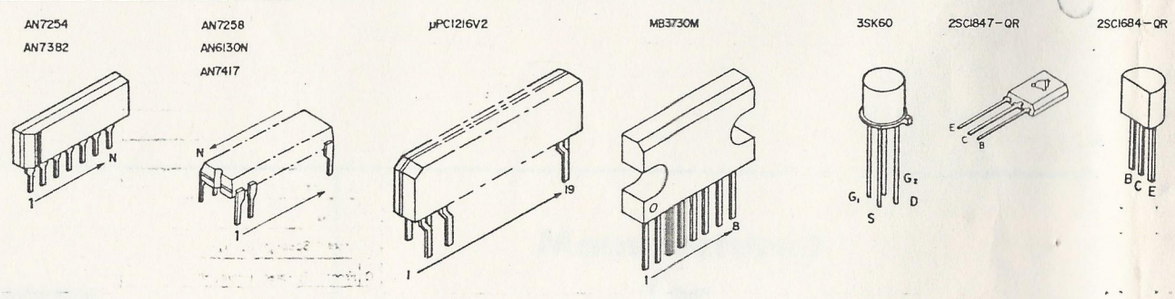
Symbol No.	Stock No.	Description		
CAPACITORS				
C 1	RN-ECC-DSL200JY	20 pF	50V	ceramic
C 2	RN-ECC-DSL390JY	39 pF	〃	〃
C 3, 4, 38	RN-ECC-DSL050CY	5 pF	〃	〃
C 5, 11	RN-ECC-DSL020CY	2 pF	〃	〃
C 6, 13, 125 126, 127, 128 129, 133	RN-ECK-DYR103M	.01 μF	〃	〃
C 7, 22, 46, 68 77, 80, 86	RN-ECB-DOX103E	.01 μF	25V	ceramic
C 8	RN-ECE-M1R0V50	1 μF	50V	electrolytic
C 9	RN-ECC-DSL040CY	4 pF	〃	ceramic
C10	RN-ECC-DSL080DY	8 pF	〃	〃
C12, 71, 134	RN-ECC-DSL300JY	30 pF	〃	〃
C14	RN-ECK-DB471KY	470 pF	50V	ceramic
C15, 31, 52, 57	RN-ECE-M470V10-4	47 μF	10V	electrolytic
C16, 20	RN-ECC-DTJ030D-2	3 pF	50V	ceramic
C17, 19	RN-ECC-DUJ050CY	5 pF	〃	〃
C18	RN-ECC-DUJ100DY	10 pF	〃	〃
C21, 40, 93, 94	RN-ECE-M1R0V50	1 μF	50V	electrolytic
C23, 32	RN-ECB-DOX473E	.047 μF	25V	ceramic
C24, 25, 26, 28 29, 30, 61, 62	RN-ECB-DOX223E	.022 μF	〃	〃
C33, 141	RN-ECC-DSL201JY	200 pF	50V	〃
C34, 35, 36, 39	RN-ECG-DSA181J	180 pF	〃	〃
C37, 78, 92	RN-ECE-M100V16	10 μF	16V	electrolytic
C41, 42	RN-ECK-DB681KY	680 pF	50V	ceramic
C43	RN-ECK-DB122KY	.0012 μF	〃	〃
C44	RN-ECC-DSL680JY	68 pF	〃	〃
C45, 47, 48, 60	RN-ECE-MR47V50	.47 μF	〃	electrolytic
C 49, 73 113, 114	RN-ECK-DB222KY	.0022 μF	50V	ceramic
C50	RN-ECB-DOX682E	.0068 μF	25V	〃
C51	RN-ECB-DOX153E	.015 μF	〃	〃
C53, 70	RN-ECB-DOX333E	.033 μF	〃	〃
C 54, 81 111, 112	RN-ECE-M4R7V25	4.7 μF	〃	electrolytic
C55, 67	RN-ECC-DSL560JY	56 pF	50V	ceramic
C56	RN-ECQ-M471J50-05A	470 pF	〃	styrol
C59, 97, 98 101, 102	RN-ECE-MR22V50	.22 μF	〃	electrolytic
C63, 117, 118	RN-ECE-M221V10-4	220 μF	10V	〃
C69	RN-ECK-DB332KY	.0033 μF	50V	ceramic
C72	RN-ECC-DSL101JY	100 pF	50V	ceramic
C74	RN-ECC-DSH221JY	220 pF	〃	〃
C75, 79, 85 115, 116	RN-ECE-M220V16-3	22 μF	16V	electrolytic
C76	RN-ECK-DB561KY	560 pF	50V	ceramic
C82	RN-ECE-M101V16-4	100 μF	16V	electrolytic
C83, 99, 100	RN-ECB-DBC104B	.1 μF	16V	ceramic
C95, 96	RN-ECB-COX472E	.0047 μF	25V	〃
C117, 118	RN-ECE-M221V10-4	220 μF	10V	electrolytic
C119, 120 121, 122	RN-ECJ-MR15Z25-09F	.15 μF		alox
C123, 130	RN-ECE-M222V16-4	2200 μF	16V	electrolytic
C124	RN-ECE-M221V16-1	220 μF	16V	electrolytic
C132	RN-ECE-M102V16-3	1000 μF	〃	〃

Symbol No.	Stock No.	Description			
VARIABLE CAPACITORS					
CV 1, 2	RN-ECV-A06-77	6 pF	FM ANT, OSC, RF trimmer		
CV 4, 5	RN-ECV-A60-73	60 pF	AM OSC, RF trimmer		
RESISTORS					
R 1, 7,13,18 33,40,52	RN-ERD-AE104JB	100k ohm	5%	¼W	carbon
R 2, 26	RN-ERD-AE683JB	68k ohm	〃	〃	〃
R 3	RN-ERD-AE563JB	56k ohm	〃	〃	〃
R 4	RN-ERD-AE331JB	330 ohm	〃	〃	〃
R 5, 11	RN-ERD-AE391JB	390 ohm	〃	〃	〃
R 6, 9	RN-ERD-AE473JB	47k ohm	5%	¼W	carbon
R 8, 32	RN-ERD-AE101JB	100 ohm	〃	〃	〃
R10, 17, 47	RN-ERD-AE223JB	22k ohm	〃	〃	〃
R12, 35	RN-ERD-AE332JB	33k ohm	〃	〃	〃
R14, 15, 55	RN-ERD-AE222JB	2.2k ohm	〃	〃	〃
R16	RN-ERD-AE272JB	2.7k ohm	5%	¼W	carbon
R19	RN-ERD-AE474JB	470k ohm	〃	〃	〃
R20,21,22,23 31,56,57	RN-ERD-AE472JB	4.7k ohm	〃	〃	〃
R24	RN-ERD-AE182JB	1.8k ohm	〃	〃	〃
R25	RN-ERD-AE103JB	10k ohm	〃	〃	〃
R27	RN-ERD-AE183JB	18k ohm	5%	¼W	carbon
R28	RN-ERD-AE822JB	8.2k ohm	〃	〃	〃
R29	RN-ERD-AE680JB	68 ohm	〃	〃	〃
R30	RN-ERD-AE271JB	270 ohm	〃	〃	〃
R34	RN-ERD-AE121JB	120 ohm	〃	〃	〃
R36,61,62,64	RN-ERD-AE470JB	47 ohm	5%	¼W	carbon
R37	RN-ERD-AE682JB	6.8k ohm	〃	〃	〃
R38, 39	RN-ERD-AE102JB	1k ohm	〃	〃	〃
R41, 42, 53	RN-ERD-AE392JB	3.9k ohm	〃	〃	〃
R43,44,45,46 48,49,50,51	RN-ERD-AE273JB	27k ohm	〃	〃	〃
R54	RN-ERD-AC392JA	3.9k ohm	5%	⅛W	carbon
R58, 59	RN-ERD-AE152JB	1.5k ohm	〃	¼W	〃
R60	RN-ERD-AE471JB	470 ohm	〃	〃	〃
R63	RN-ERD-AE221JB	220 ohm	〃	〃	〃
VARIABLE RESISTORS					
RV 1	RN-ERV-0N1-188	300 ohm			
RV 2, 3, 5	RN-ERV-0N1-192	20k ohm			
RV 4	RN-ERV-0N1-190	5k ohm			
RV 6,7,8,9	RN-ERV-2P4-13	Tone : 10k ohm	Volume : 10k ohm		

Symbol No.	Stock No.	Description
SEMICONDUCTORS		
IC 1	RN-EIC-AN7254	FM RF, MIX, OSC
IC 2	RN-EIC-AN7258	FM IF
IC 3	RN-EIC-AN6130N	NOISE BLANKER
IC 4	RN-EIC-AN7417	MPX
IC 5	RN-EIC-UPC1216V2	AM RF, CONV, IF, DET
IC 6	RN-EIC-AN7382	EQUALIZER
IC 7, 8	RN-EIC-MB3730M	POWER AMP.
Q 1	RN-EVF-3SK60	FET
Q 2	RN-EVS-2SC1847-QR	Silicon transistor
Q 3	RN-EVS-2SC1684-QR	Silicon transistor
D 1	RN-EDC-ITT410	Variable capacitor diode
D 2	RN-EDT-RD9R1E-C	Zener diode, 9V
D 3	RN-EDS-SR1K2	Silicon diode
TRANSFORMERS		
T 1	RN-ETF-131/F0	FM IF, 10.7 MHz (ORG)
T 2	RN-ETF-140	FM IF, 10.7 MHz (BLK)
T 3	RN-ETH-1003	AM OSC. (RED)
T 4	RN-ETA-1004	AM IF, 455 kHz (BLK)
COILS		
L 1	RN-ELH-C2R2	Choke, 2.2 μH
L 2	RN-ELH-C180/F0	Choke, 18 μH
L 3	RN-ECH-C6R8-2	Choke, 6.8 μH
L 4	RN-ECH-C680-2	Choke, 68 μH
L 5	RN-ELT-B6R2-2/F0	Choke, 6.2 μH
L 6	RN-ELH-C4R7-3/F0	Choke, 4.7 μH
L 7, 8	RN-ELL-205	Choke, filter, 2.7 mH
LT 1	RN-ELT-1002	FM IF trap, 10.7 MHz
CERAMIC FILTERS		
CF 1, 2, 5	RN-EFC-F2-122	FM IF 10.7 MHz
CF 3	RN-EFC-A2-121	AM IF 455 kHz
CF 4	RN-EFC-A1-120	AM IF 455 kHz
TUNER COMPONENT		
μ	RN-ETB-2R-149	Pushbutton μ tuner assembly (assembly of the following six parts) AR-3022 only
	RN-ETB-2R-148	Pushbutton μ tuner assembly (assembly of the following six parts) AR-3021 only
L101, 103 201, 203	RN-ETR-L-1010	AM/FM coil assembly
	RN-ETR-J-1012	Button, AM
	RN-ETR-J-1013	Button, FM
RV 5	RN-ETR-T-1009	Tuning shaft and balance control
CV 6	RN-ETR-Z-1011	Antenna trimmer
S 3	RN-ETR-K-1005	AM/FM selector switch
MISCELLANEOUS ELECTRICAL		
J 1	RN-EJA-114	Antenna jack
J 2	RN-EWJ-2474A	Lead assembly
PL 1	RN-EPM-1009A	Lamp assembly
PL 2	RN-EPL-74-4	Lamp, AM
PL 3	RN-EPL-74-15	Lamp, FM
PL 4	RN-EPL-32A	Lamp, ST
P 1	RN-EJU-S09-404/AA	9P connector

SCHEMATIC





F	ANT. AMP. Power Supply
G	Power Supply +13.2VDC.
H	Front Speaker (Left, +)
K	Front Speaker (Right, +)
L	NC
M	Speaker AMP. Power Supply
N	Ground
P	Front Speaker (Left, −)
Q	Front Speaker (Right, −)

Fig 10 (C24073021)

NOTES:
1. All resistance in ohm, $K=10^3$
2. All capacitance in μF, $P=\mu\mu F$
3. All inductance in henly, $m=10^{-3}$, $\mu=10^{-6}$
4. DC voltage against the chassis measured with 100k ohm/volt meter, power supply set at +13.2 VDC no signal input.

WIRING ON PC BOARDS

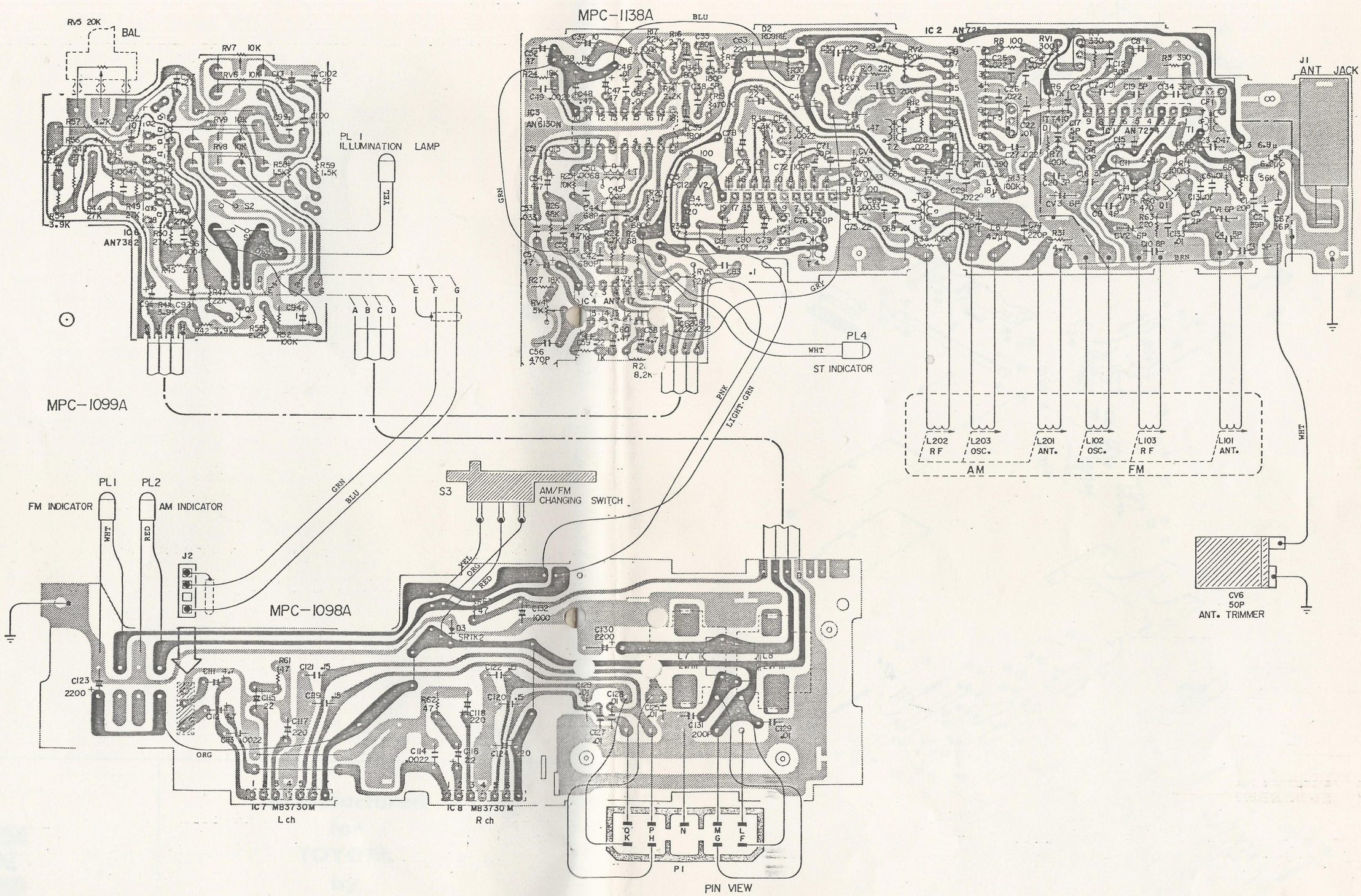


Fig. 11 (C27703021)