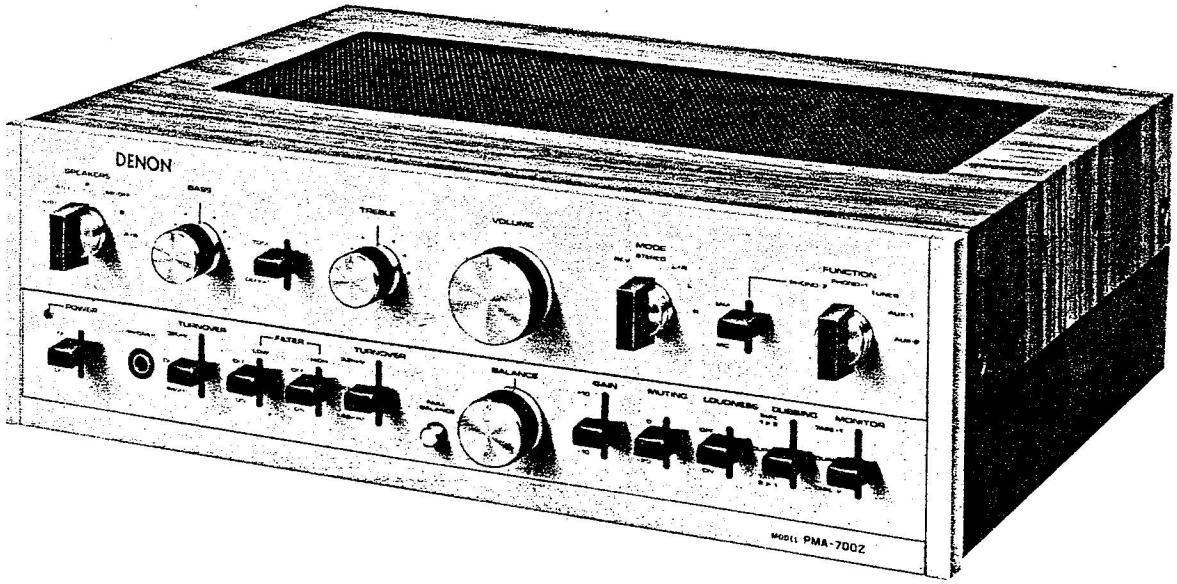
DENON Hi-Fi Component/Amplifier

SERVICE MANUAL

MODEL PMA-700Z

SOLID STATE STEREO INTEGRATED AMPLIFIER



NIPPON COLUMBIA CO.,LTD

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SPECIFICATION FOR MODEL PMA-700Z

TYPE:	All silicon transistor stereo pre-main amplifier		
POWER AMPLIFIER SECTION			
CIRCUIT SYSTEM:	Pure complementary, Whole-stage-direct-connection, 2-power source OCL circuit		
RATED OUTPUT POWER (Each channel driven):	80W/80W (load, 8 ohms) at T.H.D. 0.05% 100W/100W (load, 4 ohms) at T.H.D. 0.05%		
RATED OUTPUT POWER (Both channel driven):	70W + 70W (load, 8 ohms) at T.H.D. 0.05% 85W + 85W (load, 4 ohms) at T.H.D. 0.05%		
HARMONIC DISTORTION:	Lower than T.H.D. 0.05% (at rated output and 60Hz to 10KHz)		
CROSS MODULATION:	Lower than 0.1% (at equivalent sign wave rated output)		
DISTORTION:	Lower than 0.05% (at equivalent sign wave 80mW output)		
POWER BANDWIDTH:	8Hz – 25KHz (at T.H.D. 0.1%)		
INPUT SENSITIVITY:	1V r.m.s.		
INPUT IMPEDANCE:	80K ohms ± 20% (20Hz – 20KHz)		
RESIDUAL NOISE:	Lower than 0.5mV		
OUTPUT IMPEDANCE:	Lower than 0.16 ohms in pure resistance at lower than 10KHz		
TRANSMISSION CHARACTERISTIC:	8Hz – 150KHz (at ±0.5dB)		
PRE-AMP & CONTROL AMPLIFIER SECTION			
MAXIMUM OUTPUT LEVEL:	14.2V peak		
RATED OUTPUT LEVEL:	1V r.m.s.		
TOTAL HARMONIC DISTORTION:	Lower than 0.05% (at 10V peak, 7KHz)		
INPUT SENSITIVITY/INPUT IMPEDANCE:	(at 1KHz)		
	PHONO-1	3.2mV r.m.s.	50K ohms ± 10%
	PHONO-2 (MC)	0.32mV r.m.s.	150 ohms ± 10%
	(MM)	3.2mV r.m.s.	30K ohms ± 10%
	TUNER	320mV r.m.s.	100K ohms ± 10%
	AUX-1 (LEVEL MAX.)	320mV r.m.s.	50K ohms ± 10%
	AUX-2	320mV r.m.s.	100K ohms ± 10%
	TAPE-1 (LEVEL MAX.)	320mV r.m.s.	50K ohms ± 10%
	TAPE-2	320mV r.m.s.	100K ohms ± 10%
	REC/PB (INPUT)	500mV r.m.s.	50K ohms ± 10%
MAXIMUM ALLOWABLE INPUT LEVEL:	PHONO-1	More than 100mV r.m.s. (1KHz)	
	PHONO-2 (MM)	More than 100mV r.m.s. (1KHz)	
	(MC)	More than 10mV r.m.s. (1KHz)	
SIGNAL TO NOISE RATIO:	PHONO-1	Better than 65dB (Input terminals shorted)	
	PHONO-2 (MM)	Better than 62dB (Input terminals shorted)	
	(MC)	Better than 52dB (Input terminals shorted)	
	AUX, TUNER, TAPE	Better than 76dB (Input terminals shorted)	
EQUALIZING CHARACTERISTIC, RIAA DEVIATION:	±0.3dB (at 30Hz – 15KHz)		
TONE CONTROL SECTION			
TRANSMISSION CHARACTERISTIC:	10Hz – 150KHz ± 0.5dB at TONE DEFEAT position 20Hz – 20KHz ± 0.5dB at TONE FLAT position		
TONE CONTROL TURNOVER FREQUENCY & VARIABLE RANGE:			
	BASS; 320Hz, or 640Hz and ±10dB at 50Hz or 100Hz changeable		
	TREBLE; 1.6KHz or 3.2KHz and ±10dB at 10KHz or 20KHz changeable		
LOW FILTER CUTOFF FREQUENCY:	40Hz (18dB/oct)		
HIGH FILTER CUTOFF FREQUENCY:	9KHz (18dB/oct)		
LOUDNESS CONTROL CHARACTERISTIC:	LOW FREQUENCY RANGE; +6.5dB at 100Hz HIGH FREQUENCY RANGE; +6dB at 10KHz		
AUDIO MUTING LEVEL:	–20dB (Reference for GAIN adjusted at 0dB position)		
POWER REQUIREMENT:	AC 110/120/220/240V changeable, 50/60Hz		
POWER CONSUMPTION:	620 VA		
DIMENSIONS:	16-15/16" (430mm)W x 5-1/2" (140mm)H x 13-13/16" (350mm)D		
WEIGHT:	27.5 lbs. (12.5Kg)		

DISASSEMBLY INSTRUCTIONS

1. To remove the top cabinet, first remove the two screws in each side of the top cabinet, then lift up the top cabinet by its rear edge.
2. For removal of the bottom cover, a total of six screws have to be removed.
3. For removal of the shield cover, take off three screws for front cover and two screws for back cover. (Fig. 1)
4. To remove the knob, pull off all lever switch knobs and BASS, TREBLE, VOLUME, BALANCE knobs, for the other control knob (SPEAKERS, MODE and FUNCTION), first loosen the two screws using a small screw driver, then remove the knobs.

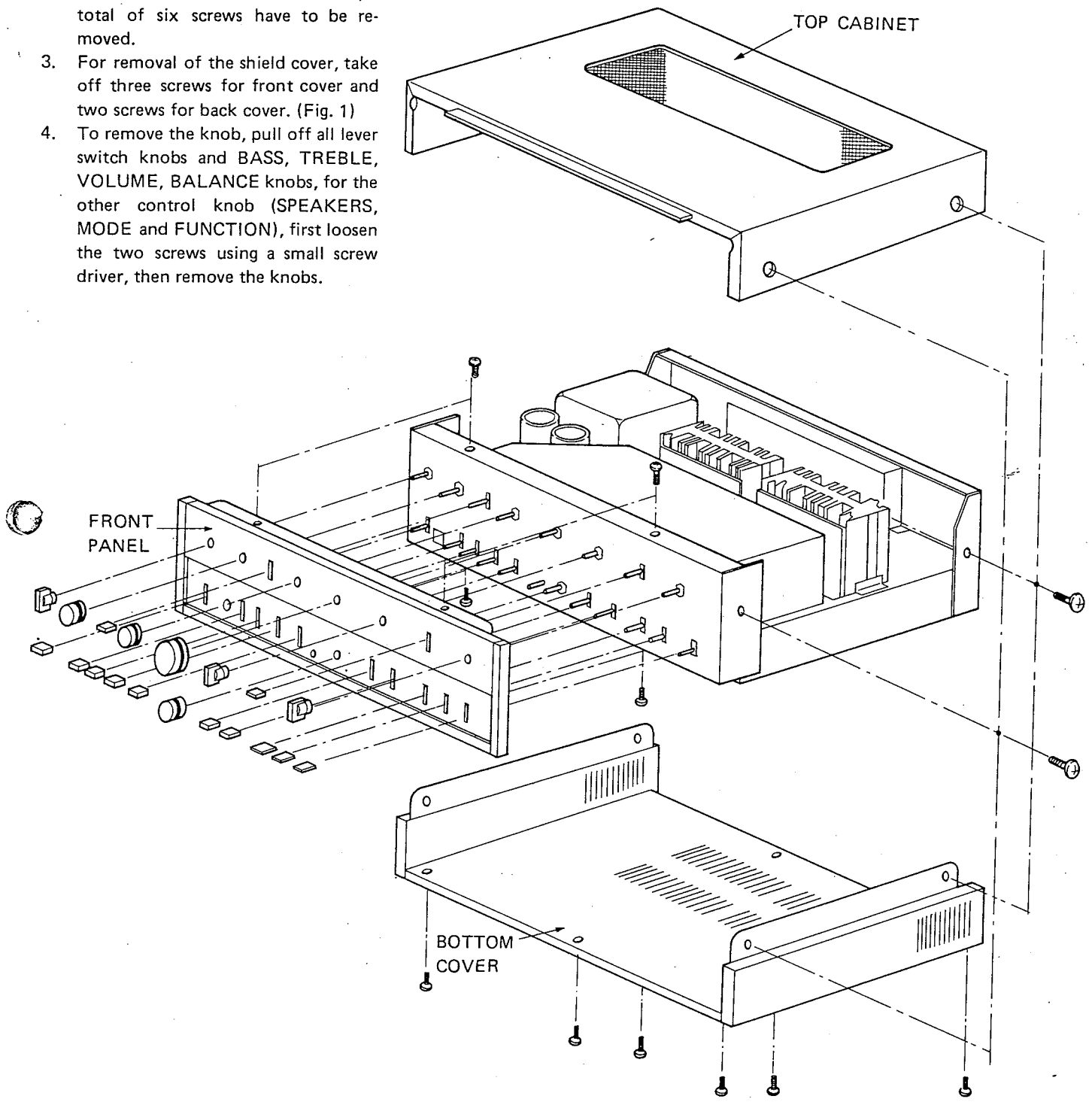


Fig. 1

CIRCUIT DIAGRAMS, PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST (The board diagram represents the view from the copper foil side)

ETC-63 HEAD AMP & EQUALIZER AMP UNIT

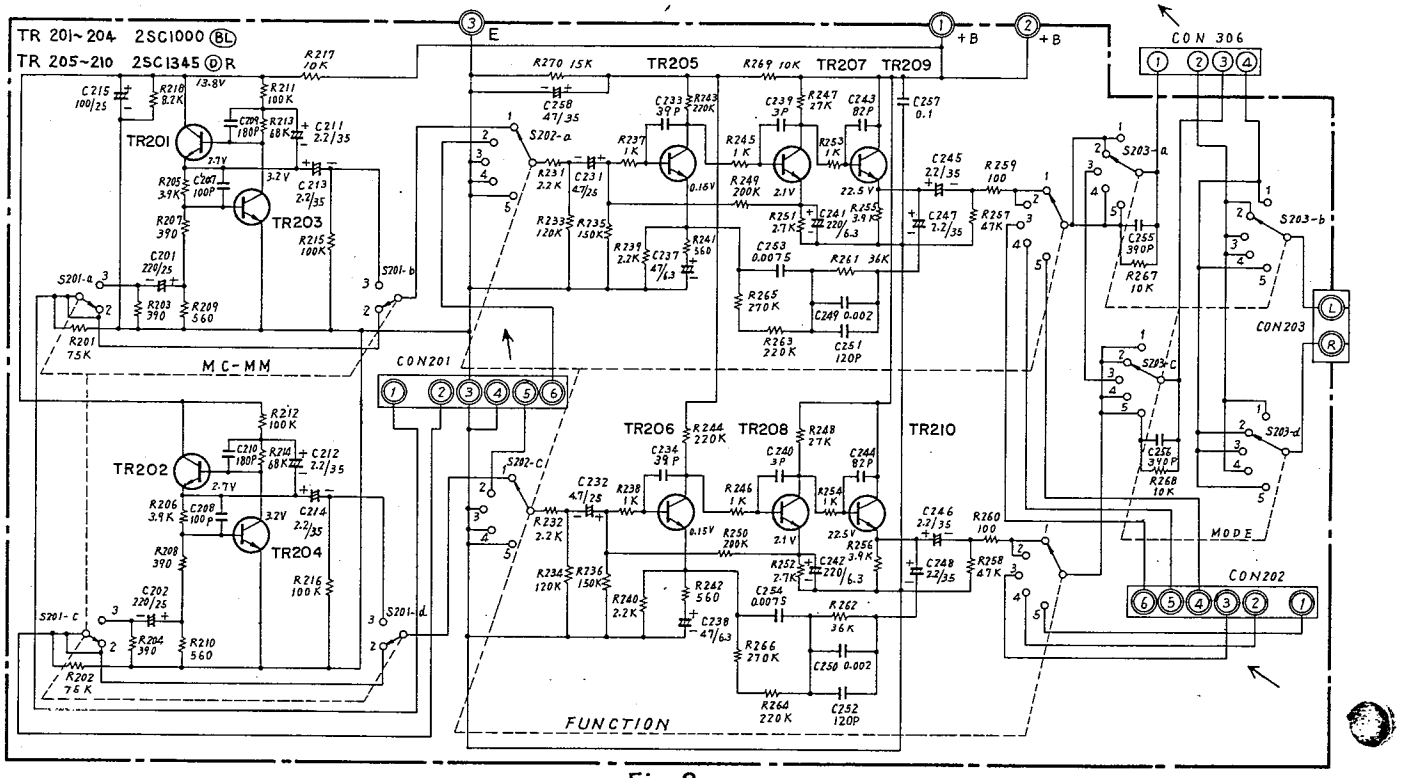


Fig. 2

Ref. No.	Part No.	Parts Name	Descriptions			
C1,2	2549005001	CE04=1E221MHS	220μF,	±20%,	25V	ELECTROLYTIC CAPACITOR
C7,8	2533627000	CC45SL1H101J	100pF,	±5%,	50V	CERAMIC CAPACITOR
C9,10	2533660009	CC45SL1H181K	180pF,	±10%,	50V	
C11,12,47,48	2549002004	CE04=1V2R2MHS	2.2μF,	±20%,	35V	ELECTROLYTIC CAPACITOR
C13,14,45,46	2541035011	CS45E1V2R2M	2.2μF,	±20%,	35V	SOLID TANTALUM CAPACITOR
C15	2544028009	CE04W1E101=	100μF,	25V		ELECTROLYTIC CAPACITOR
C31,32	2541024006	CS45E1E4R7M	4.7μF,	±20%,	25V	SOLID TANTALUM CAPACITOR
C33,34	2533617007	CC45SL1H390J	39pF,	±5%,	50V	CERAMIC CAPACITOR
C37,38	2544002009	CE04W0J470=	47μF,	6.3V		ELECTROLYTIC CAPACITOR
C39,40	2533596005	CC45SL1H030C	3pF,	±0.25pF,	50V	CERAMIC CAPACITOR
C41,42	2544004007	CE04W0J221=	220μF	6.3V		ELECTROLYTIC CAPACITOR
C43,44	2533625002	CC45SL1H820J	82pF,	±5%,	50V	CERAMIC CAPACITOR
C49,50	2554070047	CQ92P2A202F	0.002μF,	1%,	100V	PLASTIC FILM CAPACITOR
C51,52	2533629008	CC45SL1H121J	120pF,	±5%,	50V	CERAMIC CAPACITOR
C53,54	2554070050	CQ92P2A752F	0.0075μF,	1%,	100V	PLASTIC FILM CAPACITOR
C55,56	2533641002	CC45SL1H391J	390pF,	±5%,	50V	CERAMIC CAPACITOR
C57	2531027000	CK45F1H104Z	0.1μF,	50V		
C58	2544037003	CE04W1V470=	47μF,	35V		ELECTROLYTIC CAPACITOR
R1,2	2452001011	RN92=2B753J				
R3,4,7,8	2452000009	RN92=2B391J				
R5,6,55,56	2452000054	RN92=2B392J				
R9,10,41,42	2452000012	RN92=2B561J				
R11,12,15,16	2452001024	RN92=2B104J				
R13,14	2452001008	RN92=2B683J				
R17,67,68,69	2410338014	RD14B2E103JF	1/4W,	10kΩ,	±5%	CARBON FILM RESISTOR

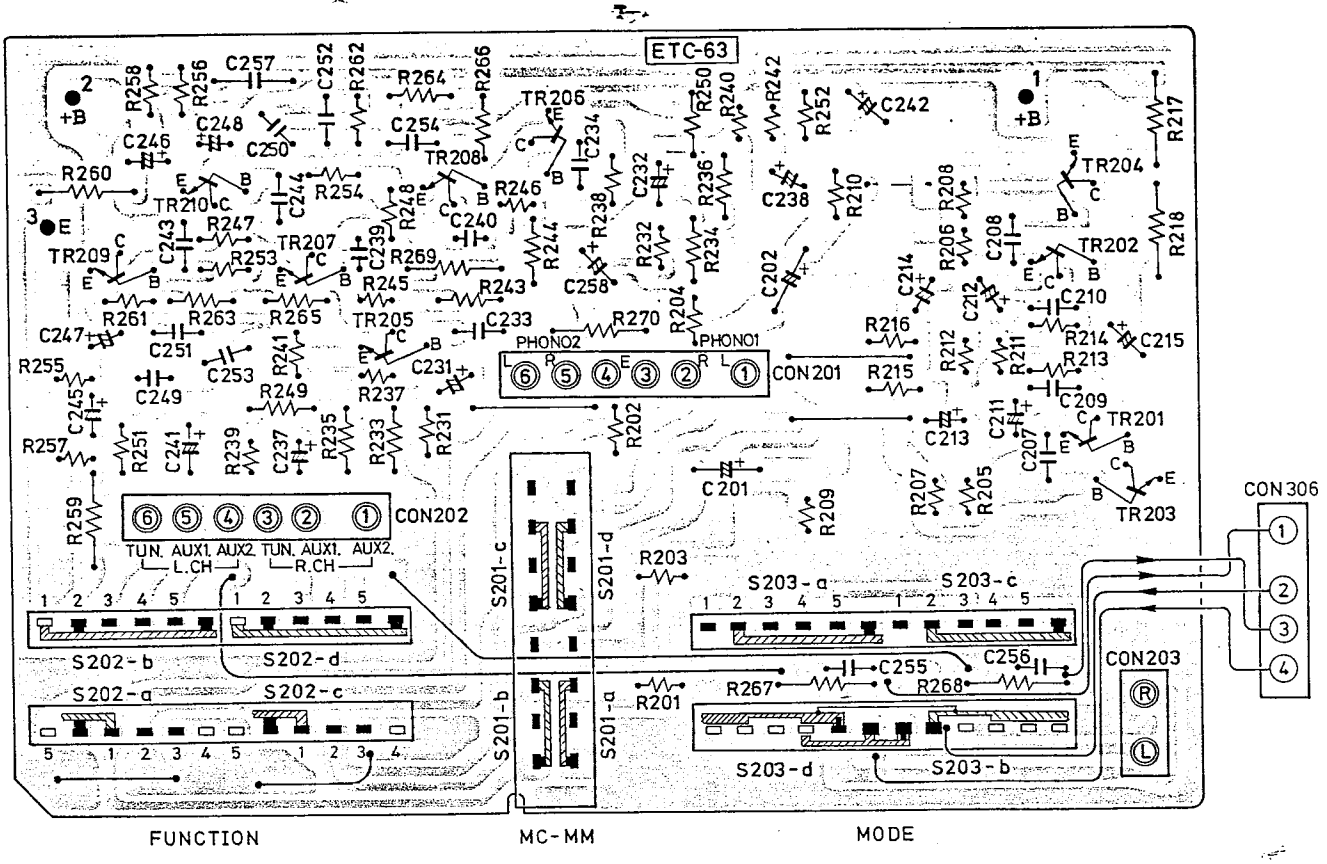


Fig. 3

Ref. No.	Part No.	Part Name	Descriptions
R18	2410336016	RD14B2E822JF	1/4W, 8.2kΩ, ±5%
R31,32,39, 40	2452000038	RN92=2B222J	
R33,34	2452002036	RN92=2E124J	1/4W, 120kΩ, ±5%
R35,36	2452002007	RN92=2E154J	1/4W, 150kΩ, ±5%
R37,38,45, 46	2452000025	RN92=2B102J	
R43,44	2452002023	RN92=2E224J	1/4W, 220kΩ, ±5%
R47,48	2452000070	RN92=2B273J	
R49,50	2452002010	RN92=2E204J	1/4W, 200kΩ, ±5%
R51,52	2452000041	RN92=2B272J	
R57,58	2452000096	RN92=2B473J	
R59,60	2410290013	RD14B2E101JF	1/4W, 100Ω, ±5% CARBON FILM RESISTOR
R61,62	2452004005	RN92=2B363G	
R63,64	2452006003	RN92=2E224G	
R65,66	2452006016	RN92=2E274G	
R70	2410342013	RD14B2E153JF	1/4W, 15kΩ, ±5% CARBON FILM RESISTOR
TR1,2,3,4	2730098018	2SC1000 BL	TRANSISTOR
TR5,6,7,8, 9,10	2730116042	2SC1345 DR	TRANSISTOR
	2120013108	SELECTOR SWITCH	FOR FUNCTION SWITCH
	2120028106		FOR MODE SWITCH
	2120010004	LEVER SWITCH	FOR MM-MC SELECTOR SWITCH
	2032011007	2P CONNECTOR BASE	
	2030028005	6P CONNECTOR BASE	
	EP-6071	BASE PIN	
	4140035009	SHIELD PLATE	
	4430003107	COLLOR	FOR SHIELD PLATE
	SC-1082	NUT	FOR SHIELD PLATE
	MD-5001	P.C.B. SPACER	FOR SHIELD PLATE
	2220135300	PRINTED CIRCUIT BOARD	

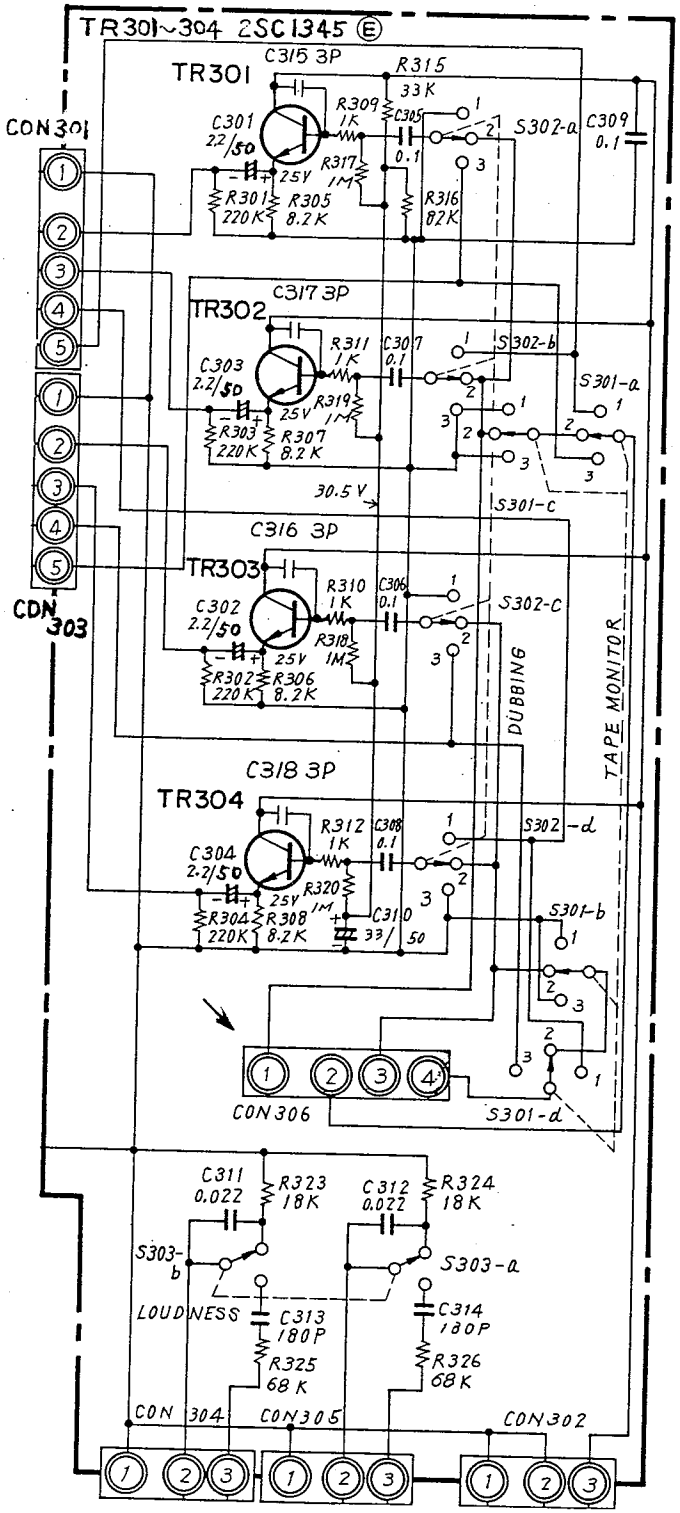


Fig. 4

Ref. No.	Part No.	Part Name	Descriptions
C1,2,3,4	2549006000	CE04=1H2R2MHS	2.2μF, ±20%, 50V ELECTROLYTIC CAPACITOR
C5,6,7,8	2551084010	CQ93M1H104KF	0.1μF, ±10%, 50V PLASTIC FILM CAPACITOR
C9	2531027013	CK45F1H104ZF	0.1μF, 50V CERAMIC CAPACITOR
C10	2544048018	CE04W1H330=F	33μF, 50V ELECTROLYTIC CAPACITOR
C11,12	2551134038	CQ92M1H223J	0.022μF, ±5%, 50V PLASTIC FILM CAPACITOR
C13,14	2533633010	CC45SL1H181JF	180pF, ±5%, 50V CERAMIC CAPACITOR
C15,16,17, 18	2533596018	CC45SL1H030CF	3pF, 0.25pF, 50V

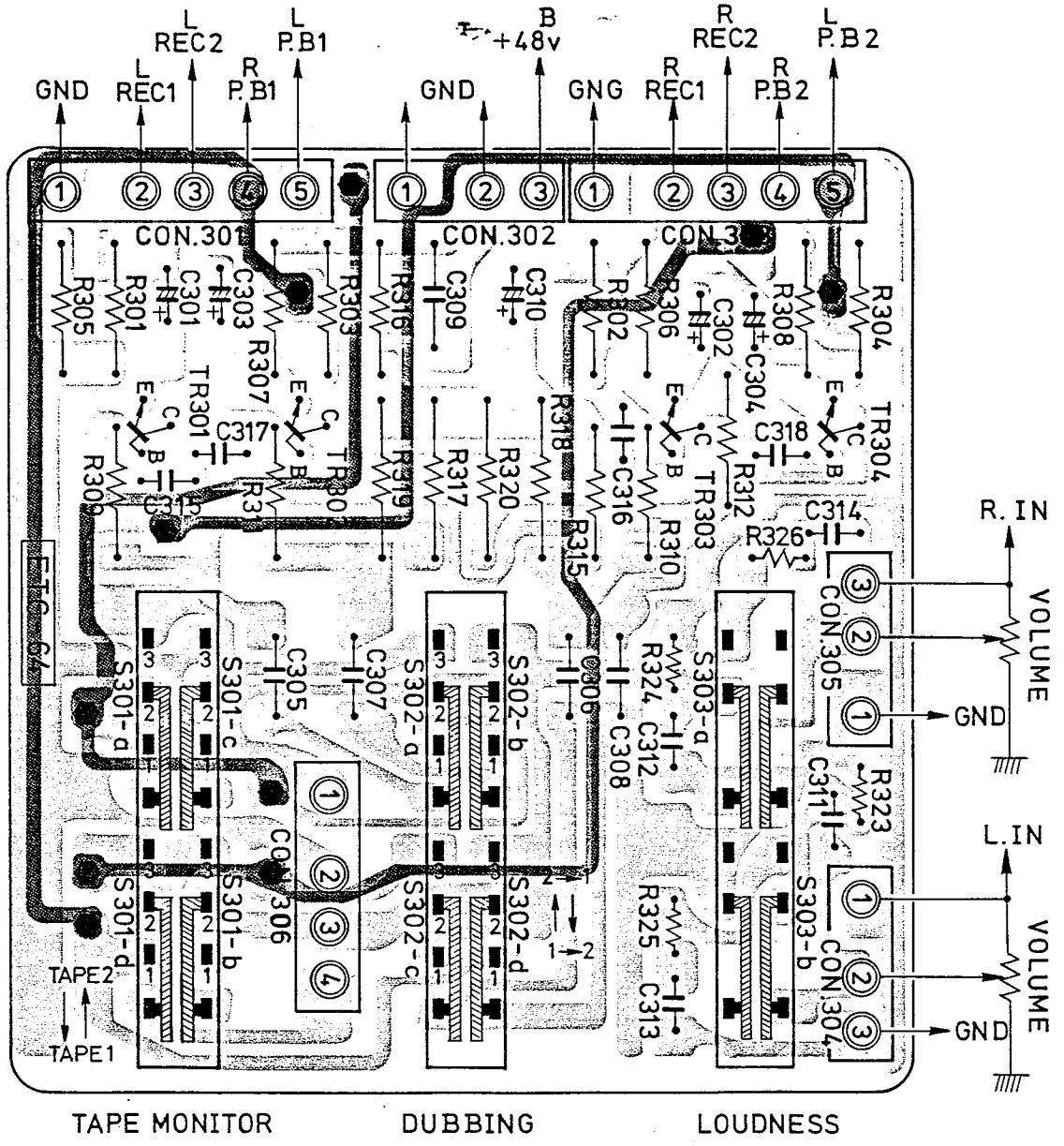


Fig. 5

Ref. No.	Part No.	Part Name	Descriptions
R1,2,3,4	2410370014	RD14B2E224JF	1/4W, 220kΩ, ±5% CARBON FILM RESISTOR
R5,6,7,8	2410336016	RD14B2E822JF	1/4W, 8.2kΩ, ±5% CARBON FILM RESISTOR
R9,10,11, 12	2410314012	RD14B2E102JF	1/4W, 1kΩ, ±5% CARBON FILM RESISTOR
R15	2410350018	RD14B2E333JF	1/4F, 33kΩ, ±5% CARBON FILM RESISTOR
R16	2410360011	RD14B2E823JF	1/4W, 82kΩ, ±5% CARBON FILM RESISTOR
R17,18,19, 20	2410257014	RD14B2H105JF	1/2W, 1MΩ, ±5% CARBON FILM RESISTOR
R23,24	2410344024	RD14B2E183JS	1/4W, 18kΩ, ±5% CARBON FILM RESISTOR
R25,26	2410358023	RD14B2E683JS	1/4W, 68kΩ, ±5% CARBON FILM RESISTOR
TR1,2,3,4	2730116013	2SC1345 E	TRANSISTOR
	2120010004	LEVER SWITCH	FOR LOUDNESS SWITCH
	2120012015		FOR DUBBING, TAPE MONITOR SWITCH
	2034013003	3P CONNECTOR BASE	
	2030029004	4P CONNECTOR BASE	
	2034026003	3P CONNECTOR(C) PLUG	
	2038024001	5P CONNECTOR(C) PLUG	
	EP-5667H1	TERMINAL	
	2220136105	PRINTED CIRCUIT BOARD	

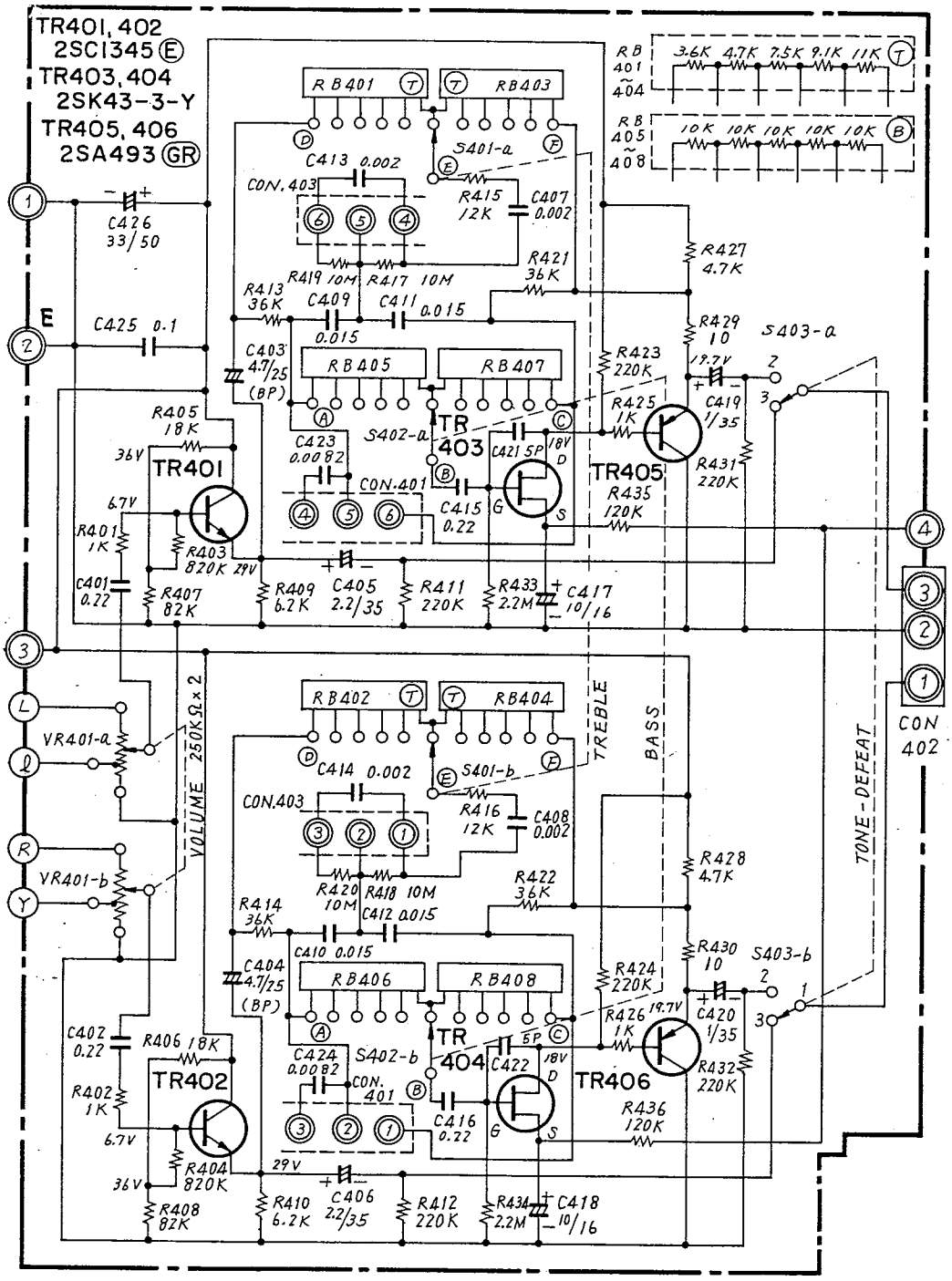


Fig. 6

Ref. No.	Part No.	Part Name	Descriptions			
C1,2,15,16	2551088016	CQ93M1H224KF	0.22μF,	±10%,	50V	PLASTIC FILM CAPACITOR
C3,4	2543039009	CE04D1E4R7MBP	4.7μF,	±20%,	25V	ELECTROLYTIC CAPACITOR
C5,6	2541035011	CS45E1V2R2M	2.2μF,	±20%,	35V	SOLID TANTALUM CAPACITOR
C7,8,13,14	2556106003	CQ09S1H202J	0.002μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C9,10,11, 12	2551135011	CQ92M1H153J	0.015μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C17,18	2544015012	CE04W1C100=F	10μF,	16V		ELECTROLYTIC CAPACITOR
C19,20	2541035008	CS45E1V010M	1μF,	±20%,	35V	SOLID TANTALUM CAPACITOR
C21,22	2533598016	CC45SL1H050DF	5pF,	0.5pF,	50V	CERAMIC CAPACITOR
C23,24	2551135008	CQ92M1H822J	0.0082μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C25	2531027013	CK45F1H104ZF	0.1μF,		50V	CERAMIC CAPACITOR
C26	2544048018	CE04W1H330=F	33μF,		50V	ELECTROLYTIC CAPACITOR

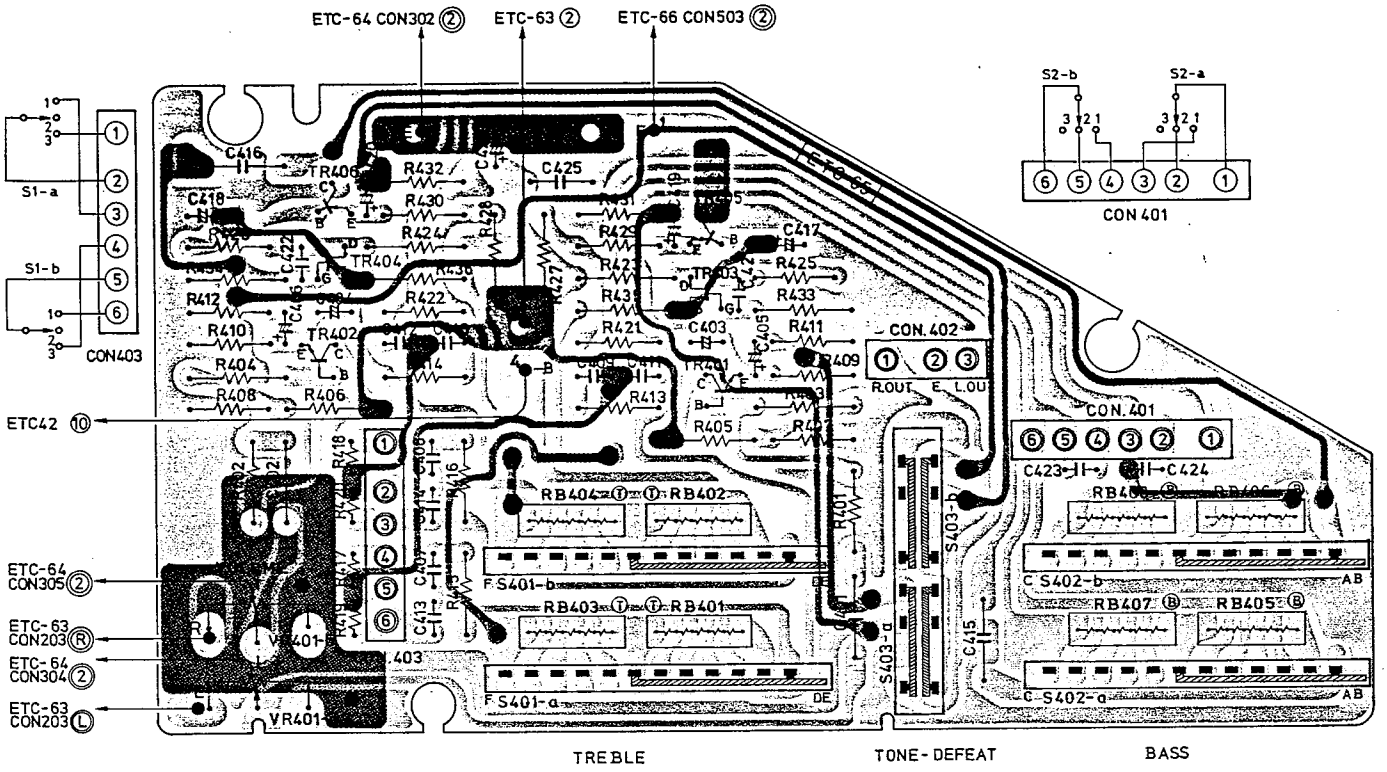


Fig. 7

Ref. No.	Part No.	Part Name	Descriptions			
R1,2,25,26	2410314012	RD14B2E102JF	1/4W,	1kΩ,	±5%	CARBON FILM RESISTOR
R3,4	2410255016	RD14B2H824JF	1/2W,	820kΩ,	±5%	CARBON FILM RESISTOR
R5,6	2410344011	RD14B2E183JF	1/4W,	18kΩ,	±5%	CARBON FILM RESISTOR
R7,8	2410360011	RD14B2E823JF	1/4W,	82kΩ,	±5%	CARBON FILM RESISTOR
R9,10	2410333019	RD14B2E622JF	1/4W,	6.2kΩ,	±5%	CARBON FILM RESISTOR
R11,12,31, 32	2410370014	RD14B2E224JF	1/4W,	220kΩ,	±5%	CARBON FILM RESISTOR
R13,14,21, 22	2410351017	RD14B2E363JF	1/4W,	36kΩ,	±5%	CARBON FILM RESISTOR
R15,16	2410340015	RD14B2E123JF	1/4W,	12kΩ,	±5%	CARBON FILM RESISTOR
R17,18,19, 20	2420203003	RC05GF2E106K	1/4W,	10MΩ,	±10%	CARBON COMPOSITE RESISTOR
R23,24	2410738012	RD05A2H224GF	1/2W,	220kΩ,	± %	CARBON COMPOSITE RESISTOR
R27,28	2410330012	RD14B2E472JF	1/4W,	4.7kΩ,	±5%	CARBON FILM RESISTOR
R29,30	2410266018	RD14B2E100JF	1/4,	10Ω,	±5%	CARBON FILM RESISTOR
R33,34	2452003019	RN92=2H225J	1/2W,	2.2MΩ,	±5%	
R35,36	2410732018	RD05A2H124GF	1/2W,	120kΩ,	± %	CARBON COMPOSITE RESISTOR
RB405,406 407,408	2462000109	RK925=2B----J	RESISTOR BLOCK			
RB401,402 403,404	2462000112	RK925=2B103J	RESISTOR BLOCK			
TR1,2	2730116013	2SC1345 E	TRANSISTOR			
TR3,4	2750013028	2SK43-3-Y	TRANSISTOR (FET)			
TR5,6	2710012001	2SA493 GR	TRANSISTOR			
VR1	2110015103	V2420P25RR254T	FOR MAIN VOLUME 250k			
	2120010004	LEVER SWITCH	FOR TONE DEFEAT SWITCH			
	2120029105	SELECTOR SWITCH	FOR BASS, TREBLE SWITCH			
	2034013003	3P CONNECTOR BASE				
	2030028005	6P CONNECTOR BASE				
	EP-6071	BASE PIN				
	2220139102	PRINTED CIRCUIT BOARD				

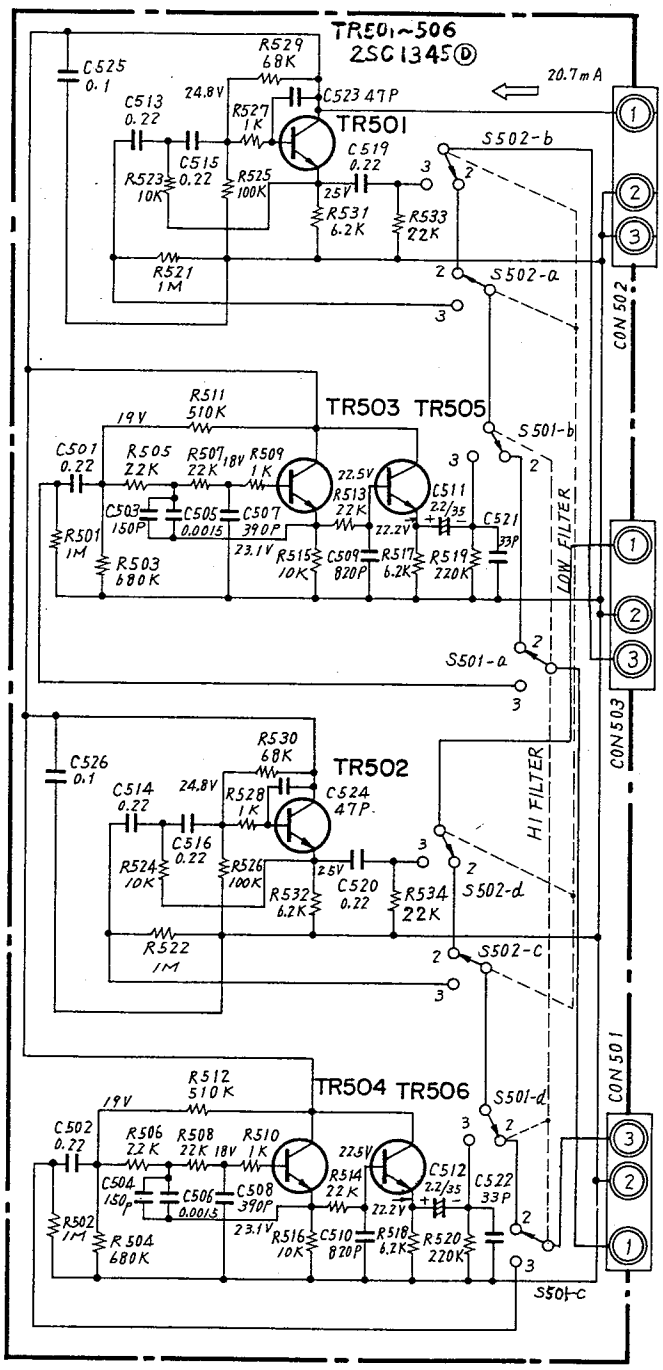


Fig. 8

Ref. No.	Parts No.	Parts Name	Descriptions			
C1,2	2551130087	CQ93M1H224JF	0.22μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C3,4	2533631012	CC45SL1H151JF	150pF,	±5%,	50V	CERAMIC CAPACITOR
C5,6	2551128028	CQ93M1H152JF	0.0015μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C7,8	2533641015	CC45SL1H391JF	390pF,	±5%,	50V	CERAMIC CAPACITOR
C9,10	2556023005	CQ08S1H821J	0.00082μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C11,12	2541035011	CS45E1V2R2M	2.2μF,	±20%,	35V	SOLID TANTALUM CAPACITOR
C13,14,15, 16,19,20	2551134070	CQ92M1H224J	0.22μF,	±5%,	50V	PLASTIC FILM CAPACITOR
C21,22	2533615012	CC45SL1H330JF	33pF,	±5%,	50V	CERAMIC CAPACITOR
C23,24	2533653016	CC45SL1H470KF	47pF,	±10%,	50V	
C25,26	2531027013	CK45F1H104ZF	0.1μF,		50V	

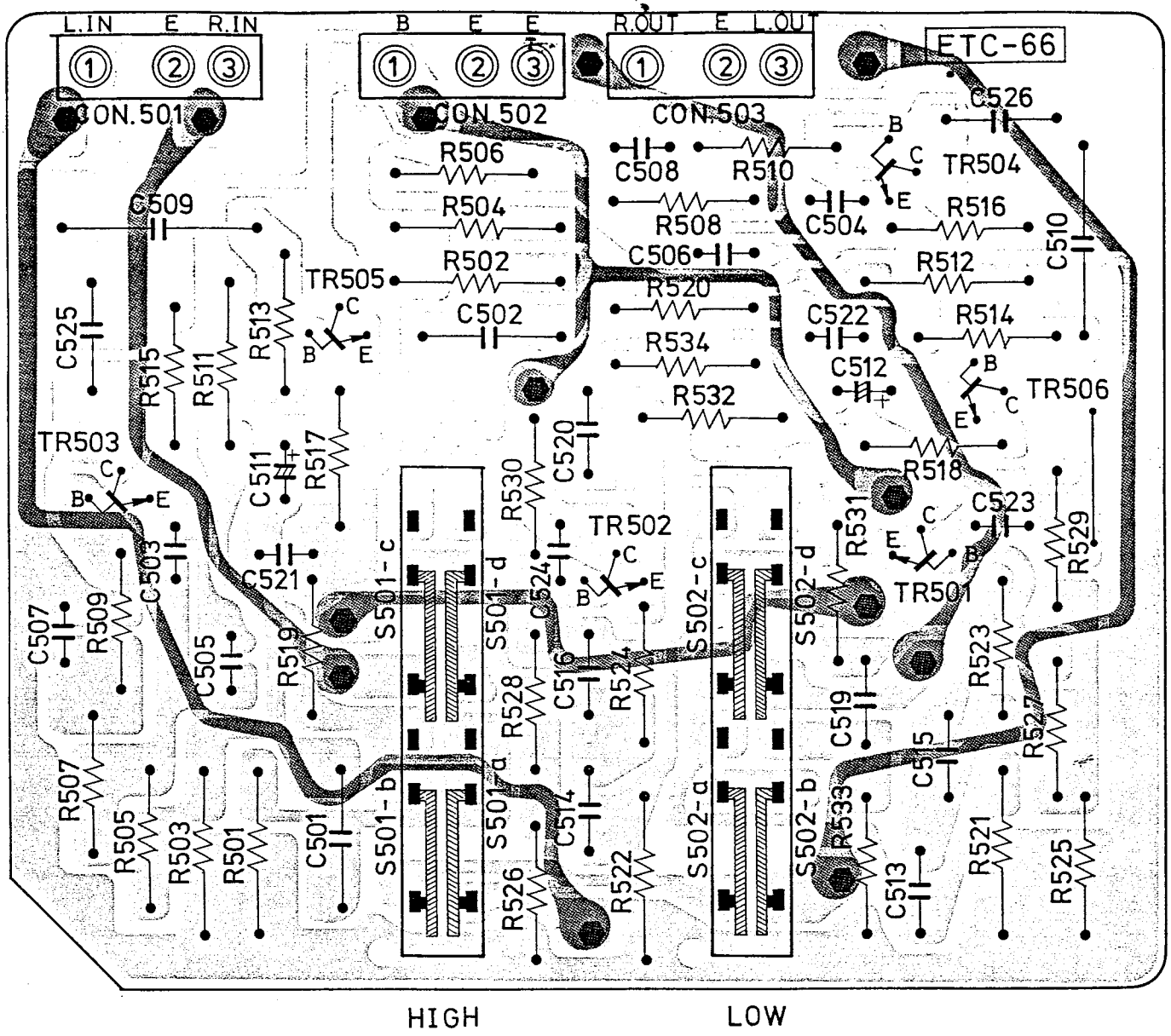
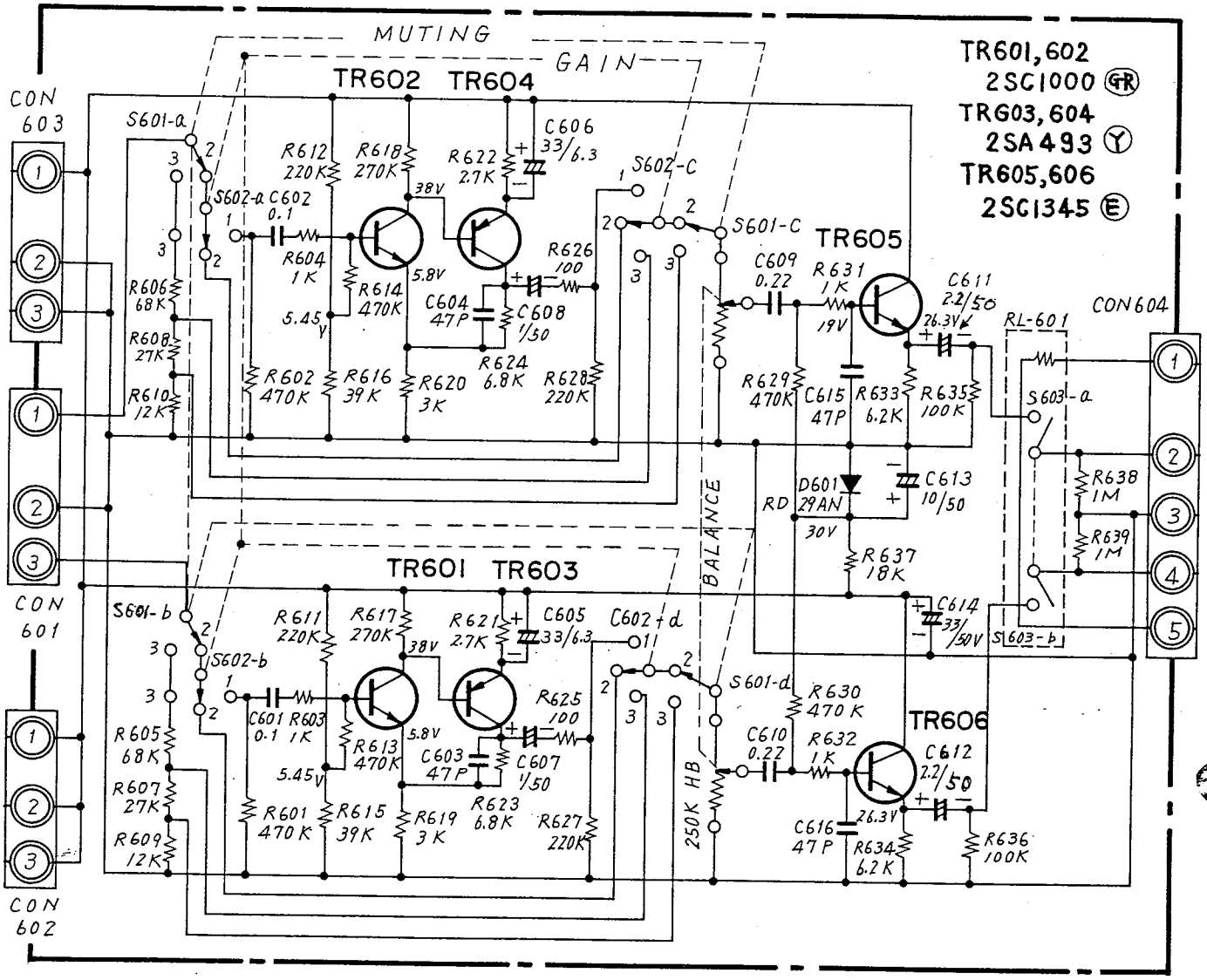


Fig. 9

Ref. No.	Part No.	Part Name	Descriptions
R1,2,21,22	2410257014	RD14B2H105JF	1/2W, 1MΩ, ±5% CARBON FILM RESISTOR
R3,4	2410253018	RD14B2H684JF	1/2W, 680kΩ, ±5% CARBON FILM RESISTOR
R5,6,7,8, 13,14,33, 34	2410346019	RD14B2E223JF	1/4W, 22kΩ, ±5% CARBON FILM RESISTOR
R9,10,27, 28	2410314012	RD14B2E102JF	1/4F, 1kΩ, ±5% CARBON FILM RESISTOR
R11,12	2410250011	RD14B2H514JF	1/2W, 510kΩ, ±5% CARBON FILM RESISTOR
R15,16,23, 24	2410338014	RD14B2E103JF	1/4W, 10kΩ, ±5% CARBON FILM RESISTOR
R17,18,31, 32	2410333019	RD14B2E622JF	1/4W, 6.2kΩ, ±5% CARBON FILM RESISTOR
R19,20	2410370014	RD14B2E224JF	1/4W, 220kΩ, ±5% CARBON FILM RESISTOR
R25,26	2410362019	RD14B2E104JF	1/4W, 100kΩ, ±5% CARBON FILM RESISTOR
R29,30	2410358010	RD14B2E683JF	1/4W, 68kΩ, ±5% CARBON FILM RESISTOR
	2120010004	LEVER SWITCH	FOR HI, LOW FILTER SWITCH
	2034026003	3P CONNECTOR(C) PLUG	
	EP-5667H1	TERMINAL	
	2220137104	PRINTED CIRCUIT BOARD	



Ref. No.	Part No.	Part Name	Descriptions			
C1,2	2551084010	CQ93M1H104KF	0.1μF,	±10%,	50V	PLASTIC FILM CAPACITOR
C3,4,15,16	2533653016	CC45SL1H470KF	47pF,	±10%,	50V	CERAMIC CAPACITOR
C5,6	2544001013	CE04W0J330=F	33μF,	6.3V		ELECTROLYTIC CAPACITOR
C7,8	2541035008	CS45E1V010M	1μF,	±20%,	35V	SOLID TANTALUM CAPACITOR
C9,10	2551088016	CQ93M1H224KF	0.22μF,	±10%,	50V	PLASTIC FILM CAPACITOR
C11,12	2549006000	CE04=1H2R2MHS	2.2μF,	±20%,	50V	ELECTROLYTIC CAPACITOR
C13	2544047019	CE04W1H100=F	10μF,	50V		ELECTROLYTIC CAPACITOR
C14	2544048018	CE04W1H330=F	33μF,	50V		ELECTROLYTIC CAPACITOR
R1,2,13,14, 29,30	2410378016	RD14B2E474JF	1/4W,	470kΩ,	±5%	CARBON FILM RESISTOR
R3,4,31,32	2410314012	RD14B2E102JF	1/4W,	1kΩ,	±5%	CARBON FILM RESISTOR
R5,6	2410358010	RD14B2E683JF	1/4W,	68kΩ,	±5%	CARBON FILM RESISTOR
R7,8	2410348017	RD14B2E273JF	1/4W,	27kΩ,	±5%	CARBON FILM RESISTOR
R9,10	2410340015	RD14B2E123JF	1/4W,	12kΩ,	±5%	CARBON FILM RESISTOR
R11,12,27, 28	2410370014	RD14B2E224JF	1/4W,	220kΩ,	±5%	CARBON FILM RESISTOR
R15,16	2410352016	RD14B2E393JF	1/4W,	39kΩ,	±5%	CARBON FILM RESISTOR
R17,18	2410372012	RD14B2E274JF	1/4W,	270kΩ,	±5%	CARBON FILM RESISTOR
R19,20	2410325014	RD14B2E302JF	1/4W,	3kΩ,	±5%	CARBON FILM RESISTOR
R21,22	2410324015	RD14B2E272JF	1/4W,	2.7kΩ,	±5%	CARBON FILM RESISTOR

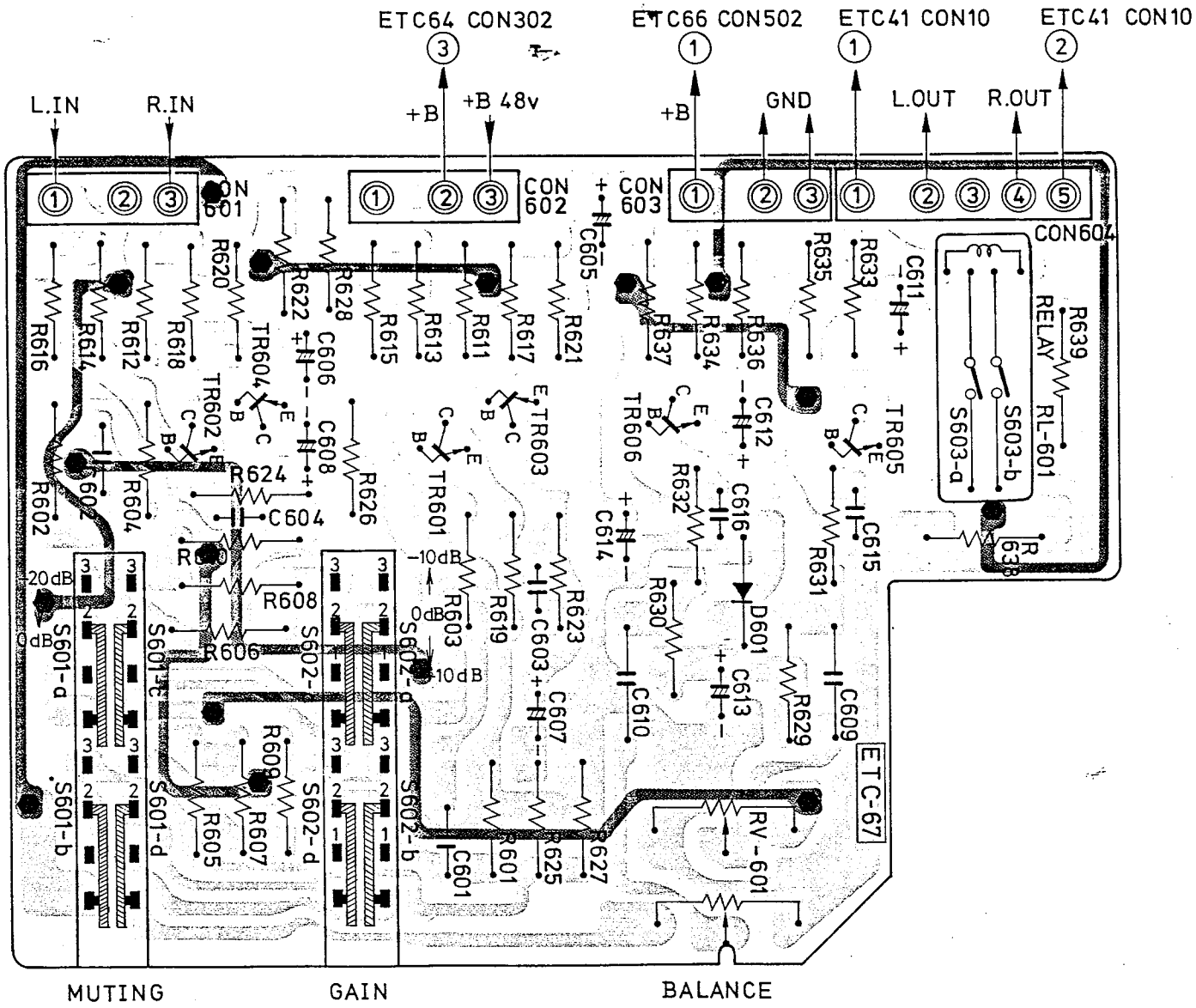


Fig. 11

Ref. No.	Part No.	Part Name	Descriptions
R23,24	2410334018	RD14B2E682JF	1/4W, 6.8kΩ, ±5% CARBON FILM RESISTOR
R25,26	2410290013	RD14B2E101JF	1/4W, 100Ω, ±5% CARBON FILM RESISTOR
R33,34	2410333019	RD14B2E622JF	1/4W, 6.2kΩ, ±5% CARBON FILM RESISTOR
R35,36	2410362019	RD14B2E104JF	1/4W, 100kΩ, ±5% CARBON FILM RESISTOR
R37	2410344011	RD14B2E183JF	1/4W, 18kΩ, ±5% CARBON FILM RESISTOR
R38,39	2410257014	RD14B2H105JF	1/2W, 1MΩ, ±5% CARBON FILM RESISTOR
TR1,2	2730098034	2SC1000 GR	TRANSISTOR
TR3,4	2710012014	2SA493 Y	TRANSISTOR
TR5,6	2730116013	2SC1345 E	TRANSISTOR
D1	2760093025	RD29AN	ZENNER DIODE
VR6	2110010108	V1820P25KW254	FOR BALANCE VOLUME 250K
	2120010004	LEVER SWITCH	FOR MUTING SWITCH
	2120012015		FOR GAIN CONTROL SWITCH
RL1	2140009008	REED RELAY	
	2034026003	3P CONNECTOR(C) PLUG	
	2038024001	5P CONNECTOR(C) PLUG	
	EP-5667H1	TERMINAL	
	2220138200	PRINTED CIRCUIT BOARD	

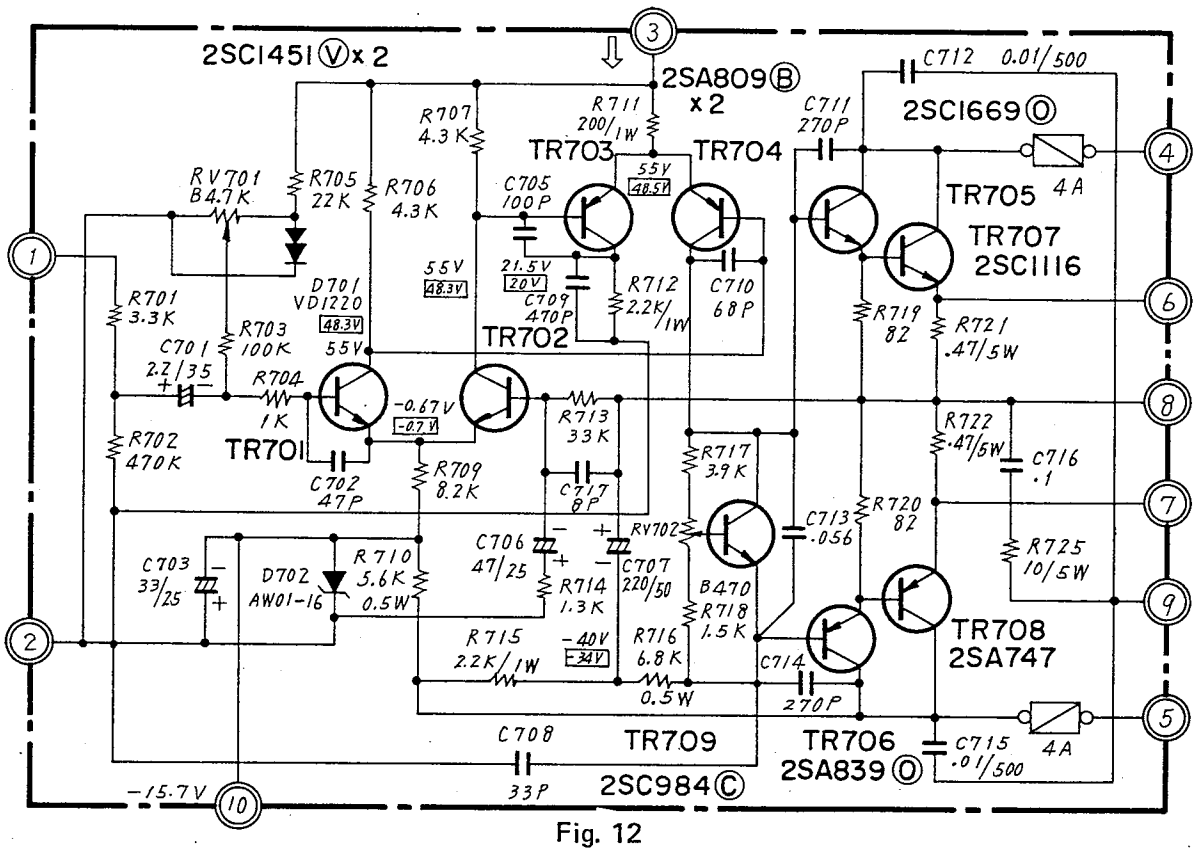


Fig. 12

Ref. No.	Parts No.	Parts Name	Descriptions			
C1	2549002004	CE04=1V2R2MHS	2.2μF,	±20%,	35V	ELECTROLYTIC CAPACITOR
C2	2533653003	CC45SL1H470K	47pF,	±10%,	50V	CARAMIC CAPACITOR
C3	2544026001	CE04W1E330=	33μF,	25V		ELECTROLYTIC CAPACITOR
C5	2533657009	CC45SL1H101K	100pF,	±10%,	50V	CERAMIC CAPACITOR
C6	2544027000	CE04W1E470=	47μF,	25V		ELECTROLYTIC CAPACITOR
C7	2542056002	CW02W1H221=	220μF,	50V		ELECTROLYTIC CAPACITOR
C8	2533651005	CC45SL1H330K	33pF,	±10%,	50V	CERAMIC CAPACITOR
C9	2531002009	CK45B1H471K	470pF,	±10%,	50V	CERAMIC CAPACITOR
C10	2533655001	CC45SL1H680K	68pF,	±10%,	50V	CERAMIC CAPACITOR
C11,14	2533662007	CC45SL1H271K	270pF,	±10%,	50V	CERAMIC CAPACITOR
C12,15	2531053003	CK45E2H103P	0.01μF,	500V		CERAMIC CAPACITOR
C13	2551022001	CQ92M1H563K	0.056μF,	±10%,	50V	PLASTIC FILM CAPACITOR
C16	2551025008	CQ92M1H104K	0.1μF,	±10%,	50V	PLASTIC FILM CAPACITOR
C17	2533601000	CC45SL1H080D	8pF,	±0.5pF,	50V	CERAMIC CAPACITOR
R1	2410326013	RD14B2E332JF	1/4W,	3.3kΩ,	±5%	CARBON FILM RESISTOR
R2	2410378016	RD14B2E474JF	1/4W,	470kΩ,	±5%	CARBON FILM RESISTOR
R3	2410362019	RD14B2E104JF	1/4W,	100kΩ,	±5%	CARBON FILM RESISTOR
R4	2410314012	RD14B2E102JF	1/4W,	1kΩ,	±5%	CARBON FILM RESISTOR
R5	2410346019	RD14B2E223JF	1/4W,	22kΩ,	±5%	CARBON FILM RESISTOR
R6,7	2410329010	RD14B2E432JF	1/4W,	4.3kΩ,	±5%	CARBON FILM RESISTOR
R9	2410336016	RD14B2E822JF	1/4W,	8.2kΩ,	±5%	CARBON FILM RESISTOR
R10	2410203013	RD14B2H562JF	1/2W,	5.6kΩ,	±5%	CARBON FILM RESISTOR
R11	2442002004	RS14B3A201JNB	1W,	200Ω,	±5%	METAL OXIDE RESISTOR
R12	2440045005	RS14B3A222JNB	1W,	2.2kΩ,	±5%	METAL OXIDE RESISTOR
R13	2410346019	RD14B2E333JF	1/4W,	33kΩ,	±5%	CARBON FILM RESISTOR
R14	2410317019	RD14B2E123JF	1/4W,	12kΩ,	±5%	CARBON FILM RESISTOR
R15	2440045005	RS14B3A222JNB	1W,	2.2kΩ,	±5%	METAL OXIDE RESISTOR
R16	2410205011	RD14B2H682JF	1/2W,	6.8kΩ,	±5%	CARBON FILM RESISTOR
R17	2410328011	RD14B2E392JF	1/4W,	3.9kΩ,	±5%	CARBON FILM RESISTOR
R18	2410318018	RD14B2E152JF	1/4W,	1.5kΩ,	±5%	CARBON FILM RESISTOR
R19,20	2410288012	RD14B2E820JF	1/4W,	82Ω,	±5%	CARBON FILM RESISTOR
R21,22	2432003000	RW98A3HR47K	5W,	0.47Ω,	±10%	WIRE WOUND RESISTOR
R25	2432003013	RW98A3H100K	5W,	10Ω,	±10%	WIRE WOUND RESISTOR

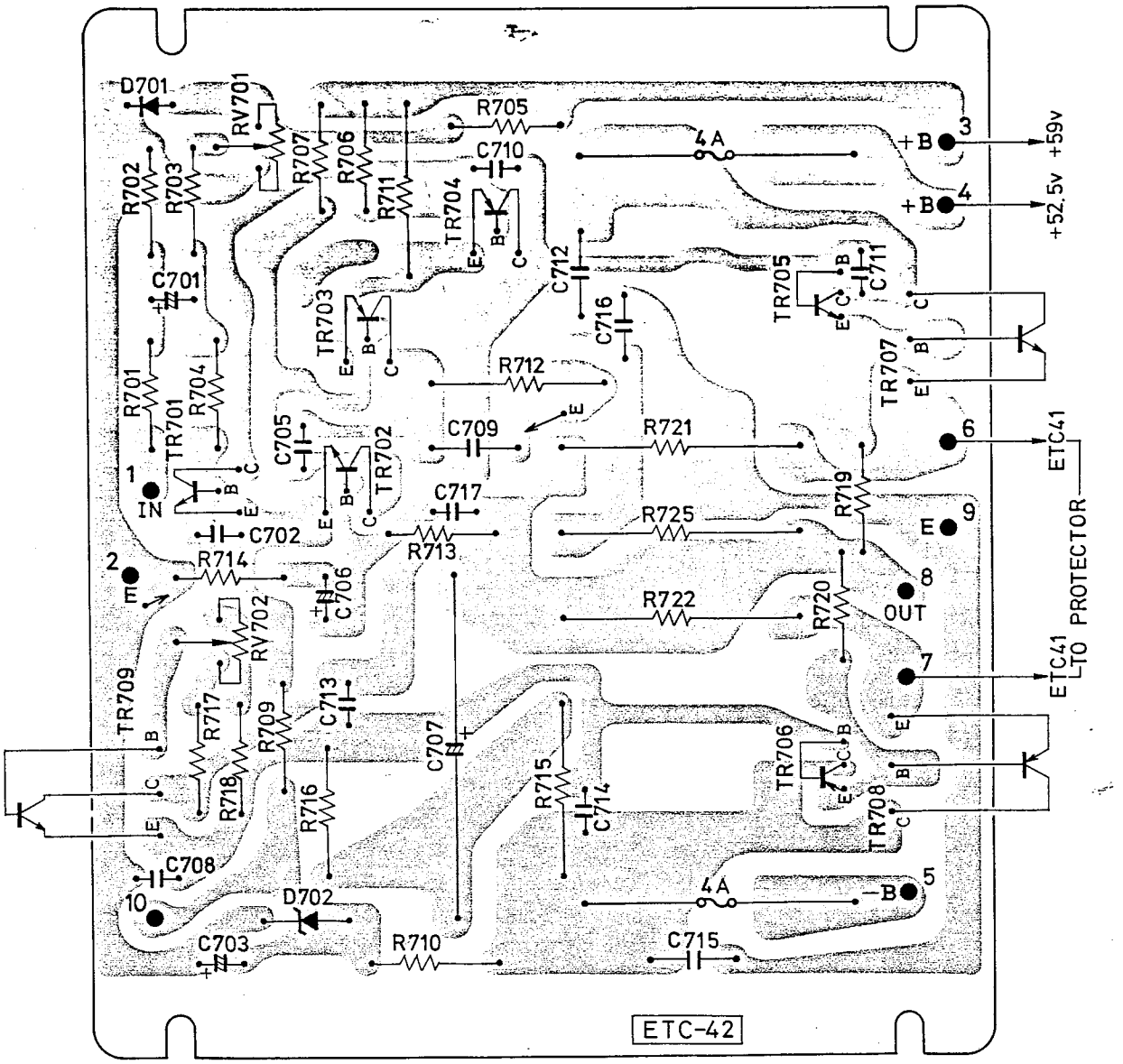


Fig. 13

Ref. No.	Part No.	Part Name	Descriptions
TR1,2	2730143002	2SC1451 V	TRANSISTOR
TR3,4	2710060008	2SA809 B	TRANSISTOR
TR5	2730142003	2SC1669 0-LB-B	TRANSISTOR
TR6	2710059006	2SA839 0-LB-B	TRANSISTOR
TR7	2730144001	2SC1116	TRANSISTOR
TR8	2710061007	2SA747	TRANSISTOR
TR9	2730096023	2SC984 C	TRANSISTOR
D1	2760156001	VD1220	VARISTER
D2	2760068005	AW01-16	ZENNER DIODE
VR1	EP-546211	SOLID VOLUME	4.7kΩ VARIABLE RESISTOR
VR2	EP-54625	SOLID VOLUME	470Ω VARIABLE RESISTOR
	EP-71329	FUSE (4A)	FOR "+B", "−B" FUSE
	EP-5870	FUSE HOLDER	
	4170024006	RADIATOR	FOR TR5,6
	4170023007	RADIATOR	FOR TR3,4
	EE-2043N1	RADIATOR	FOR TR7,8
	2070001008	TR. SOCKET	FOR TR7,8
		INSULATING SHEET	FOR TR7,8
	EE-2054H	RADIATOR BRACKET	FOR EE-2043N1 RADIATOR
	EP-6071	BASE PIN	
	2220030201	PRINTED CIRCUIT BOARD	

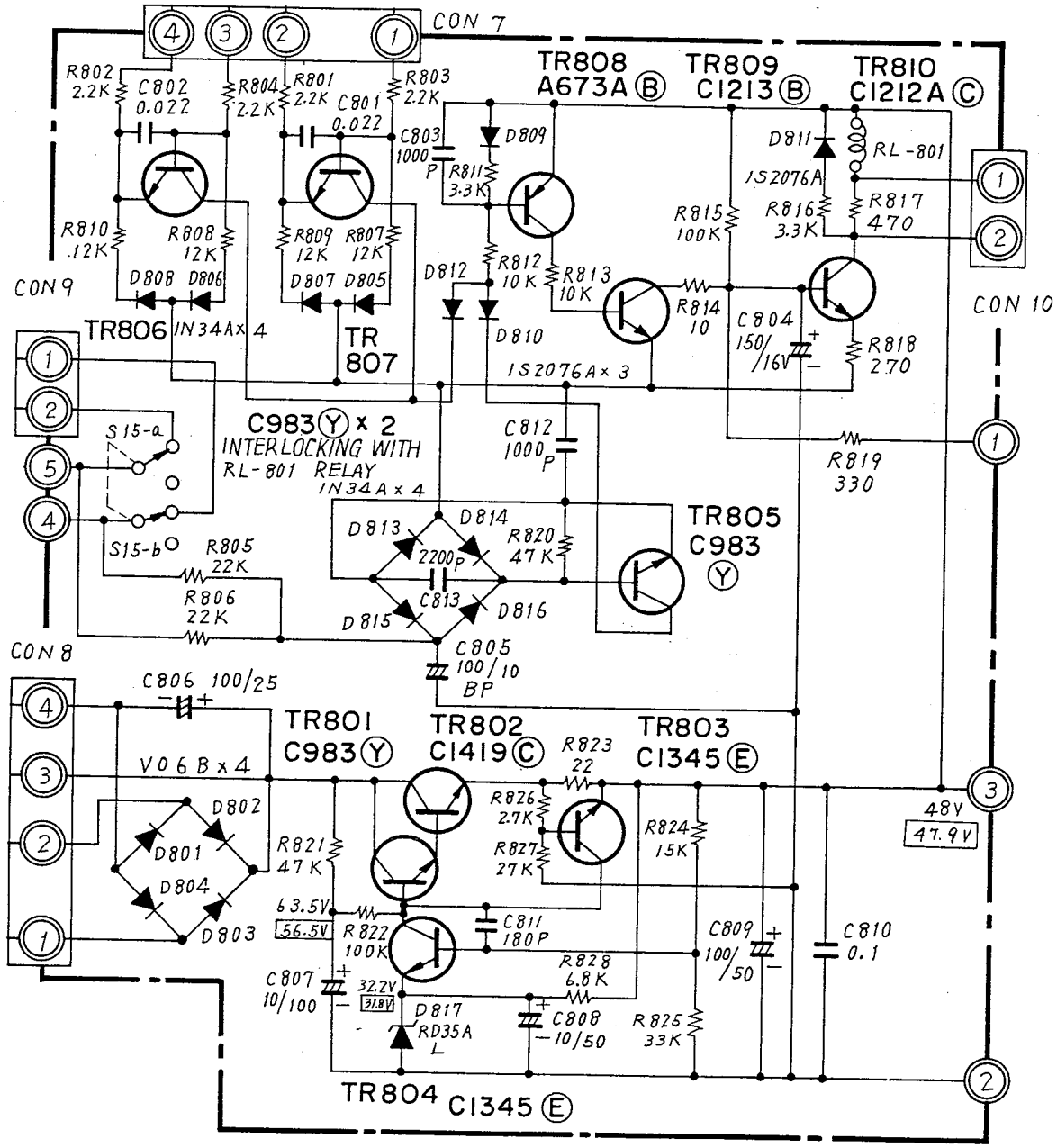


Fig. 14

Ref. No.	Parts No.	Parts Name	Descriptions
C1,2	2551017003	CQ92M1H223K	0.022μF, ±10%, 50V PLASTIC FILM CAPACITOR
C3,12	2531004007	CK45B1H102K	0.001μF, ±10%, 50V CERAMIC CAPACITOR
C4	2549005014	CE04=1E151MHS	150μF, ±20%, 25V ELECTROLYTIC CAPACITOR
C5	2543013057	CE04D1A101MBP	100μF, ±20%, 10V ELECTROLYTIC CAPACITOR
C6	2544028009	CE04W1E101=	100μF, 25V ELECTROLYTIC CAPACITOR
C7	2544060009	CE04W2A100=	10μF, 100V ELECTROLYTIC CAPACITOR
C8	2544047006	CE04W1H100=	10μF, 50V ELECTROLYTIC CAPACITOR
C9	2544050006	CE04W1H101=	100μF, 50V ELECTROLYTIC CAPACITOR
C10	2531027000	CK45F1H104Z	0.1μF, 50V CERAMIC CAPACITOR
C11	2533660009	CC45SL1H181K	180pF, ±10%, 50V CERAMIC CAPACITOR
C13	2531006005	CK45B1H222K	220pF, ±10%, 50V CERAMIC CAPACITOR
R1,2,3,4	2410322017	RD14B2E222JF	1/4W, 2.2kΩ, ±5% CARBON FILM RESISTOR
R5,6	2410346019	RD14B2E223JF	1/4W, 22kΩ, ±5% CARBON FILM RESISTOR
R7,8,9,10	2410340015	RD14B2E123JF	1/4W, 12kΩ, ±5% CARBON FILM RESISTOR
R11,16	2410326013	RD14B2E332JF	1/4W, 3.3kΩ, ±5% CARBON FILM RESISTOR

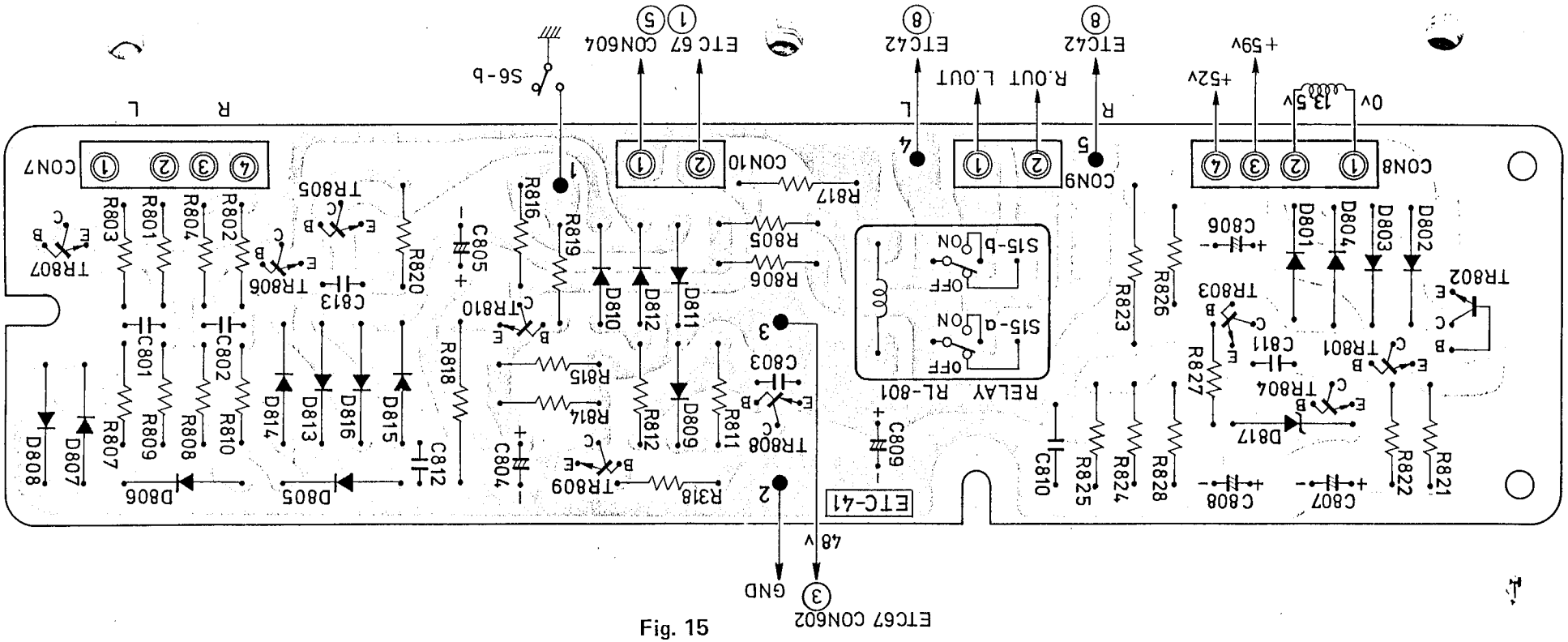


Fig. 15

Ref. No.	Part No.	Part Name	Descriptions	Ref. No.	Part No.	Part Name	Descriptions
R12,13	2410338014	RD14B2E103JF	1/4W, 10kΩ, ±5% CARBON FILM RESISTOR	D1,2,3,4	2760057003	V06B	RECTIFIER
R14	2410266018	RD14B2E100JF	1/4W, 10Ω, ±5% CARBON FILM RESISTOR	D5,6,7,8,	2760001004	1N34A	DIODE
R15	2410362019	RD14B2E104JF	1/4W, 100kΩ, ±5% CARBON FILM RESISTOR	13,14,15,			
C17	2410177013	RD14B2H471JF	1/4W, 470Ω, ±5% CARBON FILM RESISTOR	16			
R18	2440034003	RS14B3A271JNB	1W, 270Ω, ±5% METAL OXIDE FILM RESISTOR	D9,10,11,	2760049011	1S2076A	DIODE
R19	2410302011	RD14B2E331JF	1/4W, 330Ω, ±5% CARBON FILM RESISTOR	12			
R20,21	2410354014	RD14B2E473JF	1/4W, 47kΩ, ±5% CARBON FILM RESISTOR	D17	2760094011	RD35AL	ZENNER DIODE
R22	2410362019	RD14B2E104JF	1/4W, 100kΩ, ±5% CARBON FILM RESISTOR				
R23	2440021003	RS14B3A220JNB	1W, 22Ω, ±5% METAL OXIDE FILM RESISTOR		4170007007	RADIATOR	FOR TR2
R24	2410710001	RD05A2H153G	1/2W, 15kΩ, CARBON COMPOSITE RESISTOR			INSULATING SHEET	FOR TR2
R25	2410718003	RD05A2H333G	1/2W, 33kΩ, CARBON COMPOSITE RESISTOR			INSULATING BUSH	FOR TR2
R26	2410324015	RD14B2E272JF	1/4W, 2.7kΩ, ±5% CARBON FILM RESISTOR		2140016004	RELAY	
R27	2410348017	RD14B2E273JF	1/4W, 27kΩ, ±5% CARBON FILM RESISTOR		2032011007	2P CONNECTOR BASE	
R28	2410334018	RD14B2E682JF	1/4W, 6.8kΩ, ±5% CARBON FILM RESISTOR		2030029004	4P CONNECTOR BASE	
					EP-6071	BASE PIN	
TR1,5,6,7	2730162009	2SC1175A-F	TRANSISTOR		2220029209	PRINTED CIRCUIT BOARD	
TR2	2730120012	2SC1419 C	TRANSISTOR				
TR3,4	2730116013	2SC1345 E	TRANSISTOR				
TR8	2710040044	2SA673 A-B	TRANSISTOR				
TR9	2730111018	2SC1213 B	TRANSISTOR				
TR10	2730110019	2SC1212 A-C	TRANSISTOR				

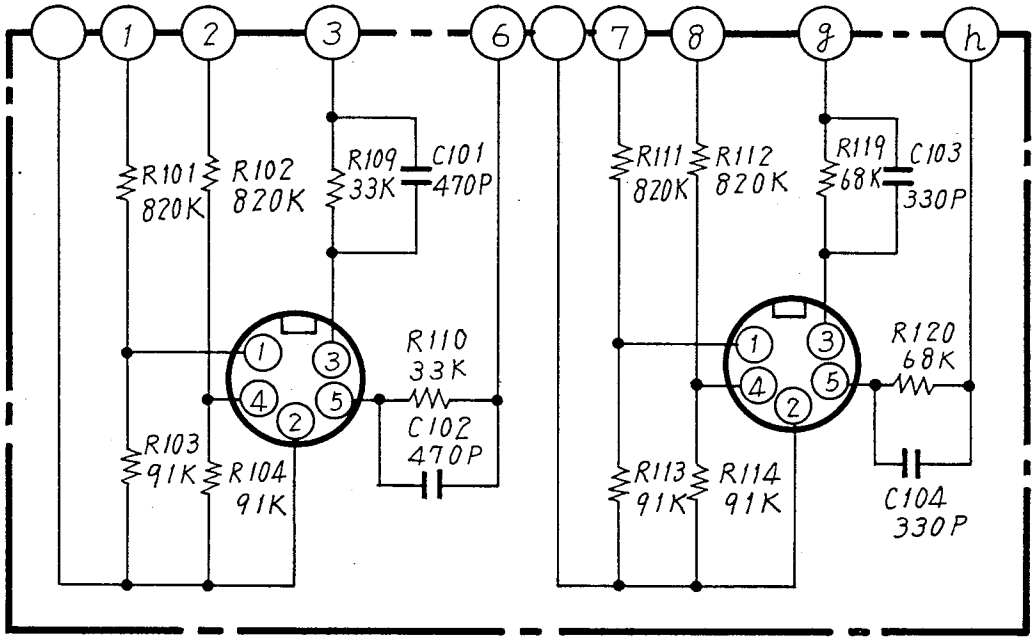


Fig. 16

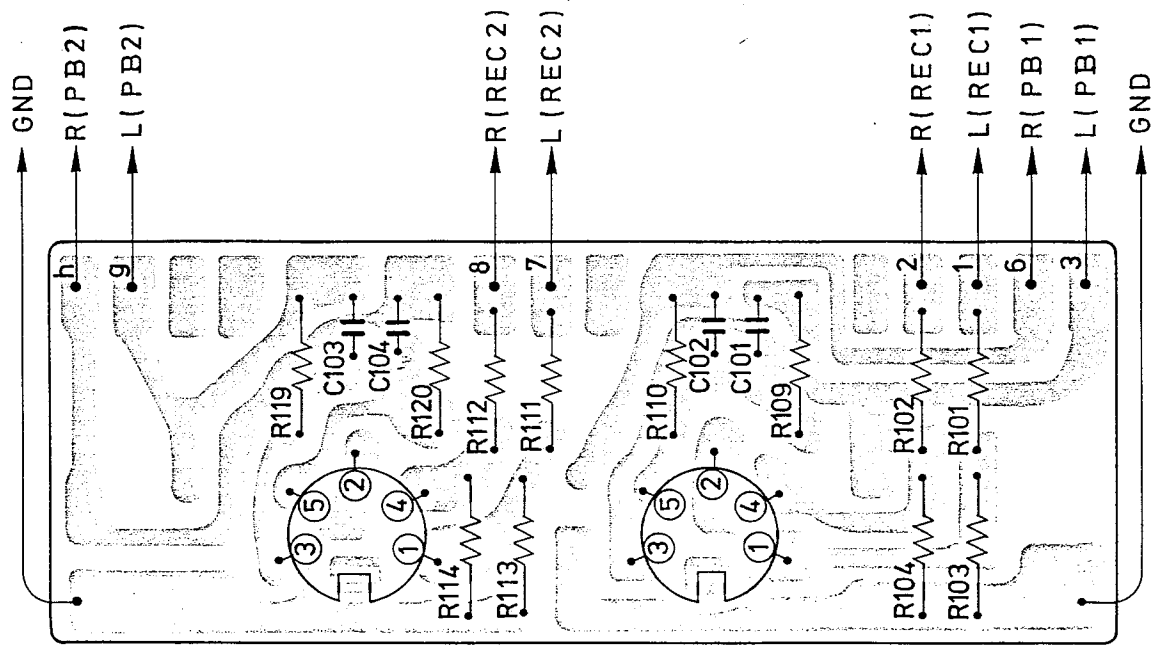


Fig. 17

Ref. No.	Parts No.	Parts Name	Descriptions
C1,2	2531002009	CK45B1H471K	470pF, ±10%, 50V CERAMIC CAPACITOR
C3,4	2531001000	CK45B1H331K	330pF, ±10%, 50V CERAMIC CAPACITOR
R1,2,11,12	2410255003	RD14B2H824J	1/2W, 820kΩ, ±5% CARBON FILM RESISTOR
R3,4,13,14	2410361010	RD14B2E913JF	1/4W, 91kΩ, ±5% CARBON FILM RESISTOR
R9,10	2410350018	RD14B2E333JF	1/4W, 33kΩ, ±5% CARBON FILM RESISTOR
R19,20	2410358010	RD14B2E683JF	1/4W, 68kΩ, ±5% CARBON FILM RESISTOR
	EP-7103	5P CONNECTOR BASE	DIN TYPE CONNECTING SOCKET
	EP-5667H1	TERMINAL	
	EE-2177H	PRINTED CIRCUIT BOARD	

GE-8001-1 CHASSIS & CABINET GROUP

Ref. No.	Parts No.	Parts Name	Descriptions
C1	2518001023	CPO5C==AC473MC	0.047μF, ±20%, 450VAC OIL CAPACITOR
C3,4	2546003103	CE642W1K471=	470μF, 80V ELECTROLYTIC CAPACITOR
C5,6	2546004209	CE64W1J472=HR	4700μF, 63V ELECTROLYTIC CAPACITOR
C7,8,9,10	2533625002	CC45SL1H820J	82pF, ±5%, 50V CERAMIC CAPACITOR
C11	2554065007	CQ93P2J473M	0.047μF, ±20%, 630V PLASTIC FILM CAPACITOR
C12,13	2531026001	CK45F1H473Z	0.047μF, 50V CERAMIC FILM CAPACITOR
C14	2531027000	CK45F1H104Z	0.1μF, 50V CERAMIC FILM CAPACITOR
R13,14	2440145002	RS14B3F221JNB	3.15W, 220Ω, ±5% METAL OXIDE FILM RESISTOR
R15	2440033004	RS14B3A221JNB	1W, 220Ω, ±5% METAL OXIDE FILM RESISTOR
	2124058004	LEVER SWITCH	FOR POWER ON-OFF SWITCH
	EP-7101H1	LEVER SWITCH	FOR TONE CONTROL TURNOVER SWITCH
	2120008100	SPEAKERS SWITCH	FOR SPEAKER SELECTOR SWITCH
	2124035001	PUSH SWITCH	FOR NULL BALANCE SWITCH
	3930004005	LAMP ASSY	FOR PILOT LAMP
	EP-5941	HEAD PHONE JACK	
	EP-71141	PUSH TERMINAL	FOR SPEAKER CONNECTING TERMINAL
	2030026007	4P CONNECTOR BASE	FOR PHONO 1,2 AUX 1,2 INPUT JACK
	EP-6762	4P CONNECTOR BASE	FOR PRE-MAIN SELECT SWITCH
	EP-6764	8P CONNECTOR BASE	FOR TAPE 1,2 JACK
	2032037007	2P CONNECTOR BASE	FOR TUNER INPUT JACK
	2090012006	SHOT PIN	FOR TAPE PB SHOT PIN PLUG
	2120017007	6P SLIDE SWITCH	FOR PRE-MAIN COUPLER
	CF-8576H	SWITCH STOPPER	FOR PRE-MAIN SELECT SWITCH
	2020012005	FUSE HOLDER	
	2061015032	FUSE (2.5A)	FOR AC LINE FUSE
	2006034007	AC CORD WITH PLUG	
	MD-2982H	BUSHING	
	EP-7130	TERMINAL	FOR GND TERMINAL
	2110009009	VI620N15KB104T	FOR TAPE, AUX LEVEL CONTROL VOLUME
	2300008108	POWER TRANS ASSY	
D2	2760160000	SILICON RECTIFIER (+)	
D1	2760160013	SILICON RECTIFIER (–)	
	4170006008	RADIATOR	HEAT SINK FOR D1,2
	2030032046	1P CONNECTOR CORD	
	2030032059	1P CONNECTOR CORD	
	2030032062	1P CONNECTOR CORD	
	2030032075	1P CONNECTOR CORD	
	2030032004	1P CONNECTOR CORD	
	2030032017	1P CONNECTOR CORD	
	2030032020	1P CONNECTOR CORD	
	2030032033	1P CONNECTOR CORD	
	2030033029	1P CONNECTOR CORD	
	2030032091	1P CONNECTOR CORD	
	2030132014	1P CONNECTOR CORD	
	2032001004	2P CONNECTOR CORD	
	2032001020	2P CONNECTOR CORD	
	2032022025	2P CONNECTOR CORD	
	2036002106	4P CONNECTOR CORD	
	2036014204	4P CONNECTOR CORD	
	2040009205	6P CONNECTOR CORD	
	2030132001	1P CONNECTOR CORD	
	2034042003	3P CONNECTOR CORD (A)	
	2034043109	3P CONNECTOR CORD (B)	
	2034044001	3P CONNECTOR CORD (C)	
	2034045000	3P CONNECTOR CORD (D)	
	2034050008	3P CONNECTOR CORD	
	2036041002	4P CONNECTOR CORD	
	2038033131	5P CONNECTOR CORD (B)	
	2038033128	5P CONNECTOR CORD (B)	
	2038034004	5P CONNECTOR CORD (A)	
	2040032007	6P CONNECTOR CORD	
	2040033006	6P CONNECTOR CORD	

Ref. No.	Parts No.	Parts Name	Descriptions
	1400016004	FRONT PANEL ASSY	
	1120007209	VOLUME KNOB	FOR MAIN VOLUME
	MD-5176H1	KNOB RING	FOR MAIN VOLUME KNOB
	DL-7282K2	KNOB ASSY	FOR BALANCE VOLUME
	DL-7282K1	KNOB ASSY	FOR BASS, TREBLE
	DL-7284K	FUNCTION KNOB ASSY	FOR FUNCTION, MODE, SPEAKER
	MD-5169	PUSH KNOB	FOR NULL BALANCE
	MD-5167H	LEVER KNOB (A)	FOR POWER, HIGH, LOW, LOUDNESS, TONE DEFEAT, MM-MC
	MD-5221	LEVER KNOB (B)	FOR TURNOVER, GAIN, DUBBING, MONITOR
	MD-7294H	KNOB	FOR TAPE, AUX LEVEL
	EE-2061K1	BOTTOM COVER ASSY	
	100000309	TOP CABINET ASSY	
	SC-1162	SPECIAL SCREW	FIXING SCREW FOR TOP CABINET

MEMO:

ADJUSTMENTS AND MEASUREMENTS PROCEDURES

INSTRUCTIONS FOR ADJUSTING MIDPOINT ELECTRIC POTENTIAL AND IDLING ELECTRIC CURRENT OF POWER APPLIFIER UNIT.

To ensure accurate adjustment of the midpoint electric potential and idling electric current of the PMA-700Z Power Amplifire Unit (ETC-42), adjustment should be performed in the manner indicated below:

1. MEASURING INSTRUMENTS

A. DC Voltmeter (200mV)
B. DC Ammeter (100mA)

NOTE:

One each of the above mentioned instruments will suffice if a test is conducted on only one channel at a time.

2. CONNECTION

A. Connect one DC voltmeter to the left and one to the right channel of the SPEAKER terminals. (See Fig. 18)
B. Remove the plug (red wire) from the No. 1 terminal (+B) of the Power Amplifire Unit (ETC042) and connect the DC ammeter to each channel. (See Fig. 19)

3. PROCEDURES

A. Set the power supply at pre-set voltages of the PMA-700Z (AC 110, 120, 220, 240 volts)
B. Wait three minutes after Power switch is ON.
C. For adjusting midpoint voltage, turn the VR-1 (4.7 Kohm) so that voltage reading on the DC voltmeter (V) becomes 0 (zero): V=0. The condition is abnormal if the value exceeds 100 mV.
D. Following adjustment of the midpoint voltage potential, adjust the idling electric current to 45 mA on the DC ammeter by rotating the VR-2 (470 ohm). 1=45mA.
Lock it with paint after adjustment is completed.

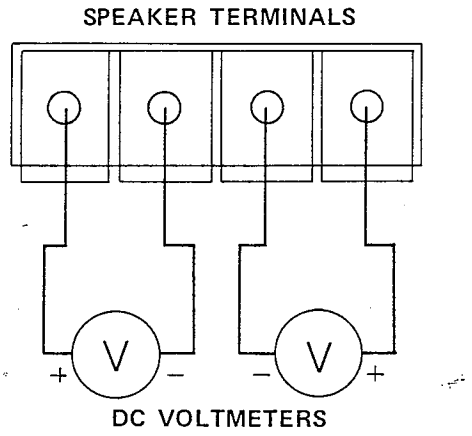


Fig. 18

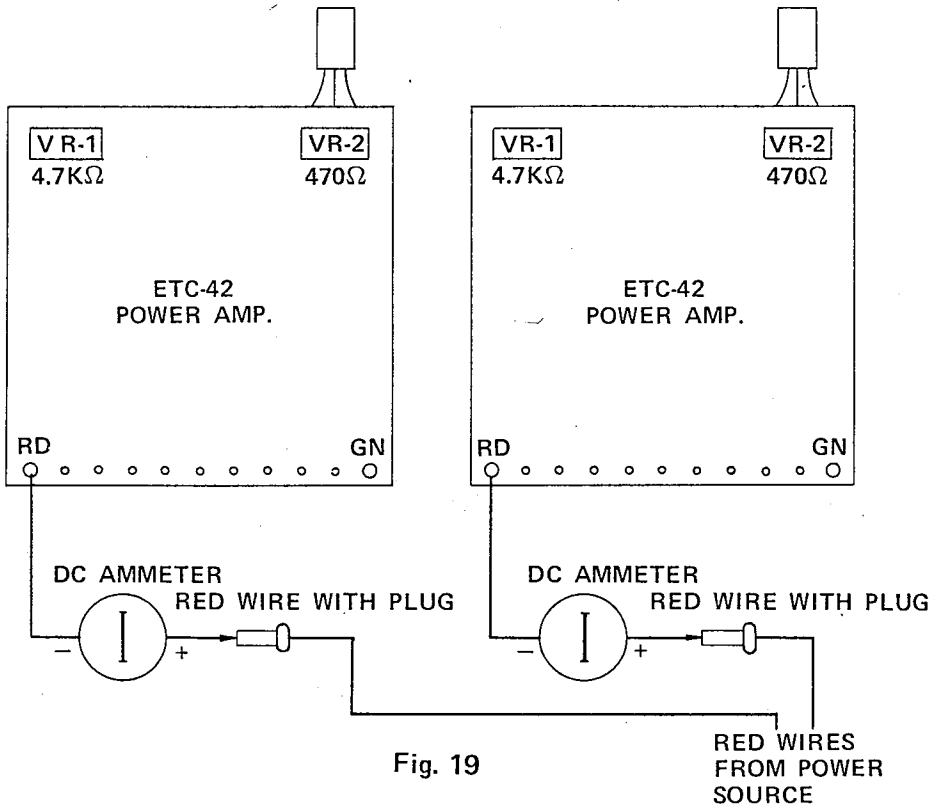


Fig. 19

INSTRUCTIONS FOR TESTING THE POWER AMPLIFIER UNIT.

To ensure accurate testing of the PMA-700Z power amplifier, a test should be conducted in the manner indicated below:

1. MEASURING INSTRUMENTS

A.	Low-distortion audio frequency oscillator	1 set
B.	High-performance distortion meter	1 set
C.	AC Voltmeter (V.T.V.M.)	2 sets
D.	Oscilloscope	1 set
E.	8 ohms noninductive resistor	2 pcs.
F.	Variable transformer	1 set

2. CONNECTION (SEE FIG. 20)

A. Connect one 8 ohms noninductive resistor to the left and one to the right channel of the SPEAKER terminals, using a separate ground lead.

B. Set the NORMAL-SEPARATE selector switch to the "SEPARATE" position and apply input signal to the MAIN-IN jack.

3. PROCEDURES

A. Set the power supply at pre-set voltages of the PMA-700Z (AC 110, 120, 220, 240 volts)

B. Supply the power only upon completion of connection.

C. Gradually increase the 1 KHz. input signal level until the distortion meter registers 0.1% distortion. Voltage of the SPEAKER terminals then becomes the output voltage (V2) and the read-off from V1 becomes the input voltage.
Be sure to apply input signal one channel at a time.

4. STANDARD VALUES

A.	Input Voltage (V1)	0.89 volts — 1.19 volts
B.	Output Voltage (V2) PMA-700Z	80 watts (25.3 volts) or more.

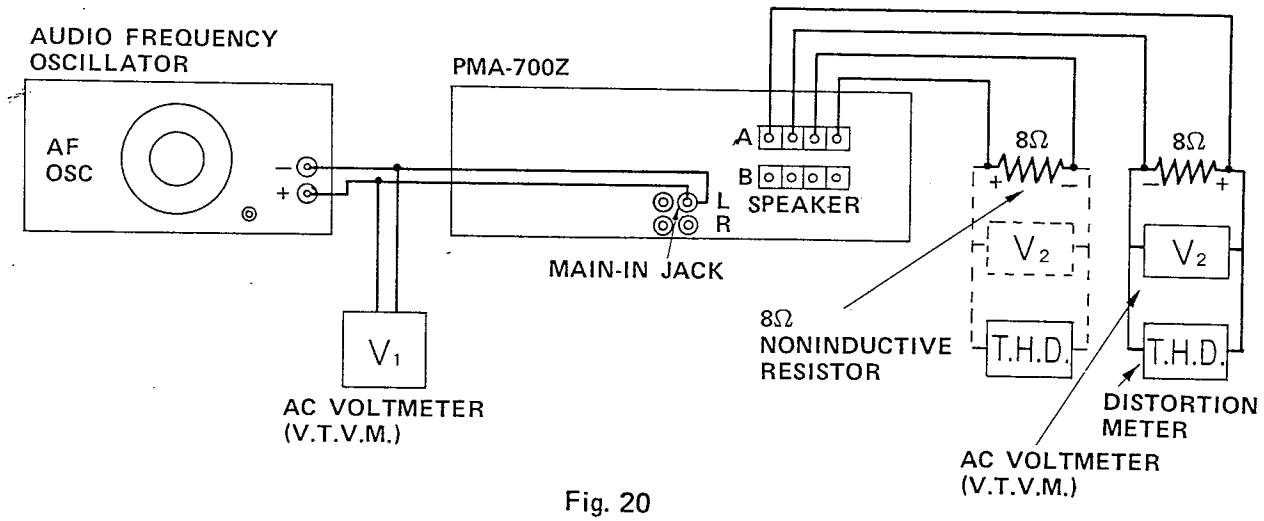


Fig. 20

INSTRUCTION FOR TESTING THE SENSITIVITY OF EACH INPUT JACK.

To ensure accurate testing of the sensitivity of each input jack, a test should be conducted in the manner indicated below:

1. MEASURING INSTRUMENTS

A. Low-distortion Audio frequency oscillator 1 set
B. High-performance distortion meter 1set
C. Oscilloscope 1 set
D. 8 ohms noninductive resistor 2 pcs.
E. AC voltmeter (V.T.V.M.) 2 sets

2. CONNECTION

A. Connect one 8 ohms noninductive resistor to the left and one to the right channel of the SPEAKER terminals, using a separate ground lead.
B. Connection of other instrument refer Fig. 21.

3. PROCEDURES

A. Set the power supply at pre-set voltages of the PMA-700Z (AC 110, 120, 220, 240 volts)
B. Apply 1 KHz. input signal to AUX-1 jack so that output of the SPEAKER terminals becomes THD = 0.1%. The input voltage (V1) then becomes the input sensitivity of the AUX-1. Note the output voltage (V2).
C. Change over to another input jack and adjust the input voltage so that it becomes equal to the output voltage (V2) of AUX-1. The input voltage then becomes the input sensitivity of the each jack.

4. STANDARD VALUES

A. PHONO-1,2 (MM) . . . . . 3.2 mV ±1.0 dB
B. PHONE-2 (MC) . . . . . 0.32 mV ±1.0 dB
C. TUNER . . . . . 320 mV ±0.5 dB
D. AUX-1,2 . . . . . 320 mV ±0.5 dB
E. TAPE P.B. (DIN) . . . . . 320 mV ±0.5 dB
F. TAPE P.B. (RCA PIN) . . . . . 320 mV ±0.5 dB

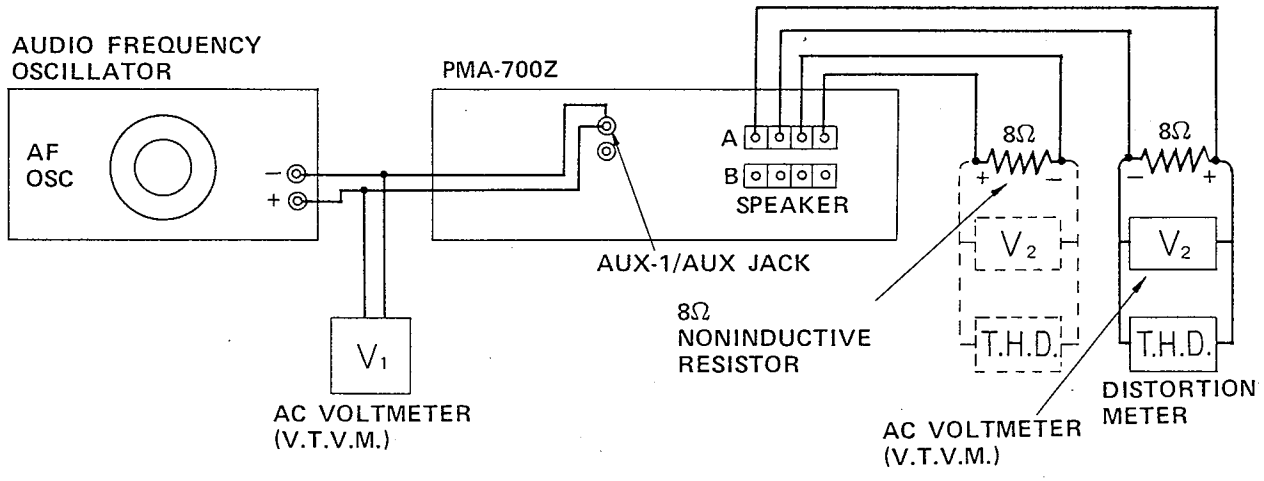


Fig. 21

INSTRUCTIONS FOR TESTING FREQUENCY CHARACTERISTIC

To ensure accurate testing of the PMA-700Z frequency characteristic, a test should be conducted in the manner indicated below:

1. MEASURING INSTRUMENTS

A.	AC voltmeter (V.T.V.M.)	2 sets
B.	Oscilloscope	1 set
C.	CR oscillator	1 set
D.	8 ohms noninductive resistor	2 pcs.
E.	Variable transformer	1 set
F.	Low frequency direct-viewing apparatus	1 set
G.	Audio frequency sweep generator	1 set

2. CONNECTION

A. Connect one 8 ohms noninductive resistor to the left and one to the right channel of the SPEAKER terminals, using a separate ground lead.
B. Figure 22 shows for testing AUX-1 frequency characteristic.
C. Figure 23 shows for testing PHONE-1 frequency characteristic.

3. PROCEDURES

3-1. FREQUENCY CHARACTERISTIC FROM AUX INPUT JACK

A. Set the power supply at pre-set voltages of the PMA-700Z (AC 110, 120, 220, 240 volts)
B. Supply power upon completion of wiring.
C. Set the TONE DEFEAT switch to "TONE" position.
D. Set the MAIN VOLUME control to the maximum and BASS and TREBLE controls to it's center (Flat) position.
E. Apply 1 KHz. input signal from the audio frequency sweep generator (or CR oscillator) and adjust the output level of the generator so that the power output (V) becomes 5 watts (6.3 volts). The level of the low frequency direct-viewing apparatus must be adjusted to 20 dB (When using V.T.V.M., 0 dB is set at 6.3 volts). Then set the sweep generator to AUTO. Be sure that level variation while sweeping at 30Hz. – 15KHz. is within ±1 dB.
F. Set the TONE DEFEAT switch to "DEFEAT" position.
G. The same procedure used for item "E" applies. Variation of the level while sweeping at 25Hz. – 20KHz. should be within ±1 dB.
H. Set the TONE DEFEAT switch to "TONE" position and BASS control at the maximum position.
I. When sweep is performed in a manner similar to item "E", the level at 80Hz. should be +10 ±1.5 dB.
J. When the BASS control is set at the minimum position, the level must be −10.5 ±1.5 dB at 80Hz.
K. When the TREBLE control is set at the maximum position and sweep is performed in a manner similar to item "E", the level should be +10 ±1.5 dB at 12KHz.
L. Likewise, when TREBLE control is set at the minimum position, the level at 12KHz. should be −9 ±1.5 dB.
Manipulate the tone controls in the order of BASS, both center and TREBLE.
M. Set the BASS and TREBLE controls to center (Flat) position.
N. When the HIGH FILTER switch is set at the "ON" position and sweep is performed in a manner similar to item "E", the level should be −3 +1.5 dB, −2.5 dB at 9KHz. and −14 ±4 dB at 20KHz.
O. When LOW FILTER switch is set at "ON" position, and sweep is performed in a manner similar to item "E", the level should be −14 ±4 dB at 20Hz. and −3 +1.5 dB, −2.5 dB at 40Hz.

3-2. STANDARD VALUES FOR FREQUENCY CHARACTERISTIC FROM AUX INPUT JACK.

	ITEM	CONDITION	STANDARD VALUES
A.	AUX	±0.3dB.	Less than 20Hz.– more than 20,000 Hz.
B.	BASS MAX.	at 80Hz.	+10±1.5dB.
C.	BASS MIN.	at 80Hz.	−10.5±1.5dB.
D.	TREBLE MAX.	at 12KHz.	+10±1.5dB.
E.	TREBLE MIN.	at 12KHz.	−9±1.5dB.
F.	HIGH FILTER	at 9KHz.	$-3^{+1.5dB.}_{-2.5dB.}$
G.	" "	at 20KHz.	−14±4dB.
H.	LOW FILTER	at 40Hz.	$-3^{+1.5dB.}_{-2.5dB.}$
I.	" "	at 20Hz.	−14±4dB.
J.	AUX (TONE DEFEAT)	± 1dB.	Less than 25Hz.– more than 20,000 Hz.

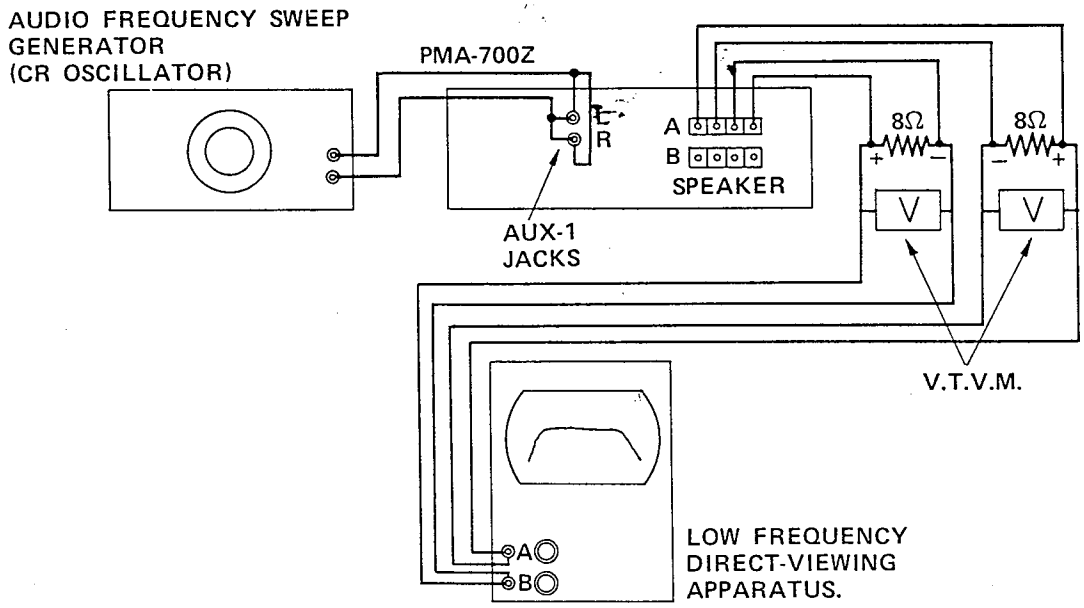


Fig. 22

3-3. FREQUENCY CHARACTERISTIC FROM PHONE-1 INPUT JACK.

A. Apply input signal to PHONE-1 jack and obtain the output from REC-1 jack.

B. Apply 1 KHz. input signal from the audio frequency sweep generator (or CR oscillator). 0 dB is to be set at 100 mV for REC-1 output level.
The level of the low frequency direct-viewing apparatus should be set at 20 dB.
On setting the sweep generator to "AUTO", the REC-1 output level of each frequency while sweeping should be as follows:

CONDITION	STANDARD VALUES
at 30Hz	+18.6 ±0.5dB
at 100Hz	+13.1 ±0.5dB
at 400Hz	+3.8 ±0.5dB
at 5,000Hz	−8.2 ±0.5dB
at 10,000Hz	−13.8 ±0.5dB
at 15,000Hz	−17.3 ±0.5dB

NOTES:

A. The stray capacitance of the input lead should be set at less than 100pF, and the lead length should be shortened as much as possible to minimize the effect of, external hum.

B. Frequency characteristic of the V.T.V.M. should be checked and calibrated in advance.

C. Remember that an alteration of frequency may cause a variation of input voltage.

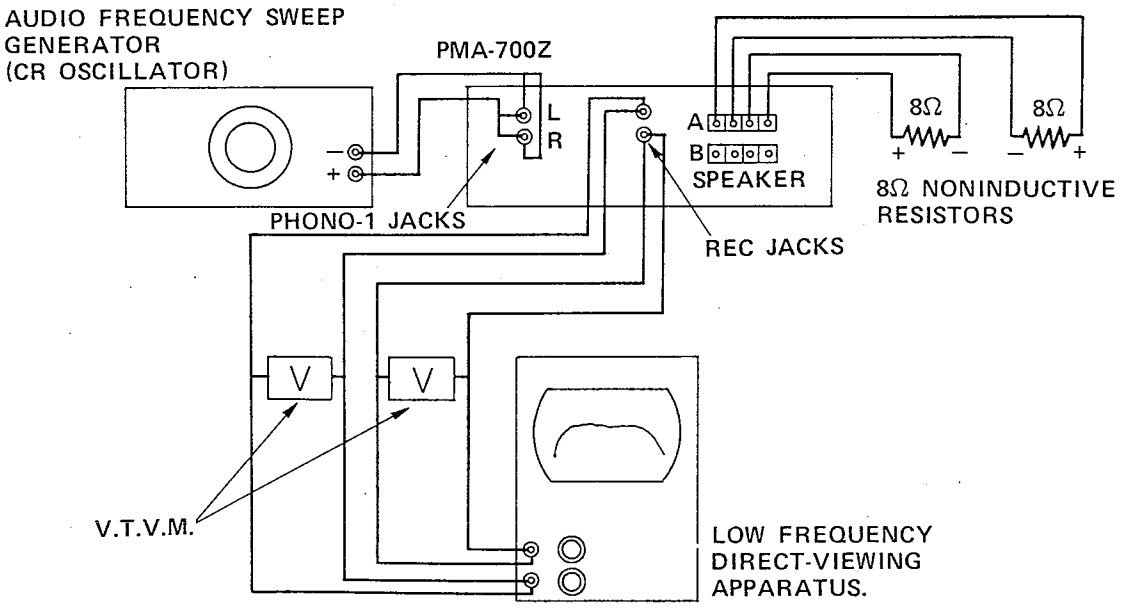


Fig. 23

INSTRUCTIONS FOR TESTING CROSSTALK, RESIDUAL NOISE AND INDUCTIVE NOISE.

To ensure accurate testing of the PMA-700Z crosstalk, residual noise and inductive noise, a test should be performed in the manner indicated below:

1. MEASURING INSTRUMENTS

A. AC voltmeter (V.T.V.M.) (capable of measuring up to 3 mV at full range) 1 set
B. Oscilloscope 1 set
C. CR oscillator 1 set
D. 8 ohms noninductive resistor 2 pcs.
E. Variable transformer 1 set

2. CONNECTION

A. Connect one 8 ohms noninductive resistor to the left and one to the right channel of the SPEAKER terminals, using a separate ground lead.
B. Connection of other instrument refer Fig. 24.

3. PROCEDURES

3-1. RESIDUAL NOISE

A. Set the power supply at pre-set voltage of the PMA-700Z (AC 110, 120, 220, 240 volts)
B. Supply power upon completion of wiring.
C. Set the BASS and TREBLE controls to center (Flat) position and terminate the input jacks, both right and left channels at short circuit.
D. Read the output voltage when the MAIN VOLUME control is at its minimum, which becomes the residual noise.
Be sure to change the power source plug and use smaller value. Use AUX-1 jack for the input.
E. Standard values

GAIN CONTROL +10dB	less than 4 mV
GAIN CONTROL 0dB	less than 1.3 mV
GAIN CONTROL −10dB	less than 0.8 mV

3-2. INDUCTIVE NOISE

A. All input jacks is short-circuit, and set the MAIN VOLUM control at the maximum.
Position of GAIN CONTROL at "0 dB".
The noise then obtained becomes the inductive noise of each terminal, Confirm that measuring is not affected by external noise.
B. Standard values

B-A. PHONO 1 & 2 (MM)	less than 6.4 mV
B-B. PHONO2 (MC)	less than 20 mV
B-C. AUX 1 & 2, TUNER, TAPE 1 & 2	less than 1.3 mV

3-3. PHONO CROSSTALK

A. Set the GAIN CONTROL at 0 dB position and MAIN VOLUME control at the maximum. Apply 1 KHz, input signal to PHONO-1(R) jack from the oscillator, output is set the right channel of the PRE OUT and the PHONO-1(L) at short circuit.
Then check the output leakage from the right channel to the left channel. The obtained ratio becomes crosstalk for the right channel Perform a similar procedure for the left channel to determine its crosstalk.
B. Standard values is more than 65 dB.

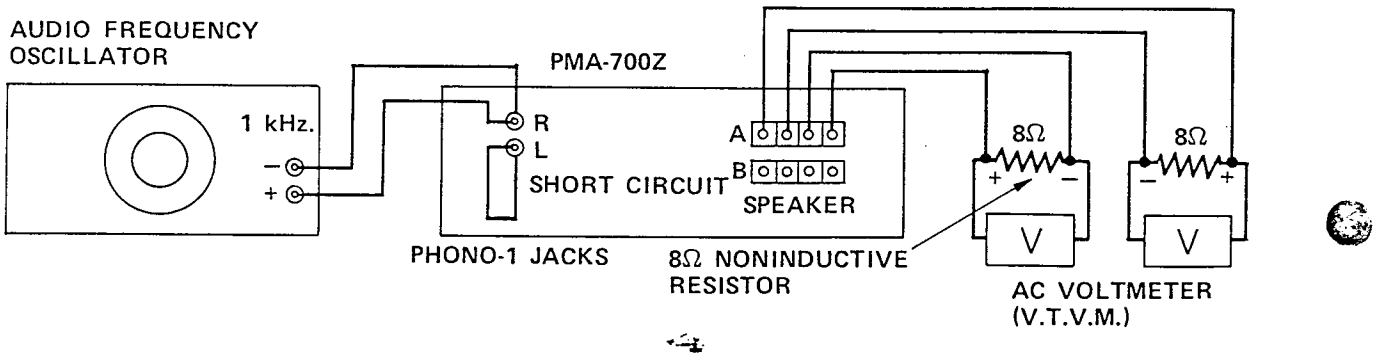


Fig. 24

VOLTAGE CHANGEOVER

If change of voltage is necessary, as shown in figure.

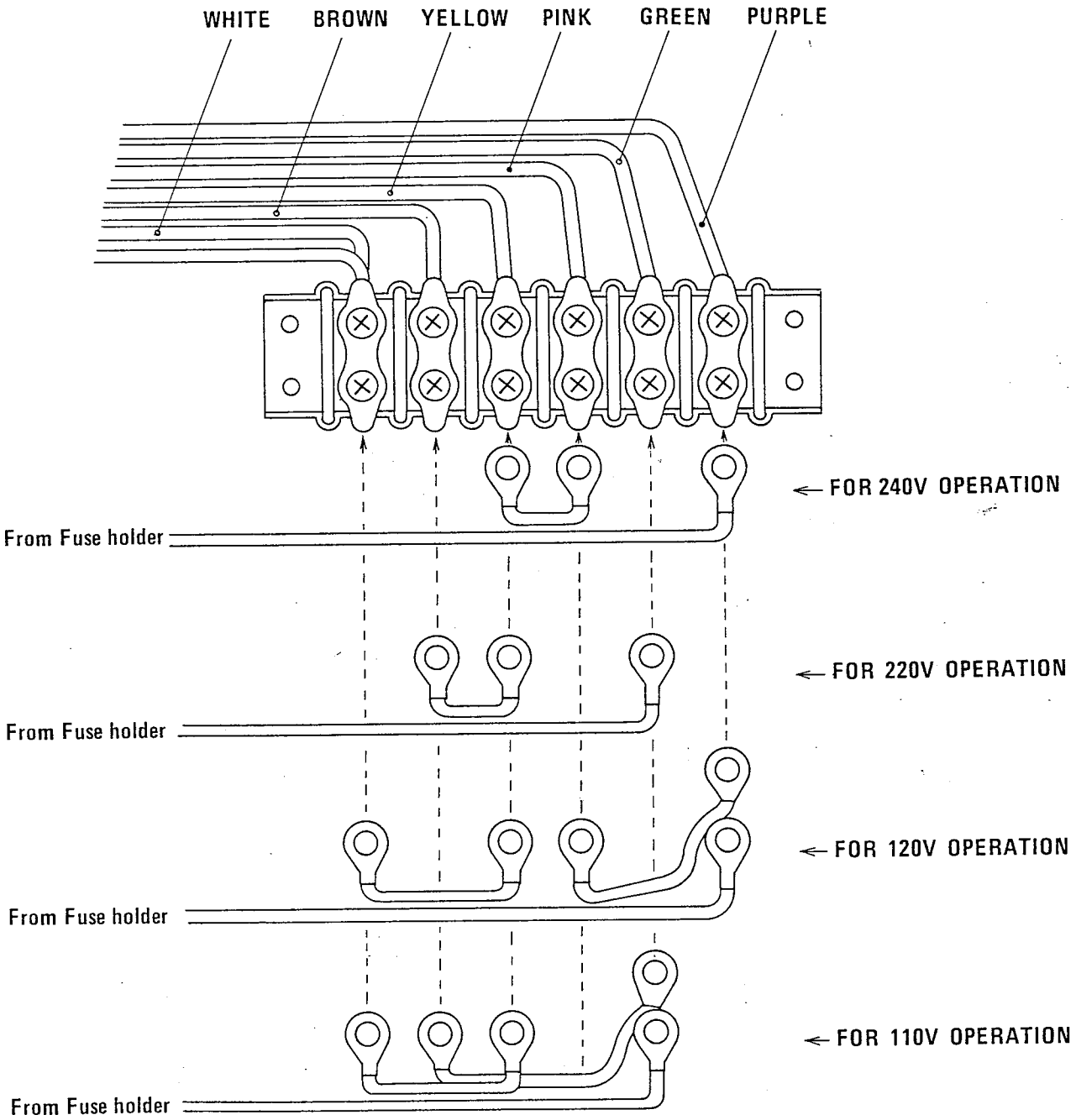


Fig. 25

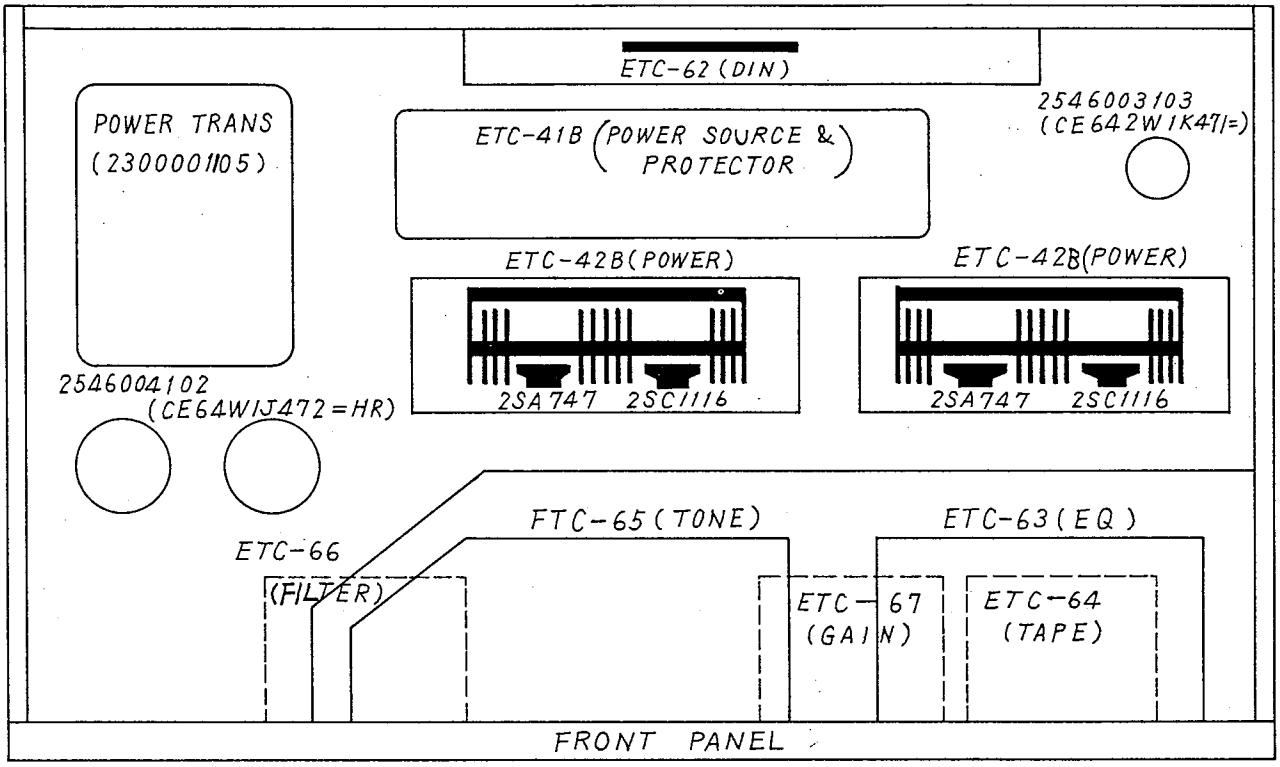
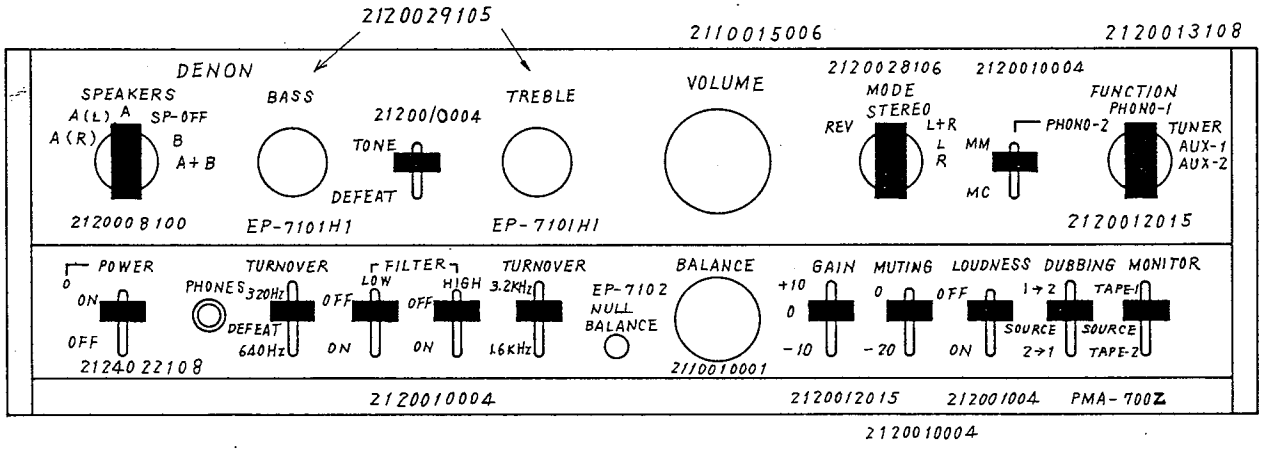

ETC-62 (DIN)
POWER TRANS
(2300001105)
ETC-41B (POWER SOURCE & PROTECTOR)
2546003103
(CE642W1K471=)
ETC-42B(POWER)
2SA747 2SC1116
ETC-42B(POWER)
2SA747 2SC1116
2546004102
(CE64W1J472=HR)
FTC-65 (TONE)
ETC-63 (EQ)
ETC-66
(FILTER)
ETC-67
(GAIN)
ETC-64
(TAPE)
FRONT PANEL

Fig. 26


2120029105
2110015006
2120013108
DENON
SPEAKERS
A(L) A SP-OFF
A(R) B
A+B
BASS
TONE
DEFEAT
TREBLE
VOLUME
2120028106
MODE
STEREO
REV L+R
L
R
2120010004
MM
MC
PHONO-2
FUNCTION
PHONO-1
TUNER
AUX-1
AUX-2
212000B100
EP-7101H1
EP-7101H1
2120012015
POWER
ON
OFF
212402 2108
PHONES
DEFEAT
TURNOVER
320Hz
640Hz
FILTER
LOW
OFF
ON
HIGH
OFF
ON
TURNOVER
3.2KHz
1.6KHz
EP-7102
NULL
BALANCE
BALANCE
2110010001
GAIN
+10
0
-10
MUTING
0
-20
LOUDNESS
OFF
ON
DUBBING MONITOR
1→2
SOURCE
2→1
TAPE-1
SOURCE
TAPE-2
2120010004
2120012015
212001004
PMA-700Z
2120010004

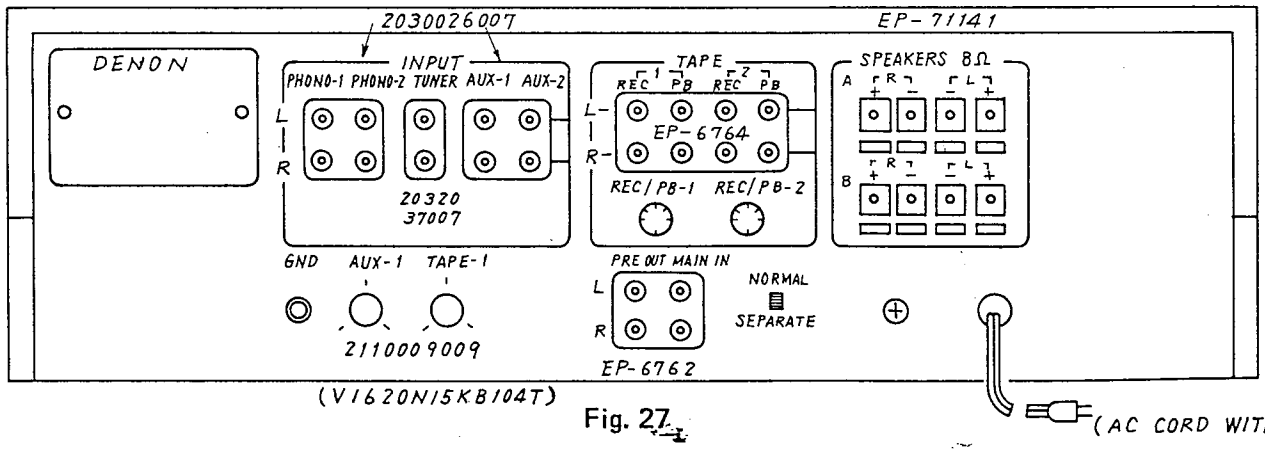

2030026007
EP-7114 1
DENON
INPUT
PHONO-1 PHONO-2 TUNER AUX-1 AUX-2
L
R
20320
37007
TAPE
REC 1 PB REC 2 PB
EP-6764
REC/PB-1 REC/PB-2
SPEAKERS 8Ω
A
B
GND AUX-1 TAPE-1
2110009009
PRE OUT MAIN IN
L
R
EP-6762
NORMAL
SEPARATE
(V1620N15KB104T)
(AC CORD WITH PLUG)

Fig. 27

BLOCK AND LEVEL DIAGRAM OF PMA-700Z

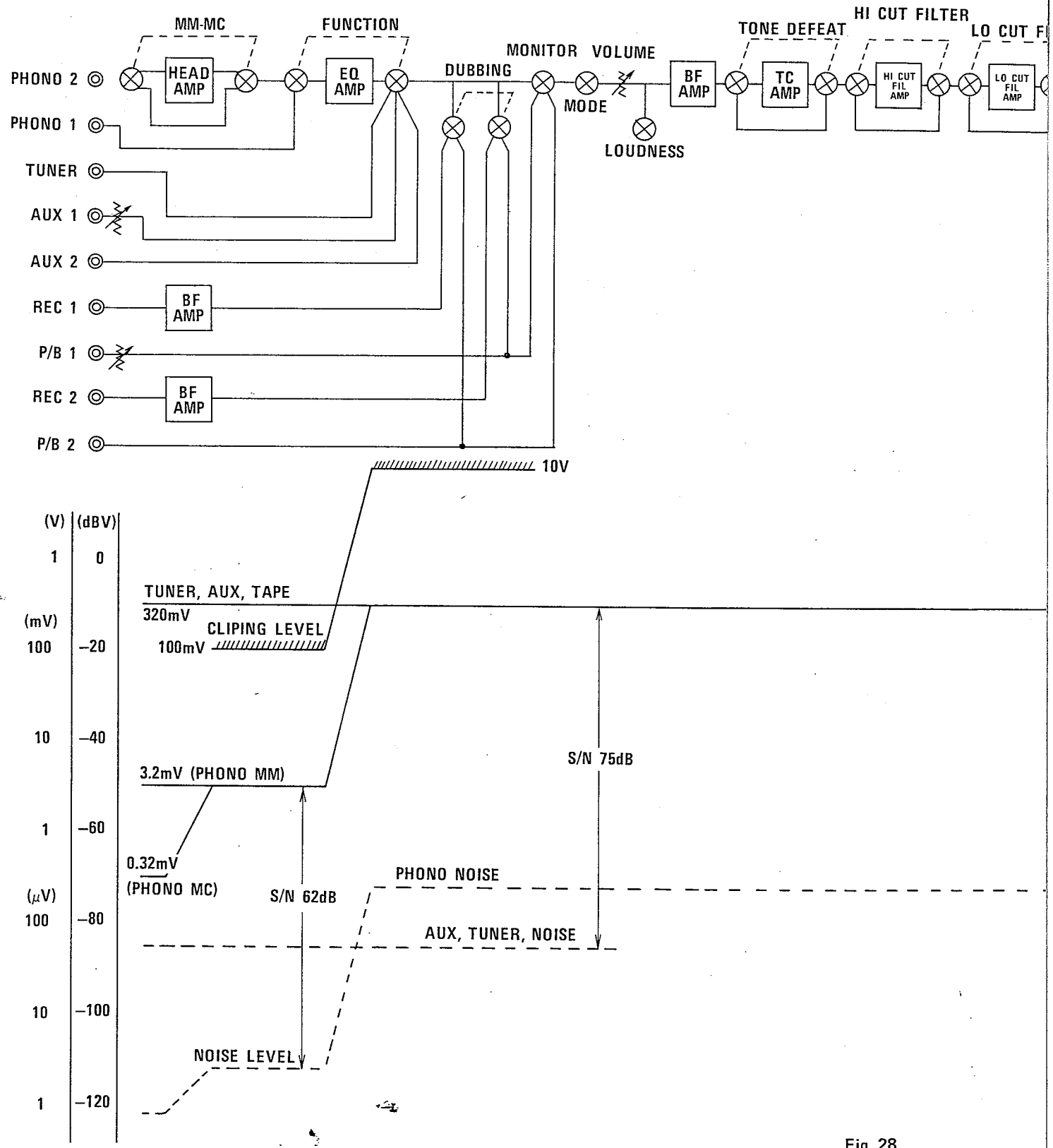
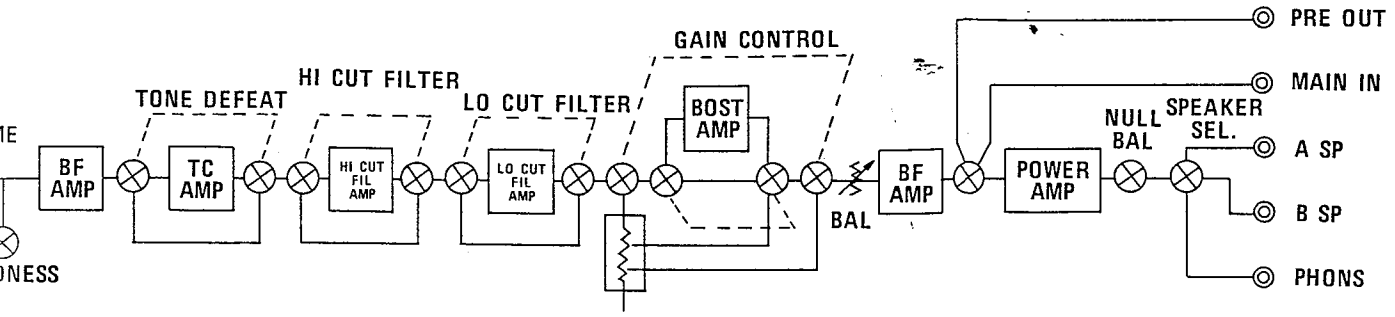


Fig. 28


GAIN CONTROL
HI CUT FILTER
TONE DEFEAT
LO CUT FILTER
BOST AMP
PRE OUT
MAIN IN
SPEAKER SEL.
NULL BAL
A SP
B SP
PHONS
BF AMP
TC AMP
HI CUT FIL AMP
LO CUT FIL AMP
BAL
BF AMP
POWER AMP

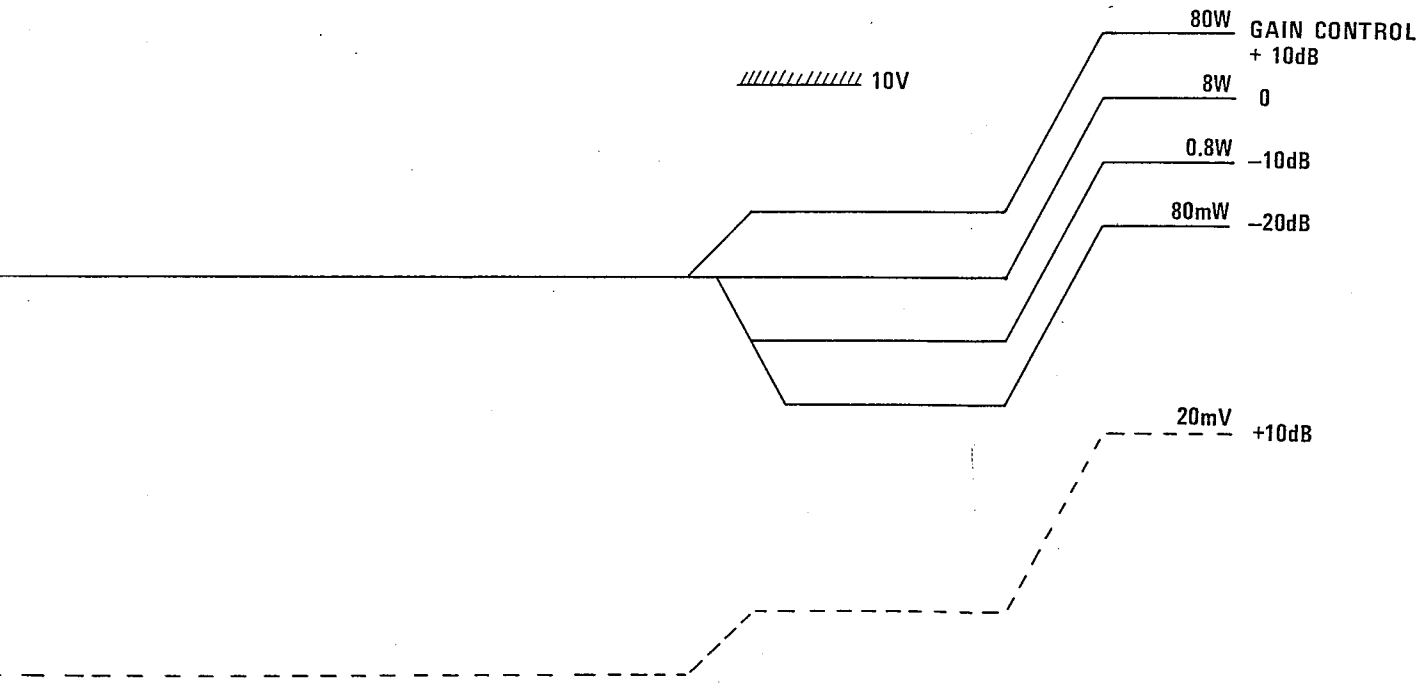

80W
GAIN CONTROL
+ 10dB
10V
8W
0
0.8W
–10dB
80mW
–20dB
20mV
+10dB

Fig. 28

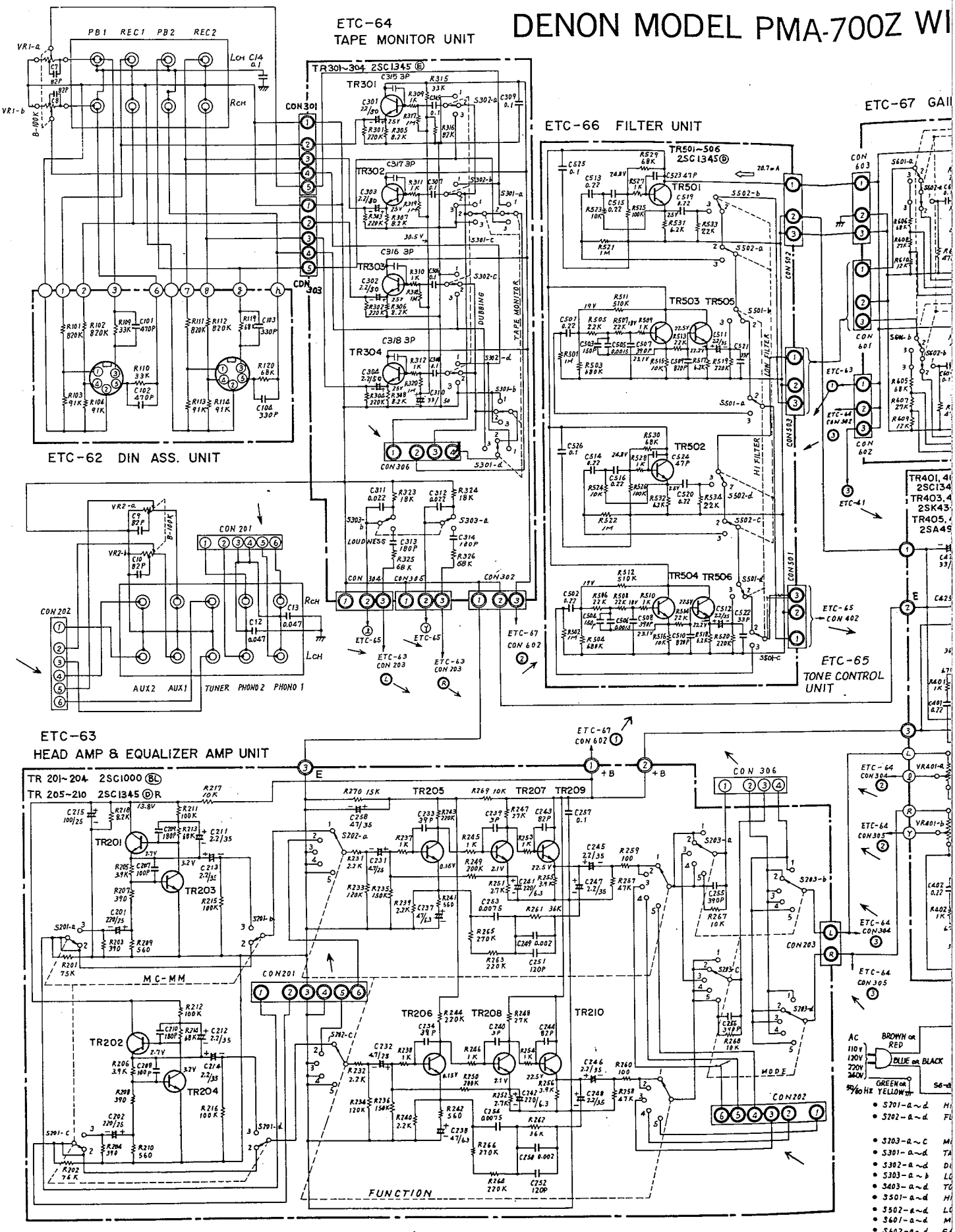
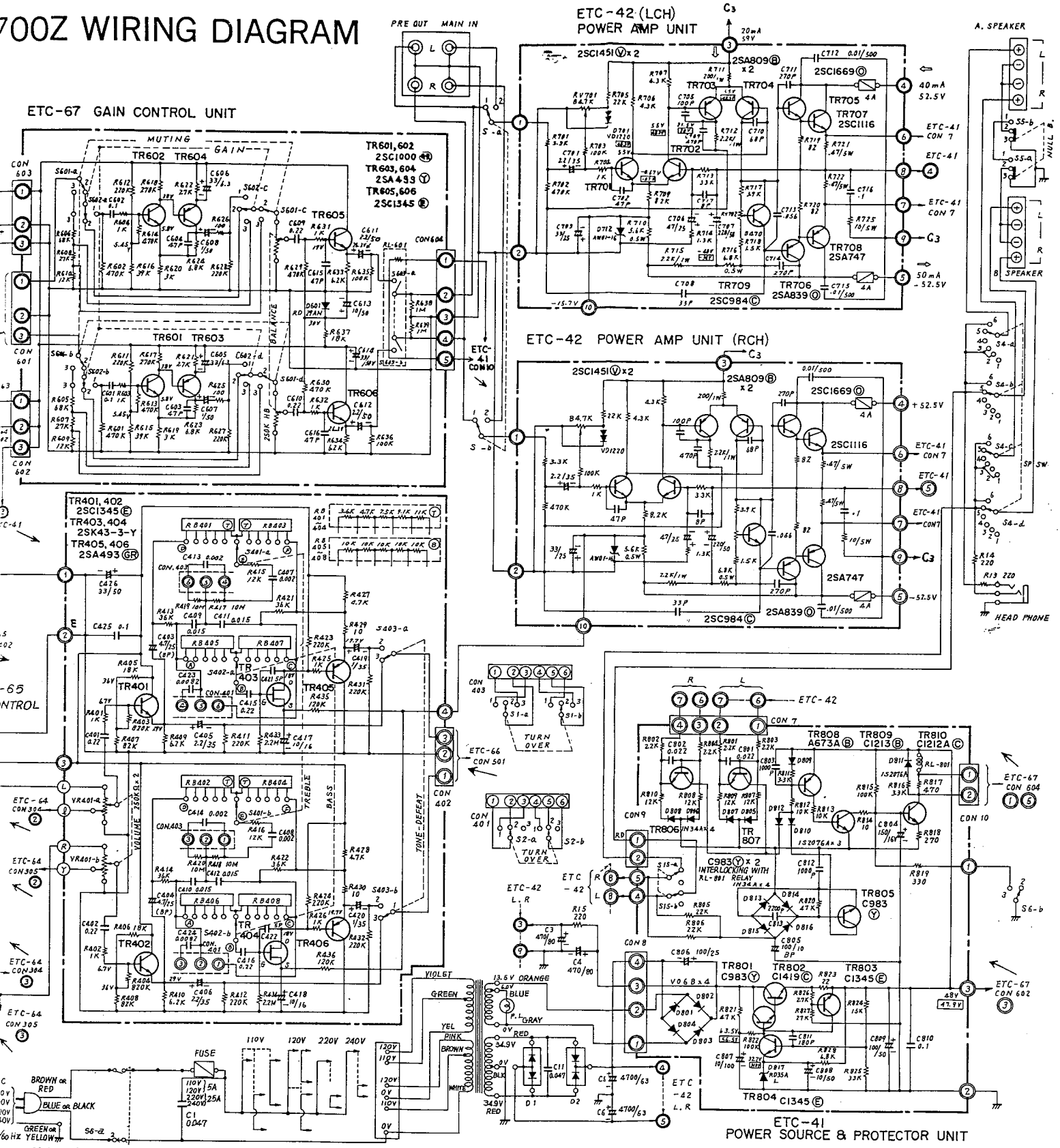

ETC-64
TAPE MONITOR UNIT
ETC-62 DIN ASS. UNIT
ETC-66 FILTER UNIT
ETC-67 GAI
ETC-65
TONE CONTROL
UNIT
ETC-63
HEAD AMP & EQUALIZER AMP UNIT
TR 201~204 2SC1000 (BL)
TR 205~210 2SC1345 (D)R
TR301~304 2SC1345 (E)
TR501~506 2SC1345 (D)
TAPE MONITOR
DUBBING
LOW FILTER
HI FILTER
MC-MM
FUNCTION
MODE
AUX2 AUX1 TUNER PHONO2 PHONO1

Fig. 29

700Z WIRING DIAGRAM



- S201-a~d HEAD AMP (2-MM, 3-MC)
- S202-a~d FUNCTION (1-PHONO 2, 2-PHONO 1, 3-TUNER, 4-AUX 1, 5-AUX 2)
- S203-a~c MODE (1-REVERSE, 2-STEREO, 3-L+R, 4-L, 5-R)
- S301-a~d TAPE MONITOR (1-TAPE1, 2-SOURCE, 3-TAPE 2)
- S302-a~d DUBBING (1-TAPE1→2, 2-SOURCE, 3-TAPE2→1)
- S303-a~b LOUDNESS (2-OFF, 3-ON)
- S403-a~d TONE DEFEAT (2-ON 3-OFF)
- S501-a~d HIGH FILTER (2-OFF, 3-ON)
- S502-a~d LOW FILTER (2-OFF, 3-ON)
- S601-a~d MUTING (2-OFF, 3-ON)
- S602-a~d GAIN CONTROL (1-+10dB, 2-0, 3--10dB)
- S15-a~b RELAY
- S1-a~b TREBLE TURN OVER (1-32KHz, 2-DEFEAT, 3-1.6KHz)
- S2-a~b BASS TURN OVER (1-320Hz, 2-DEFEAT, 3-640Hz)
- S3-a~b PRE MAIN COUPLER (1-NORMAL, 2-SEPARATE)
- S4-a~d SPEAKERS (1-A(R), 2-A(L), 3-A 4-OFF, 5-B, 6-A+B)
- S5-a~b NULL BALANCE (PUSH ON)
- S6-a~b POWER (2-ON, 3-OFF)

- ALL RESISTANCE VALUES IN OHM(S)' K=1000 OHMS M=1000000 OHMS
- ALL CAPACITANCE VALUES IN MICRO FARAD (S). P=MICRO-MICRO FARADS
- EACH VOLTAGE MEASURED AT NO SIGNAL INPUT AND USING WITH A CIRCUIT TESTER. VOLTAGE READING IN SQUARE (□) ARE AT BOTH CHANNEL DRIVEN AND CLIPPED CONDITIONS
- EVERY FUNCTIONAL SWITCH IN THIS DIAGRAM IS SET AT UNDER LINED POSITION.