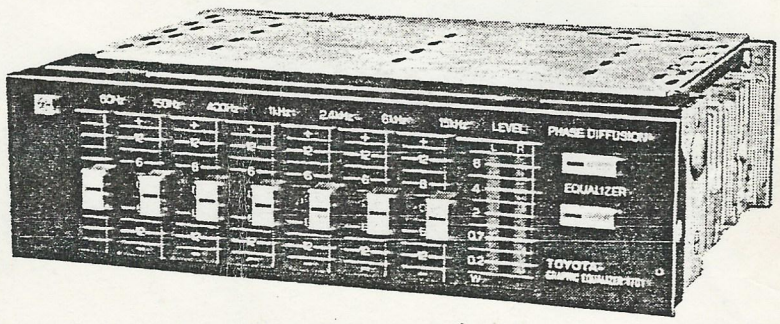
SM-419

"TEN" SERVICE MANUAL

GRAPHIC EQUALIZER

TOYOTA PART No.	FUJITSU TEN MODEL No.	VEHICLE
86280-14180	UE-101	CELICA, CELICA SUPRA COROLLA (Produced after August '81)



GENERAL

This unit is five amplifiers built-in graphic equalizer which is specifically designed and manufactured for exclusive use in TOYOTA CELICA, CELICA SUPRA and COROLLA in combination with Toyota custom-mode auto radio Toyota Part No. 86120-14370 (CE-4231), 86120-14380 (CE-4232), and features as follows :

* Audio frequency ranges are divided into seven different sections (60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz), allowing gain control (−11 dB to +11 dB) of each frequency band.
* The equalizer is provided with a defeat switch which is LED displayed to enhance operability in the night-time
* This is provided with the output indicators (0.2W, 0.7W, 2W, 4W, 8W) for the right and left channels.
* Stereo feeling can be increased by inverting the phase only for the front left channel.

TOYOTA MOTOR SALES CO., LTD.

COMPOSITION

86280-19045 (UE-101TM1)	Graphic equalizer	86280-14180 (UE-101)	1
	Screw,	93229-15008 (F6-SSA-5 x 8S)	4
	Screw,	93315-15010 (F6-SW2NA-5 x 10S)	4

COMBINATION

SUPRA

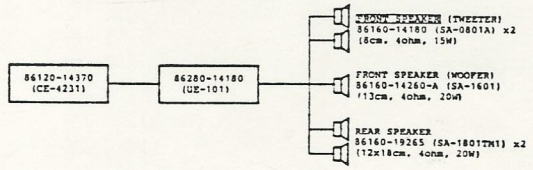


Fig. 1-1

CELICA LB, COUPE

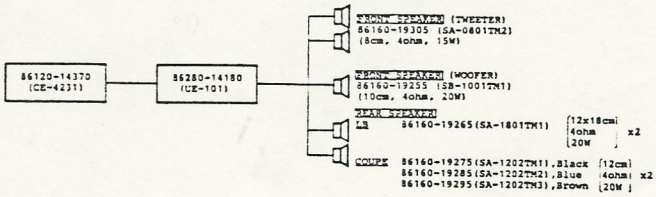


Fig. 1-2

COROLLA LB, COUPE

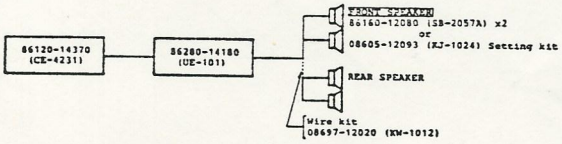


Fig. 2-1

COROLLA SEDAN, WAGON

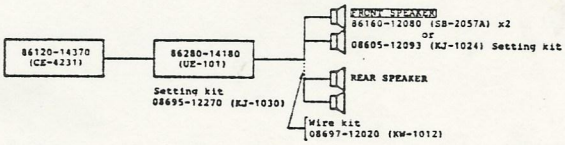


Fig. 2-2

HOW TO ORDER REPLACEMENT PARTS FROM THIS SERVICE MANUAL

(For countries other than North America, Canada, 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 to require, referring to the replacement parts list in this service manual.

EXAMPLE : RN-EIC-MB3731M Semiconductor

BLOCK DIAGRAM

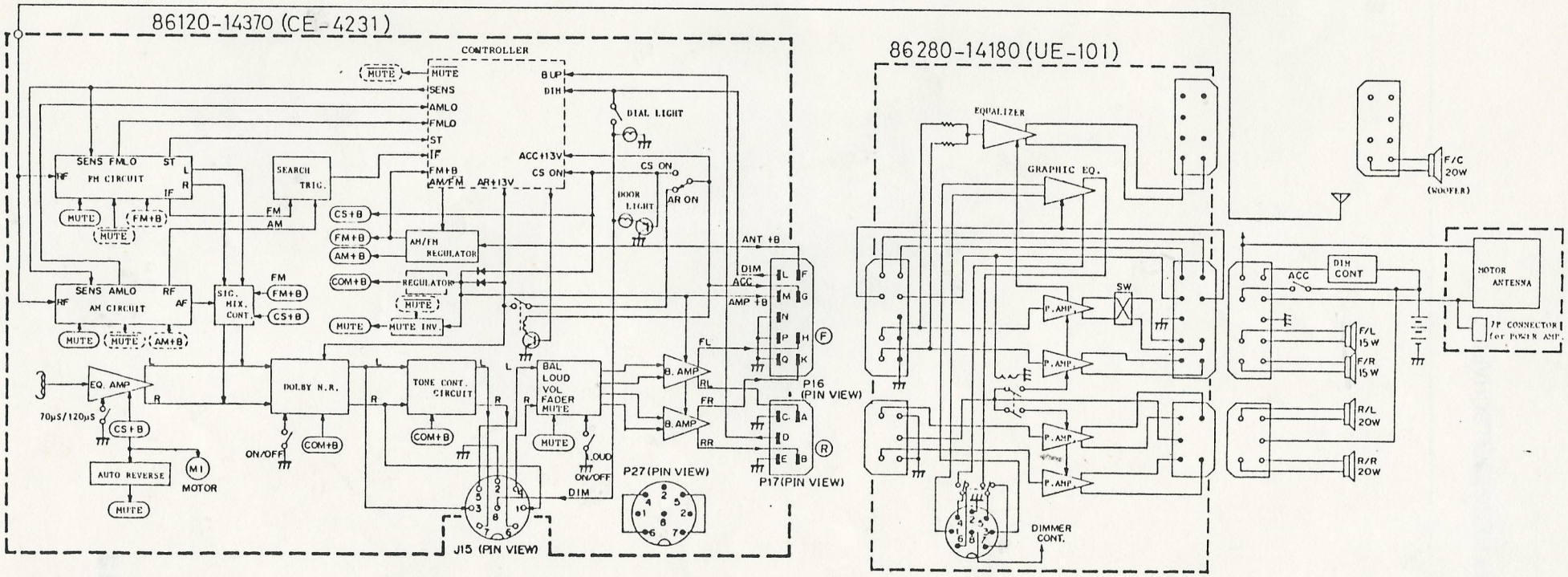


Fig. 3 (C32130101)

CONNECTIONS

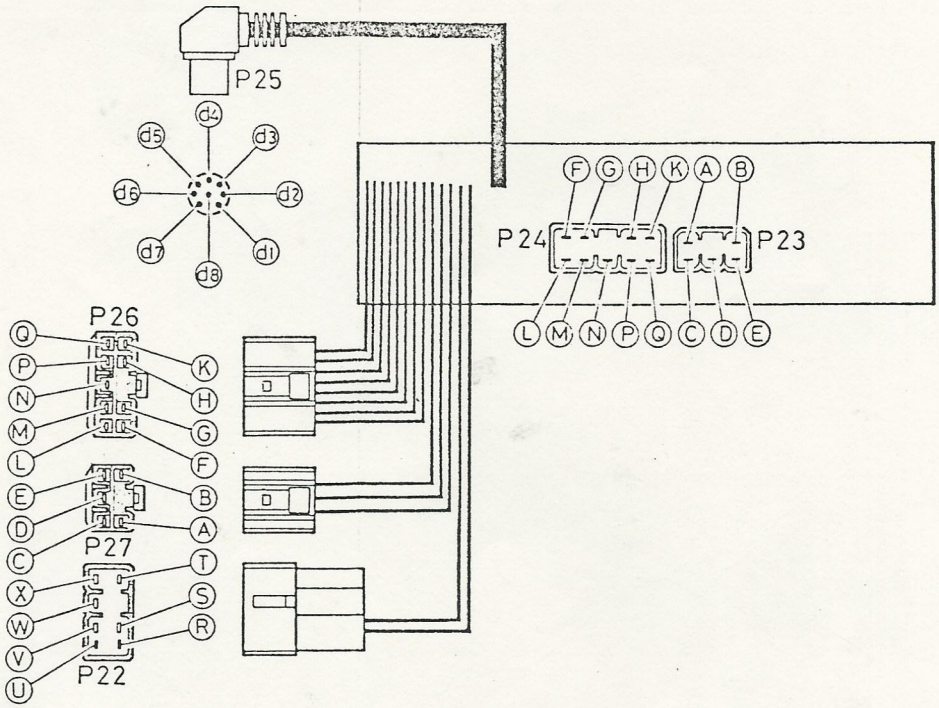


Fig. 4 (C23670101)

P22 CONNECTOR	
R	Speaker Front woofer (+)
S	NC
T	NC
U	Speaker Front woofer (−)
V	NC
W	NC
X	NC

P23 CONNECTOR	
A	Speaker (L ch) Rear (+)
B	Speaker (R ch) Rear (+)
C	Speaker (L ch) Rear (−)
D	Power supply +13.2 VDC
E	Speaker (R ch) Rear (−)

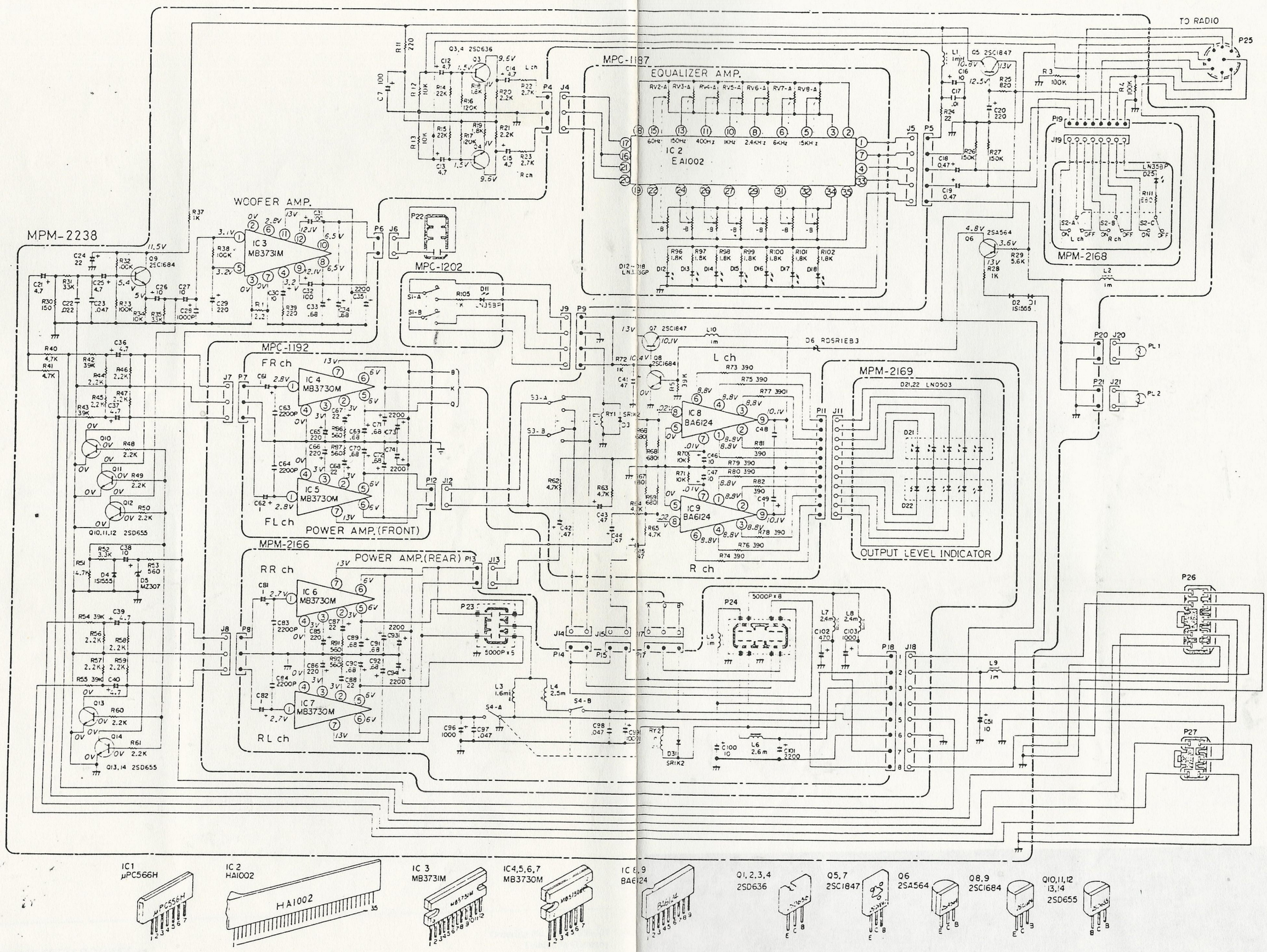
P24 CONNECTOR	
F	Power supply (Antenna amp.)
G	Power supply +13.2 VDC
H	Speeker (L ch) Front (+)
K	Speaker (R ch) Front (+)
L	Power supply (illumination)
M	Power supply (motor antenna)
N	Ground
P	Speaker (L ch) Front (−)
Q	Speaker (R ch) Front (−)

P25 CONNECTOR	
d 1	Audio signal input (L ch)
d 2	Audio signal input (L ch) Graphic EQ.
d 3	Audio signal output (L ch)
d 4	Ground
d 5	Audio signal input (R ch)
d 6	Audio signal input (R ch) Graphic EQ.
d 7	Audio signal output (R ch)
d 8	Power supply (illumination)

P26 CONNECTOR	
F	Power supply (Antenna amp.)
G	Power supply +13.2 VDC
H	Audio signal input (L ch)
K	Audio signal input (R ch)
L	Power supply (illumination)
M	Power supply (motor antenna)
N	Ground
P	Ground
Q	Ground

P27 CONNECTOR	
A	Audio signal input (L ch) Rear
B	Audio signal input (R ch) Rear
C	Ground
D	Power supply (Battery)
E	Ground

SCHEMATIC



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}
4. DC voltage against the chassis measured with 100k ohm/volt meter, power supply set at +13.2 VDC, no signal input.

Fig. 5 (C24680101)

WIRING ON PC BOARD

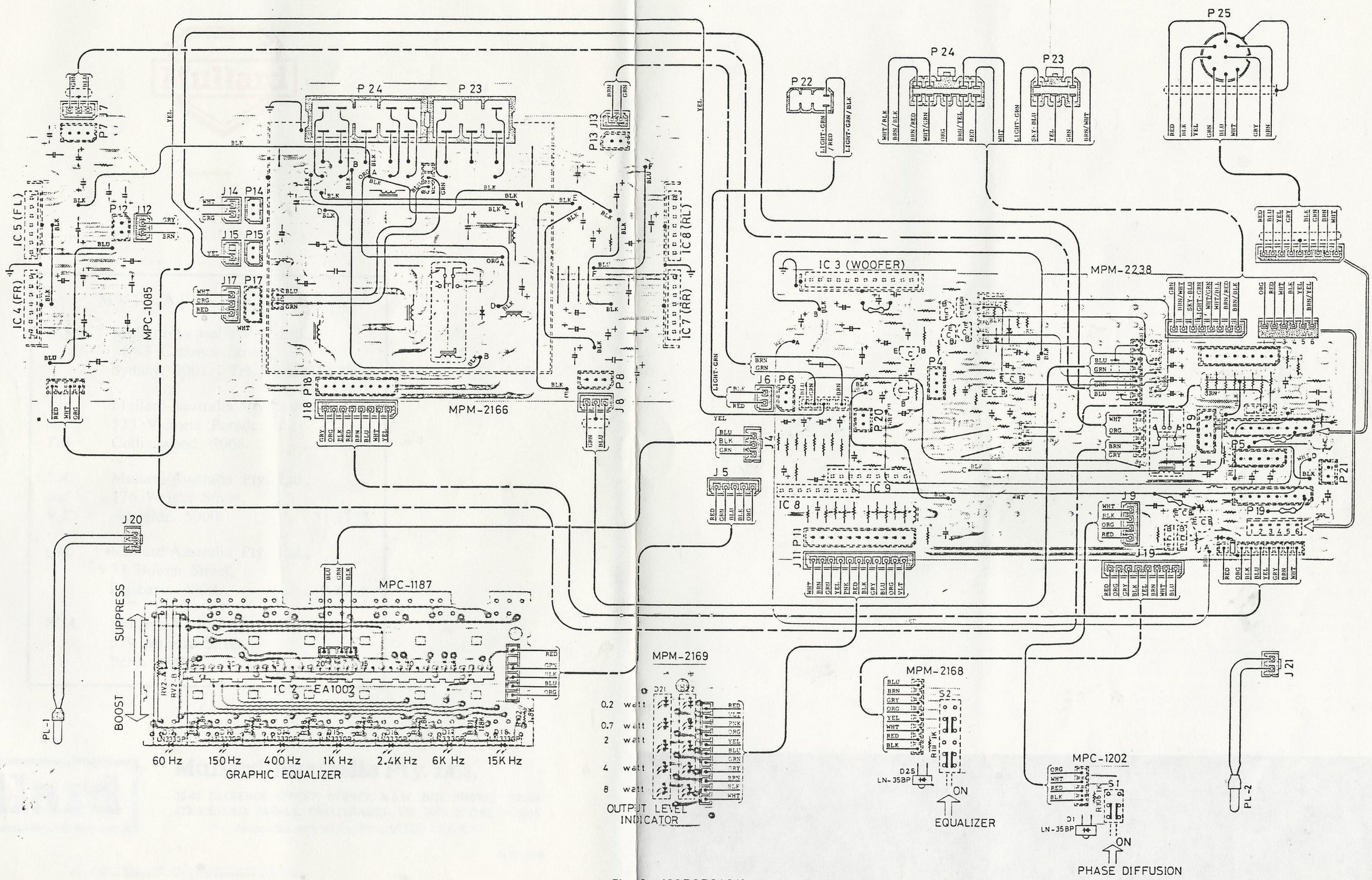


Fig. 6 (C27670101)

SPECIFICATIONS

[UE-101]

(GRAPHIC EQUALIZER SECTION)

INPUT IMPEDANCE ····· 6.5k ohm

OUTPUT IMPEDANCE ····· 4.7k ohm

GAIN ····· 0 ± 3 dB (at 1 kHz 100 mV input)

SIGNAL TO NOISE RATIO ····· 50 dB or better (at 1 kHz 100 mV input)

FREQUENCY RESPONSE ····· 60 Hz to 20 kHz (± 3 dB, 1 kHz base)

ADJUSTABLE RANGE OF TONE CONTROL ····· +11 dB ± 3 dB (60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz)
−11 dB ± 3 dB

(WOOFER AMP. SECTION)

INPUT IMPEDANCE ····· 4.7k ohm

SPEAKER IMPEDANCE ····· 4 ohm

POWER OUTPUT ····· 15 watts min. RMS (at 100 Hz, T.H.D.=10%)

FREQUENCY RESPONSE ····· 40 Hz to 100 Hz (± 2 dB, or better)
−10 dB or better at 500 Hz

SIGNAL TO NOISE RATIO ····· 50 dB or better (at 100 Hz 1 watts output)

(POWER AMP. SECTION)

INPUT IMPEDANCE ····· 40k ohm

SPEAKER IMPEDANCE ····· 4 ohm 4-channels

POWER OUTPUT ····· 8 watts min. RMS (at 1 kHz T.H.D.=10%) 4-ch

SIGNAL TO NOISE RATIO ····· 50 dB or better (at 1 kHz, 1 watts output)

(COMMON SECTION)

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

Voltage ····· 13.2 VDC

Current ····· Max. 9 ampere

SEMICONDUCTOR ····· 8 ICs, 12 Transistors, 24 Diodes

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

WEIGHT ····· Unit—1.25 kg (2.8 lbs)

WOOFER AMP. PC BOARD (MPM-2238)

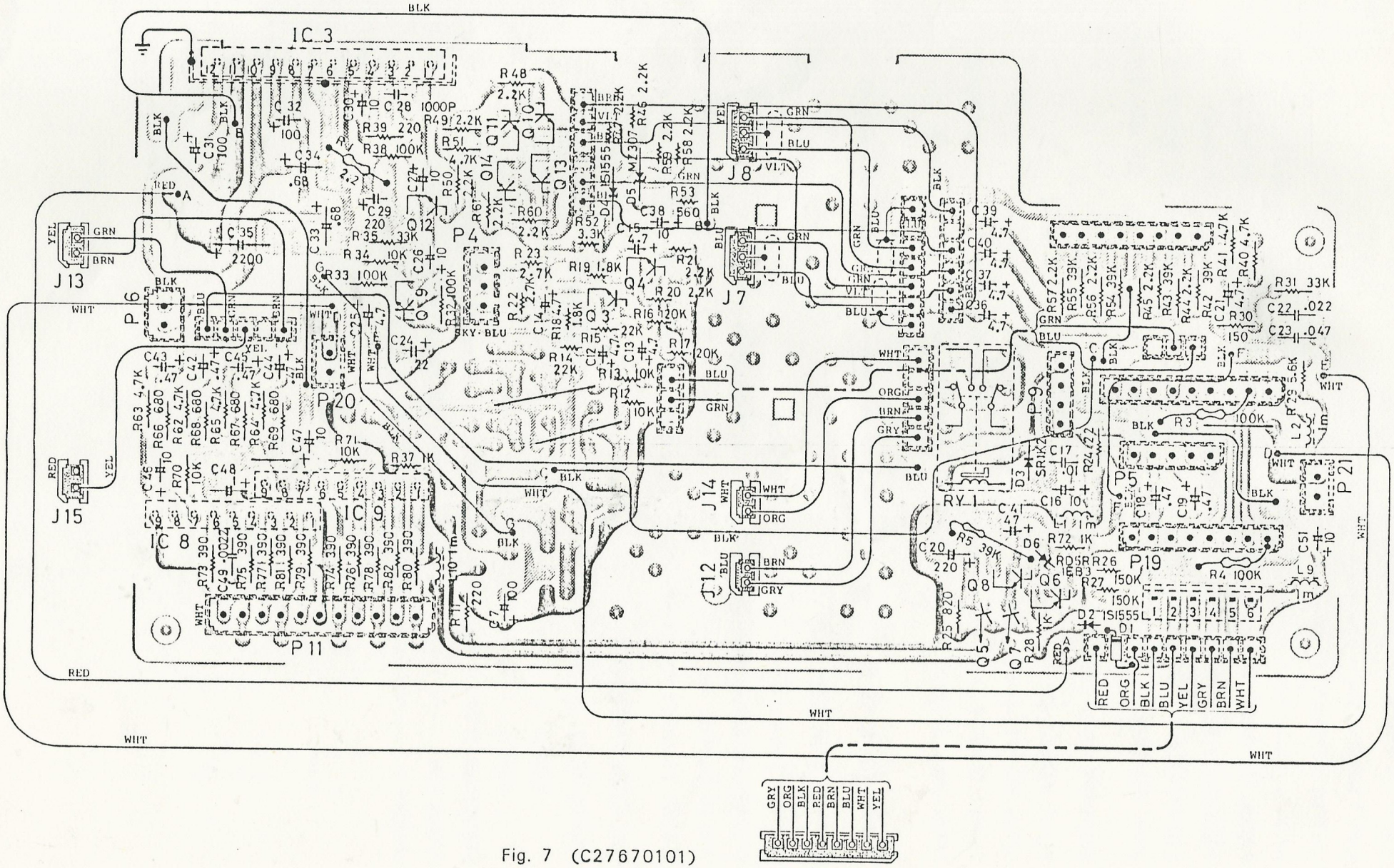


Fig. 7 (C27670101)

POWER SUPPLY AND POWER AMP. PC BOARD (MPM-2166)

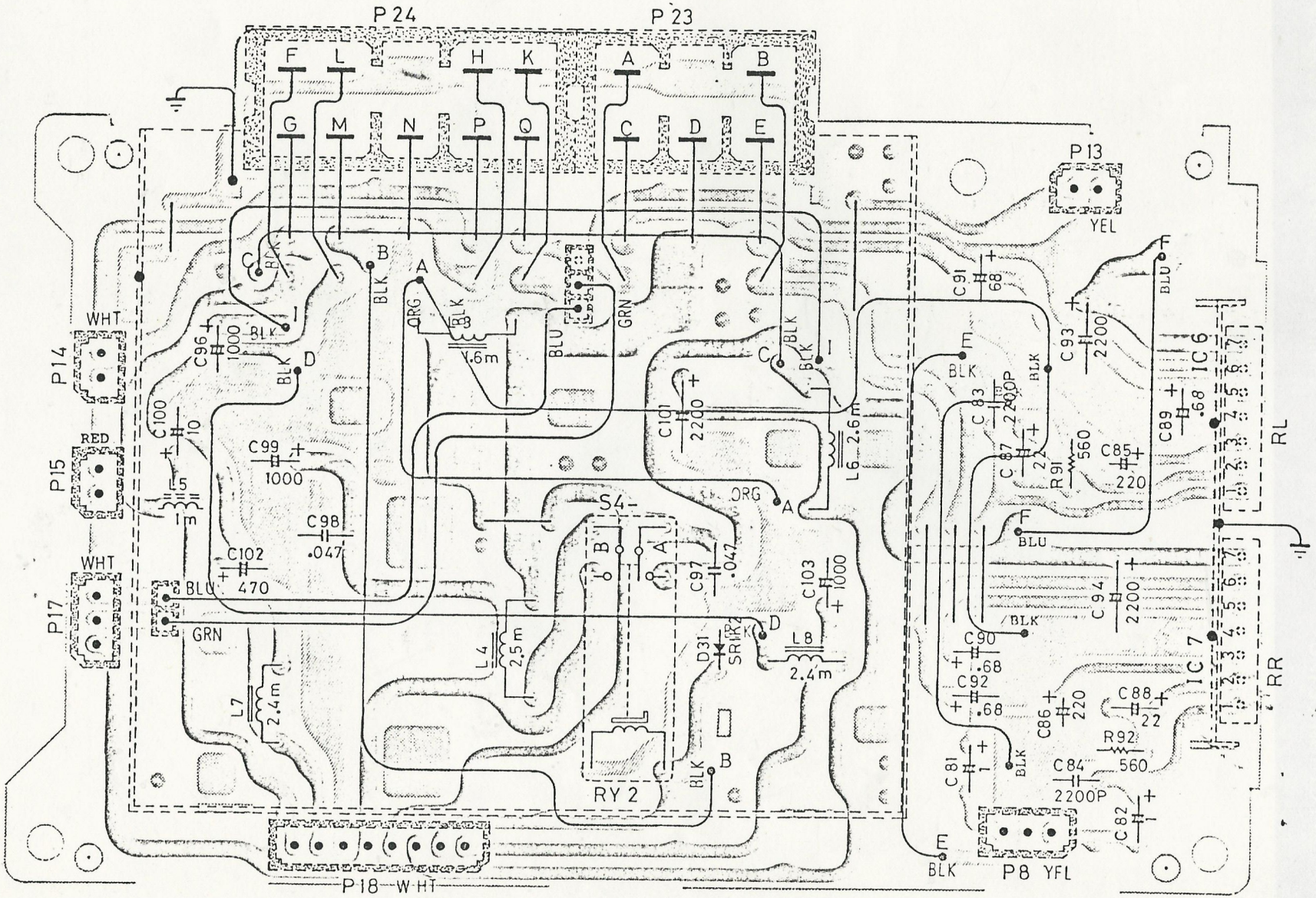


Fig. 8 (C27670101)

POWER AMP. (FRONT) PC BOARD (MPC-1085)

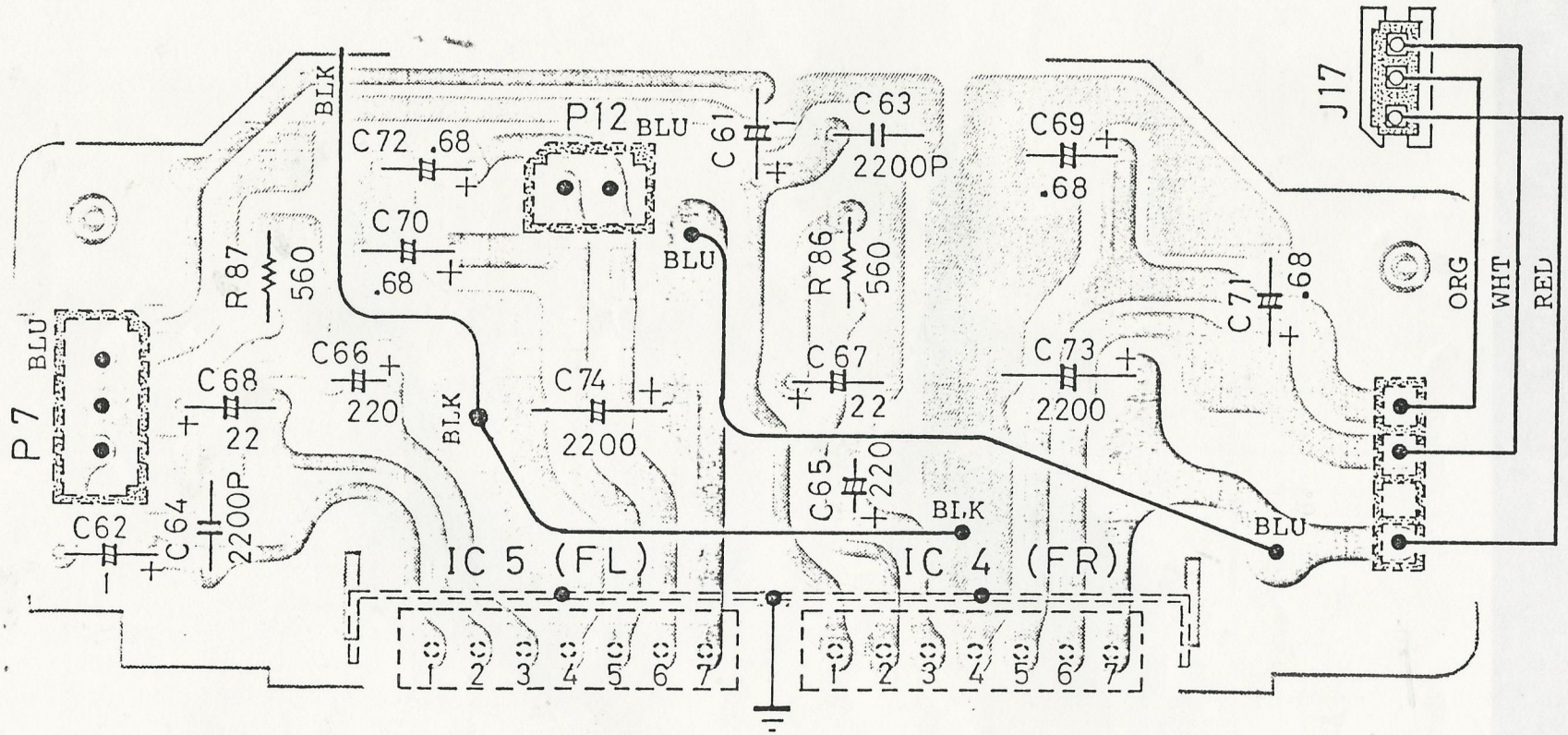


Fig. 9 (C27670101)

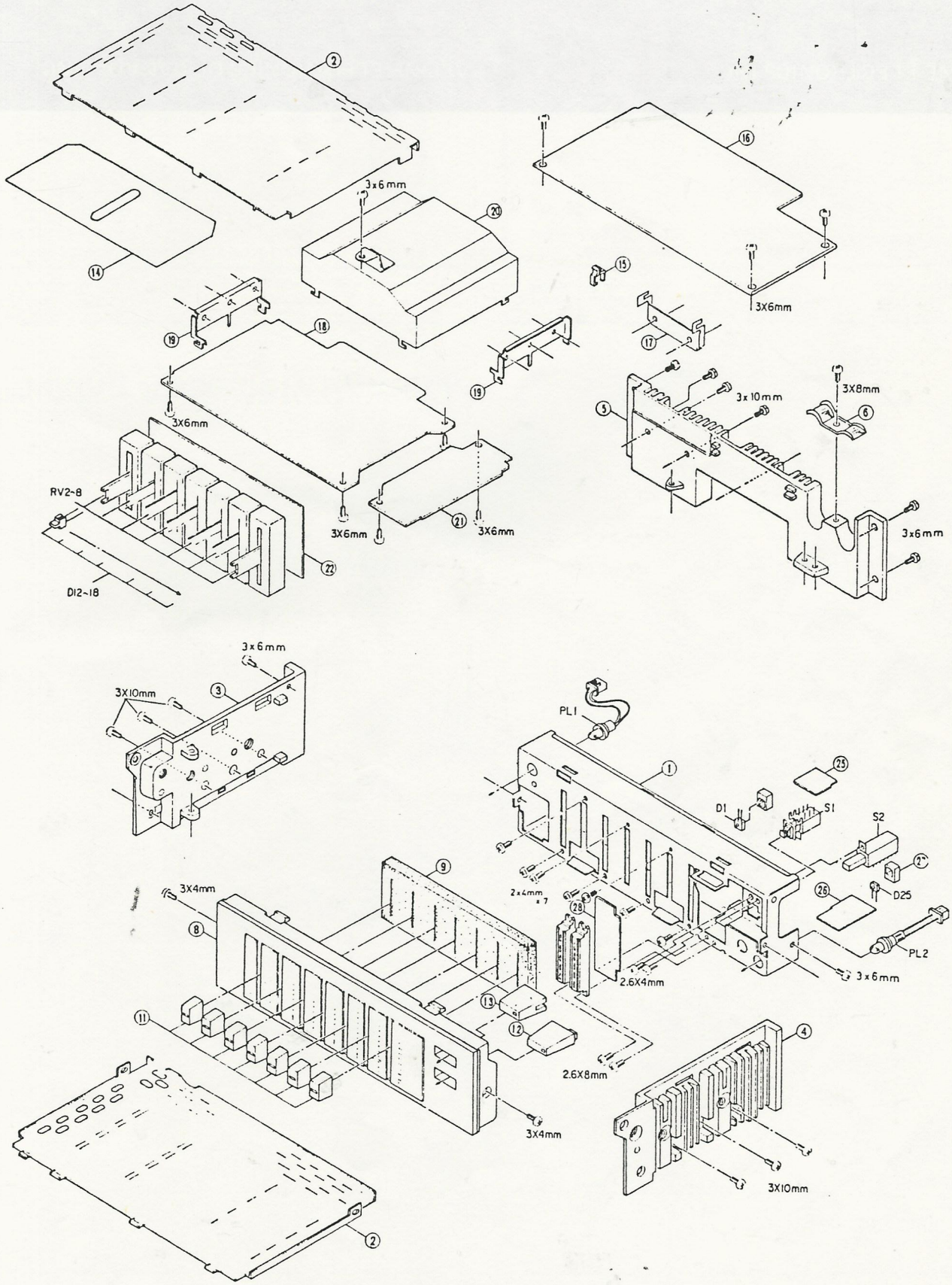


Fig. 10 (C28670101)

Symbol No.	Stock No.	Description			
R30	RN-ERD-AE151JB	150 ohm	5%	¼W	carbon
R31, 35	RN-ERD-AE333JB	33k ohm	〃	〃	〃
R40,41,51,62 63,64,65	RN-ERD-AE472JB	4.7k ohm	〃	〃	〃
R52	RN-ERD-AE332JB	3.3k ohm	〃	〃	〃
R53, 86, 87 91, 92	RN-ERD-AE561JB	560 ohm	〃	〃	〃
R66, 67, 68 69,111	RN-ERD-AE681JB	680 ohm	5%	¼W	carbon
R73,74,75,76 77,78,79,80 81,82	RN-ERD-AE391JB	390 ohm	〃	〃	〃
VARIABLE RESISTORS					
RV 2-8	RN-ERV-9N2-136	20k ohm			
SEMICONDUCTORS					
IC 2	RN-EIE-EA100~~5~~2	Graphic equalizer, hibrid IC			
IC 3	RN-EIC-MB3731M	Power amp., woofer, linear-monolithic			
IC 4, 5, 6, 7	RN-EIC-MB3730M	Power amp., front and rear, linear-monolithic			
IC 8, 9	RN-EIC-BA6124	Output level indicator control, linear-monolithic			
Q 3, 4	RN-EVS-2SD636-QR	Silicon transistor			
Q 5, 7	RN-EVS-2SC1847-PQR	Silicon transistor			
Q 6	RN-EVS-2SA564-QR	Silicon transistor			
Q 8, 9	RN-EVS-2SC1684-QR				
Q10, 11, 12 13, 14	RN-EVS-2SD655	Silicon transistor			
D 1, 2, 4	RN-EDS-1S1555	Silicon diode			
D 3, 31	RN-EDS-SR1K2	Silicon diode			
D 5	RN-EDT-MZ307	Zener diode, 7V			
D 6	RN-EDT-RD5R1EB3	Zener diode, 5V			
D11, 25	RN-EDP-LN35BP	Light emitting diode			
D21, 22	RN-EDP-LN05303P	Light emitting diode			
D12 to 18	RN-EDP-LN333GP	Light emitting diode			
COILS					
L 1, 10	RN-ELH-C102-3	Choke, 1 mH			
L 2, 5, 9	RN-ELH-C102-1	Choke, 1 mH			
L 3	RN-ELL-331	Choke, filter, 1.6 mH			
L 4	RN-ELL-329	Choke, filter, 2.5 mH			
L 6	RN-ELL-336	Choke, filter, 2.6 mH			
L 7, 8	RN-ELL-328	Choke, filter, 2.4 mH			
MISCELLANEOUS ELECTRICAL					
J 4	RN-EWJ-2401	3P connector (GRN) and lead assy.,			
J 5	RN-EWJ-2400	5P connector (WHT) and lead assy.,			
J 6 P22, 26, 27	RN-EWJ-2382	9P-5P connector and lead assy.,			
J 7, 8	RN-EWJ-2407	3P connector (BLU) and lead assy.,			
J 9	RN-EWJ-2403	4P connector (WHT) and lead assy.,			
J11	RN-EWJ-2399	11P connector (WHT) and lead assy.,			
J12, 14	RN-EWJ-2405	2P (BLU) - 2P (WHT) connector and lead assy.,			
J13, 15	RN-EWJ-2406A	2P (RED) - 2P (YEL) connector and lead assy.,			
J17	RN-EWJ-2402	3P connector (WHT) and lead assy.,			
J18	RN-EWJ-2404	8P connector (WHT) and lead assy.,			

Symbol No.	Stock No.	Description
J19	RN-EWJ-2398A	8P connector (WHT) and lead assy..
P 4	RN-EJU-S03V-562-G	3P connector (GRN)
P 5	RN-EJU-S05V-668	5P connector (WHT)
P 6	RN-EJU-S02V-665-BK	2P connector (BLK)
P 7	RN-EJU-S03V-666-B	3P connector (BLU)
P 8	RN-EJU-S03V-666-Y	3P connector (YEL)
P 9	RN-EJU-S04V-667	4P connector (WHT)
P11	RN-EJU-S11V-674	11P connector (WHT)
P12	RN-EJU-S02V-665-B	2P connector (BLK)
P13	RN-EJU-S02V-665-Y	2P connector (YEL)
P14	RN-EJU-S02V-665	2P connector (WHT)
P15	RN-EJU-S02V-665-R	2P connector (RED)
P17	RN-EJU-S03V-666	3P connector (WHT)
P18	RN-EJU-S08V-671	8P connector (WHT)
P19	RN-EJU-S08V-671-B	8P connector (BLU)
P20, 21	RN-EJU-S02V-561	2P connector (WHT)
P23, 24	RN-EJU-S14V-663	TODC connector (includes 5000 pF)
P25	RN-EWJ-~~2383~~ 2252	Wiring sub-assy..
PL 1, 2	RN-EPM-1031A	Lamp (includes connector and filter)
RY 1	RN-EED-1005	DC Relay
RY 2	RN-EED-1004	DC Relay
S 1-A, B	RN-ESB-2L2-167A	Push switcn
S 2-A,B,C	RN-ESB-4L2-141	Push switch

REPLACEMENT PARTS LIST

Symbol No.	Stock No.	Description			
CAPACITORS					
C 7, 31, 32	RN-ECE-M101V16-7	100 μF	16V		electrolytic
C12,13,14,15 21,25,36,37 39,40	RN-ECE-M4R7V25-5	4.7 μF	25V		〃
C16, 26, 27 30, 38, 46 47, 51,100	RN-ECE-M100V16-7	10 μF	16V		〃
C17	RN-ECF-R103V50	.01 μF	50V		mylar
C18, 19, 42 43, 44, 45	RN-ECE-MR47V50-2	.47 μF	〃		electrolytic
C20, 29, 65 66, 85, 86	RN-ECE-M221V16-7	220 μF	16V		electrolytic
C22	RN-ECF-R223V50	.022 μF	50V		mylar
C23, 97, 98	RN-ECF-R473V50	.047 μF	〃		〃
C24, 67, 68 87, 88	RN-ECE-M220V16-5	22 μF	16V		electrolytic
C28	RN-ECK-DB102KY	1000 pF	50V		ceramic
C33,34,69,70 71,72,89,90 91,92	RN-ECJ-MR68M10-09	.68 μF	25V		alox
C35, 73, 74 93, 94,101	RN-ECE-M222V16-4	2200 μF	16V		electrolytic
C41	RN-ECE-M470V16-10	47 μF	〃		〃
C48	RN-ECF-R222V50	.0022 μF	50V		mylar
C49, 61, 62 81, 82	RN-ECE-M1R0V50-4	1 μF	〃		electrolytic
C63,64,83,84	RN-ECK-DB222KY	2200 pF	50V		ceramic
C96, 99, 103	RN-ECE-M102V16-9	1000 μF	16V		electrolytic
C102	RN-ECE-M471V16-10	470 μF	〃		〃
RESISTORS					
R 1	RN-ERD-AE2R2JB	2.2 ohm	5%	¼W	carbon
R 3, 4, 32 33, 38	RN-ERD-AE104JB	100k ohm	〃	〃	〃
R11, 39	RN-ERD-AE221JB	220 ohm	〃	〃	〃
R 5, 42, 43 54, 55	RN-ERD-AE393JB	39k ohm	〃	〃	〃
R12, 13, 34 70, 71	RN-ERD-AE103JB	10k ohm	〃	〃	〃
R14, 15	RN-ERD-AE223JB	22k ohm	5%	¼W	carbon
R16, 17	RN-ERD-AE124JB	120k ohm	〃	〃	〃
R 18, 19, 96 97, 98, 99 100,101,102	RN-ERD-AE182JB	1.8k ohm	〃	〃	〃
R20,21,44,45 46,47,48,49 50,58,59,60 61	RN-ERD-AE222JB	2.2k ohm	〃	〃	〃
R22, 23	RN-ERD-AE272JB	2.7k ohm	〃	〃	〃
R24	RN-ERD-AE220JB	22 ohm	5%	¼W	carbon
R25	RN-ERD-AE821JB	820 ohm	〃	〃	〃
R26, 27	RN-ERD-AE154JB	150k ohm	〃	〃	〃
R28, 37, 72 105	RN-ERD-AE102JB	1k ohm	〃	〃	〃
R29	RN-ERD-AE562JB	5.6k ohm	〃	〃	〃

Illus. No. (Fig. 10)	Stock No.	Description	Q'ty
MECHANICAL			
1	RN-MAD-1060A	Chassis, main	1
2	RN-MAD-1061A	Chassis, top and bottom	2
3	RN-MRE-1020A	Radiator, left side	1
4	RN-MRE-1021A	Radiator, right side	1
5	RN-MRE-1022A	Radiator, rear	1
6	RN-MCE-1020	Clamp	1
7	———	———	——
8	RN-MDP-1120A	Escutcheon	1
9	RN-MLC-1032	Spacer	1
10	———	———	——
11	RN-MYB-1095	Button	7
12	RN-MYB-1096	Button	1
13	RN-MYB-1135	Button	1
14	RN-MIP-1076	Insulator	1
15	RN-MCE-1016	Clamp	2
16	RN-MPM-2238	PC board, main	1
17	RN-MHE-1042A	Holder	1
18	RN-MPM-2166	PC board	1
19	RN-MHE-1083	Holder	1
20	RN-MSB-1016	Shield plate	1
21	RN-MPC-1192	PC board	1
22	RN-MPC-1187	PC board	1
23	———	———	——
24	———	———	——
25	RN-MPC-1202	PC board	1
26	RN-MPM-2168	PC board	1
27	RN-MLC-1024	Supporter	2
28	RN-MPM-2169	PC board	1
ASSEMBLY MATERIAL			
31	RN-MEN-70		
	RN-MET-168	Screw, 3×6mm	20
	RN-MET-189	Flat screw, 6×6mm	2
	RN-MET-1044	Screw, 3×10mm	8
	F6-SBD-2.6×8S	Screw, 2.6×8mm	2
	F6-SBD-2.6×4S	Screw, 2.6×4mm	2
	F6-SBD-2×4S	Screw, 2×4mm	7

NOTE: Specifications subject to change without prior notice.