

ADDITIONAL

 **PIONEER**

Service Manual

AM/FM STEREO RECEIVER

SX-690

HG

HGW4

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
U.S. PIONEER ELECTRONICS CORPORATION 85 Oxford Drive, Moonachie, New Jersey 07074, U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Lutzhagen-Haven 9, 2030 Antwerp, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

<ART-303-0>

©APR. 1978 Printed in Japan <78D01Y5H01 >

MODEL SX-680 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
KC	120V only	Canada model
S	110V, 120V, 220V and 240V (Switchable)	General export model
S/G	110V, 120V, 220V and 240V (Switchable)	U.S. Military model

MODEL SX-690 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
HG	220V and 240V (Switchable)	United Kingdom model
HGW4	220V and 240V (Switchable)	Europe or Oceania model

- This additional service manual is applicable to the SX-690/HG, HGW4. Connections, set handling, circuitry, and adjustment are basically the same as SX-680/KU.
- The parts which are different from the SX-680/KU are covered in this additional service manual. Please use this manual together with the SX-680/KU service manual which is previously issued when ordering parts and repair.

CONTENTS

1. CONTRAST.....	3
2. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LIST	
2.1 Schematic Diagram	5
2.2 Main Board Assembly (GWM-120)	7
2.3 FM Front-end (GWB-102).....	13
2.4 Tape Assembly (GWX-188).....	15
2.5 Fuse Holder Assembly (GWX-190).....	15

1. CONTRAST OF MISCELLANEOUS PART

ASSEMBLIES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	Main Board Assembly	GWM-117	GWM-120	GWM-120
	De-emphasis Switch Assembly	GWX-180	.....	.....
	FM Front-end	GWB-101	GWB-102	GWB-102
	Tape Assembly	GWX-186	GWX-188	GWX-188
	Fuse Holder Assembly	GWX-178	GWX-190	GWX-190

TRANSFORMER

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
T1	Power transformer	ATT-511	ATT-524	ATT-524

SWITCHES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
S9	Push switch (POWER)	ASG-503	ASG-504	ASG-504
S10	Plug in selector (Line voltage selector)	.....	AKX-057	AKX-057

RESISTOR

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
R1	Wire wound 47 5W	.....	ACN-033	ACN-033

CAPACITOR

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
C2	Cermic 0.01 125V	ACG-003	.....	.....

FUSES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
FU1	Fuse 4A Fuse 2A	AEK-100 .....	..... AEK-017	..... AEK-017
FU2	Fuse 1.5A Fuse 1.6A	AEK-104 .....	..... AEK-405	..... AEK-405

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
FU3	Fuse 5A	AEK-108	.....	.....
	Fuse 5A	.....	AEK-015	AEK-015
FU4	Fuse 5A	AEK-108	.....	.....
	Fuse 5A	.....	AEK-015	AEK-015
FU5	Fuse 1A	.....	AEK-402	AEK-402
FU6	Fuse 1A	.....	AEK-402	AEK-402

OTHERS

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	AC power cord	ADG-023	.....	.....
	AC socket (OUTLET)	AKP-004	.....	.....
	AC socket (INLET)	.....	AKP-008	AKP-008
	Fuse holder 1P	.....	K91-008	K91-008
	Panel mount coaxial connector	.....	AKP-016	AKP-016
	Capacitor cover (for C1)	AEC-294	AEC-099	AEC-099
	Capacitor cover (for C2)	AEC-279	.....	.....
	Bonnet	AMM-071	.....	.....
	Top plate	.....	ANE-202	ANE-202
	Side panel (L)	.....	AMS-031	AMS-029
	Side panel (R)	.....	AMS-032	AMS-030
	Front panel	ANB-596	ANB-600	ANB-600
	Dial scale board	AAG-158	AAG-160	AAG-160

PACKING

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	Operating instructions (English)	ARB-268	ARB-276	ARB-276
	(German/French)	.....	.....	ARD-122
	Packing case	AHD-551	AHD-559	AHD-559
	Vinyl bag (for AC cord)	AHG-023	.....	.....

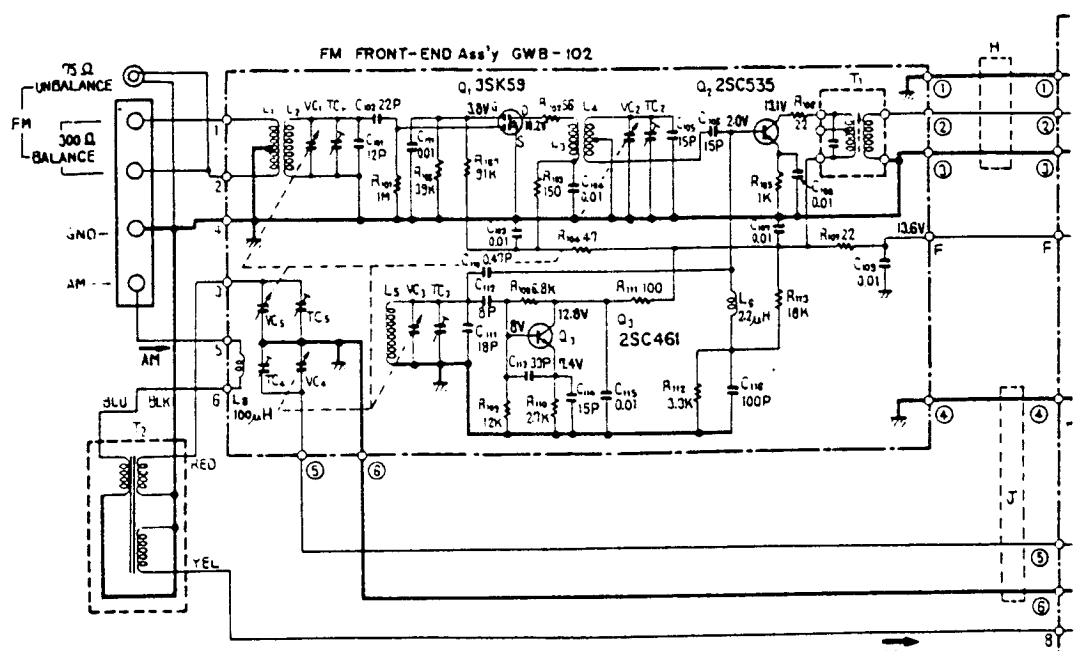
2. SCHEMATIC DIAGRAMS, P.C.I

2.1 SCHEMATIC DIAGRAM

A

B

C



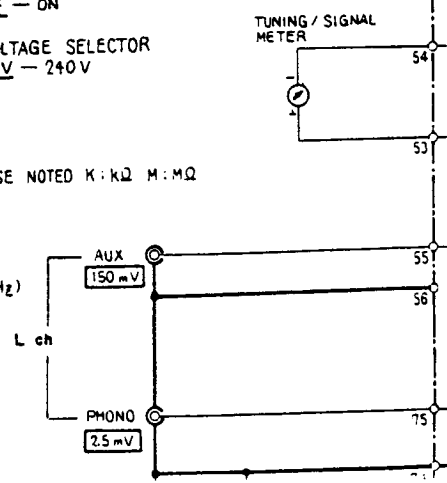
- SWITCHES:
- S₁: FUNCTION
 - 1 AM
 - 2 FM
 - 3 PHONO
 - 4 AUX
 - S₂: TAPE MONITOR 1
 - OFF - ON
 - S₃: TAPE MONITOR 2
 - OFF - ON
 - S₄: FM MUTE MODE
 - ON - STEREO - OFF / MONO
 - S₅: LOUDNESS
 - OFF - ON
 - S₆: SPEAKER A
 - OFF - ON
 - S₇: SPEAKER B
 - OFF - ON
 - S₈: POWER
 - OFF - ON
 - S₉: LINE VOLTAGE SELECTOR
 - 220V - 240V

RESISTORS:
IN OHM 1/4W ±5% TOLERANCE UNLESS OTHERWISE NOTED K: kΩ M: MΩ
(F): ±1% TOLERANCE

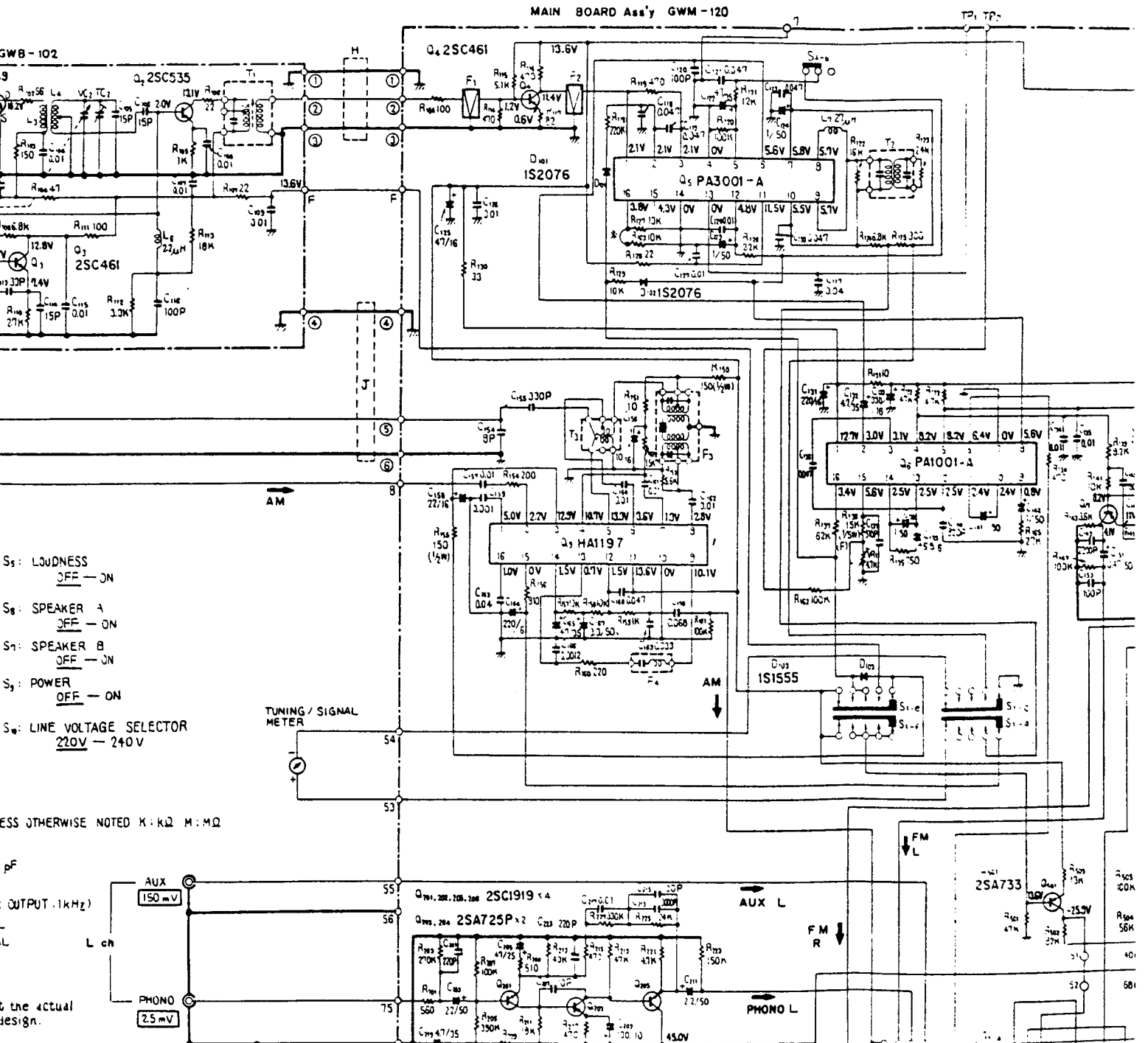
CAPACITORS:
IN μF UNLESS OTHERWISE NOTED P: pF

- : SIGNAL VOLTAGE AT 30W +30W 8Ω OUTPUT (1kHz)
- : DC VOLTAGE AT NO INPUT SIGNAL
- : DC CURRENT AT NO INPUT SIGNAL
- () : DC VOLTAGE AT 30W OUTPUT

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

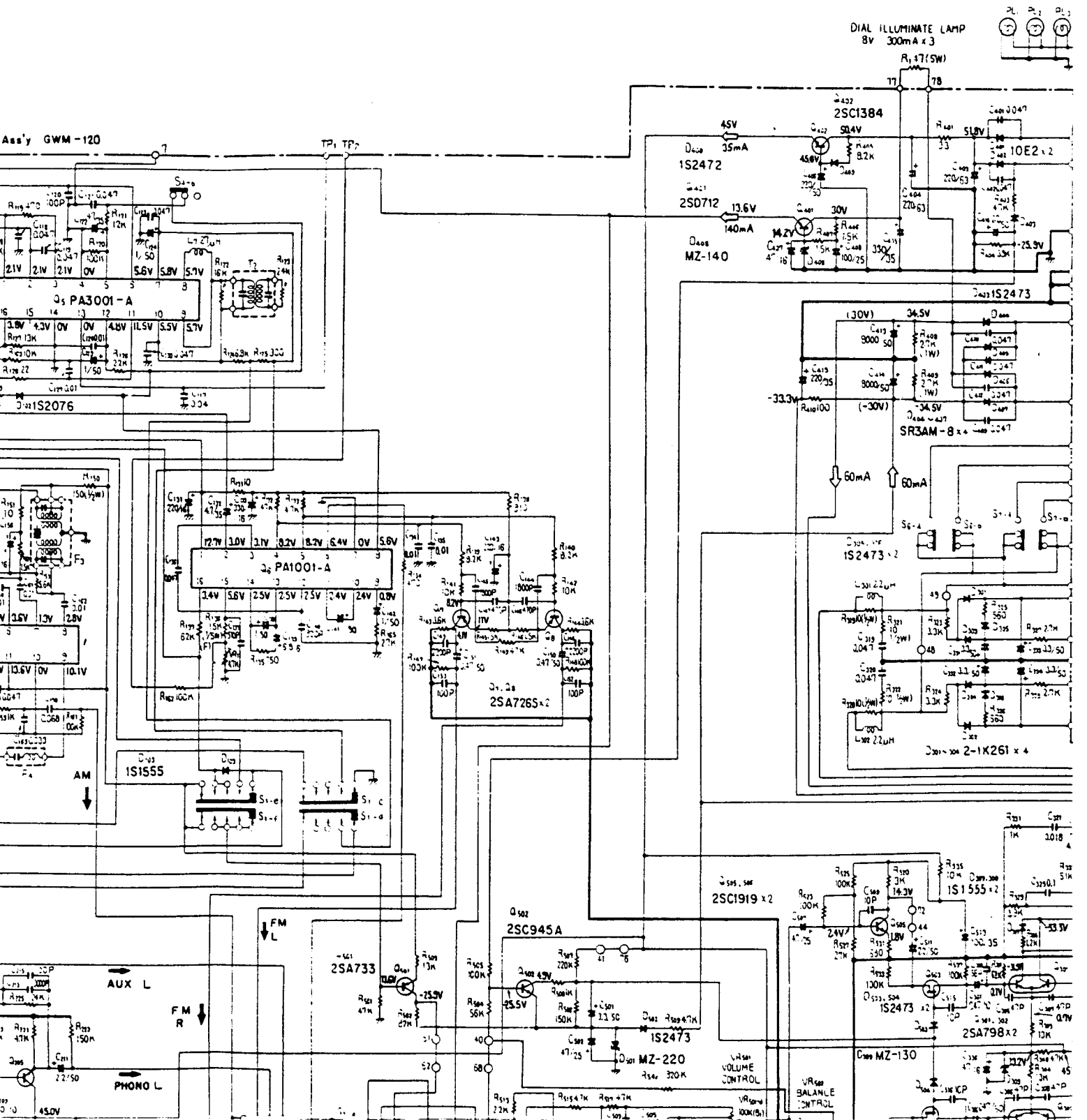


DIAGRAMS, P.C. BOARD PATTERNS AND PART



PATTERNS AND PARTS LIST

NO
TR
OR
AR



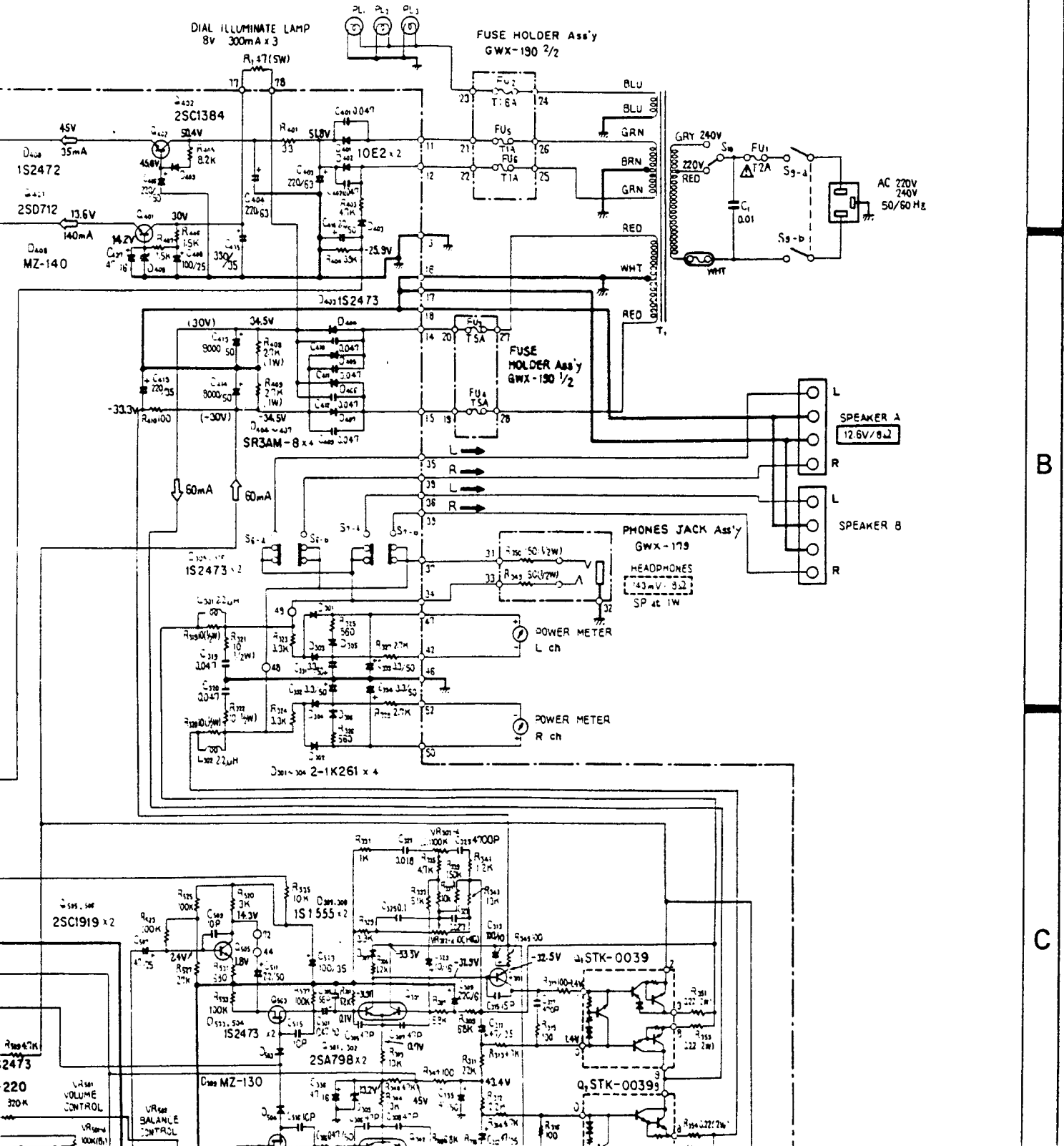
SX-690/HG, HGW4

5

6

NOTE:

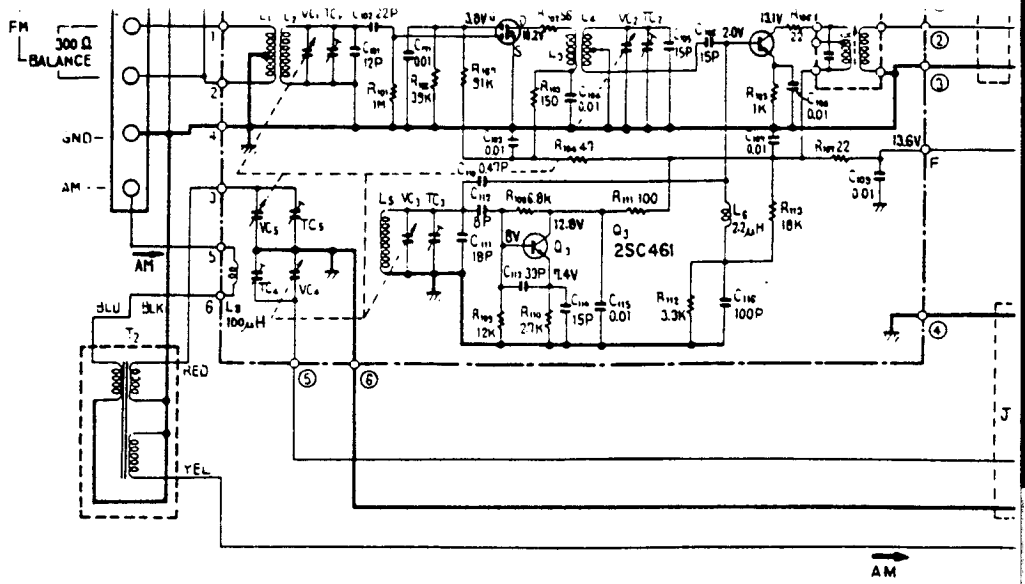
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



A

B

C



SWITCHES:

- S₁: FUNCTION
- 1 AM
- 2 FM
- 3 PHONO
- 4 AUX

- S₂: TAPE MONITOR 1
- OFF - ON

- S₃: TAPE MONITOR 2
- OFF - ON

- S₄: FM MUTE MODE
- ON/STEREO - OFF/MONO

- S₅: LOUDNESS
- OFF - ON

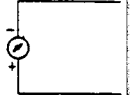
- S₆: SPEAKER A
- OFF - ON

- S₇: SPEAKER B
- OFF - ON

- S₈: POWER
- OFF - ON

- S₉: LINE VOLTAGE SELECTOR
- 220V - 240V

TUNING / SIGNAL METER



RESISTORS:

IN OHM 1/4W ±5% TOLERANCE UNLESS OTHERWISE NOTED K: kΩ M: MΩ

∅: ±1% TOLERANCE

CAPACITORS:

IN μF UNLESS OTHERWISE NOTED P: pF

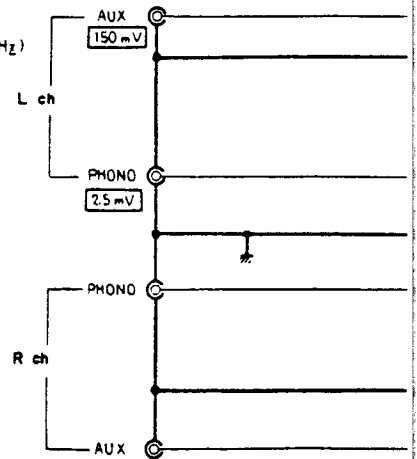
v: SIGNAL VOLTAGE AT 30W ±30W 8Ω OUTPUT (1kHz)

V: DC VOLTAGE AT NO INPUT SIGNAL

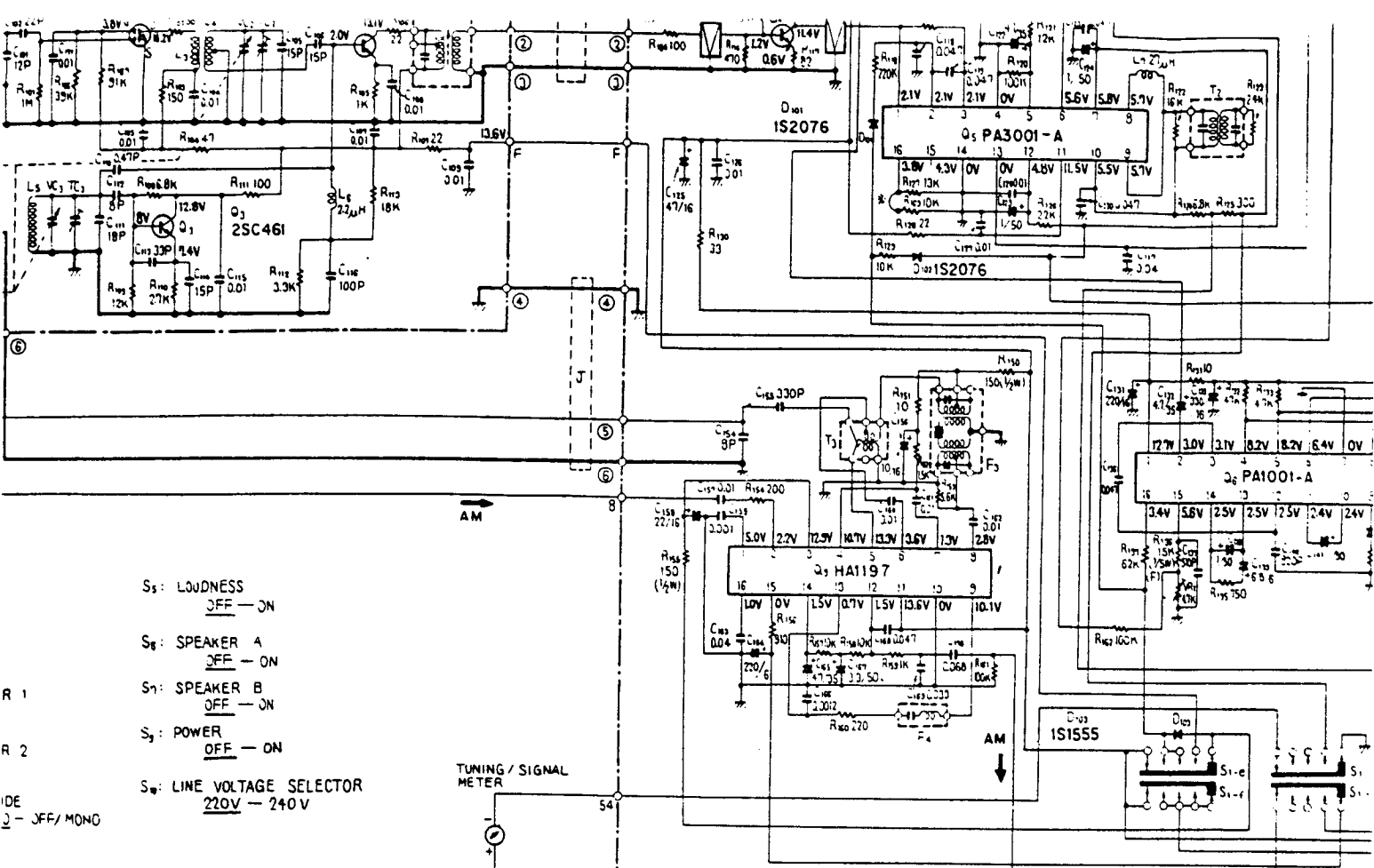
mA: DC CURRENT AT NO INPUT SIGNAL

(V): DC VOLTAGE AT 30W OUTPUT

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



INDIC./GW



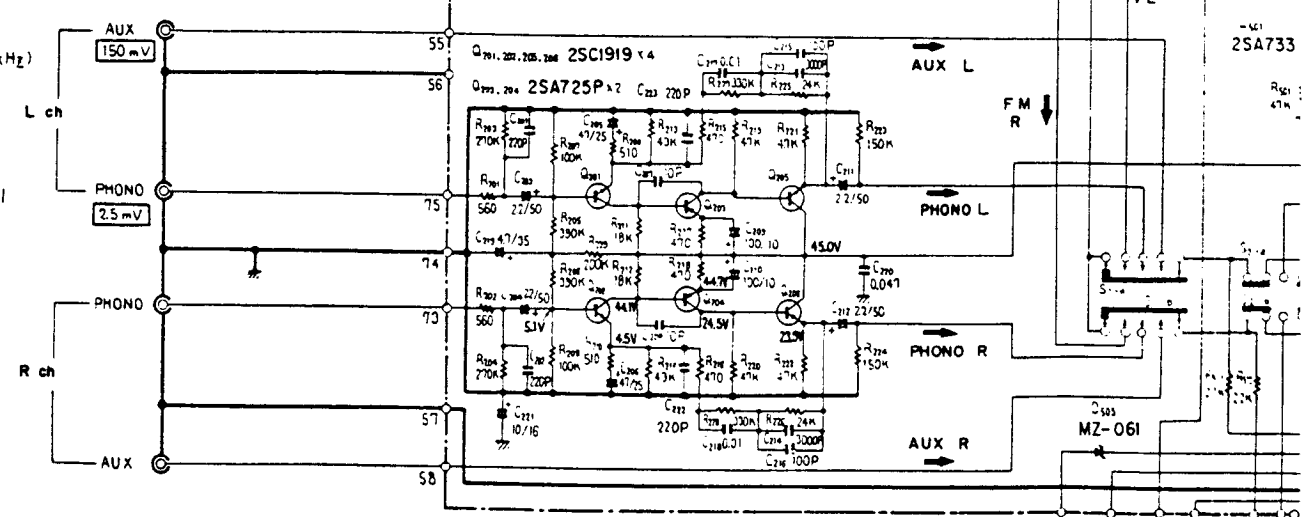
- S₁: LOUDNESS
OFF — ON
- S₂: SPEAKER A
OFF — ON
- S₃: SPEAKER B
OFF — ON
- S₄: POWER
OFF — ON
- S₅: LINE VOLTAGE SELECTOR
220V — 240V

1% TOLERANCE UNLESS OTHERWISE NOTED K: K Ω M: M Ω ANGLE

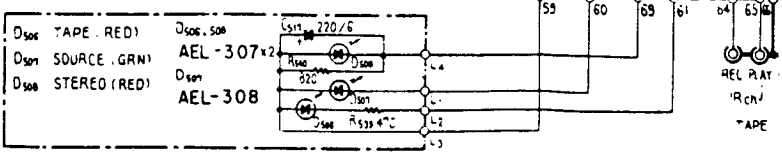
UNLESS OTHERWISE NOTED P: pF

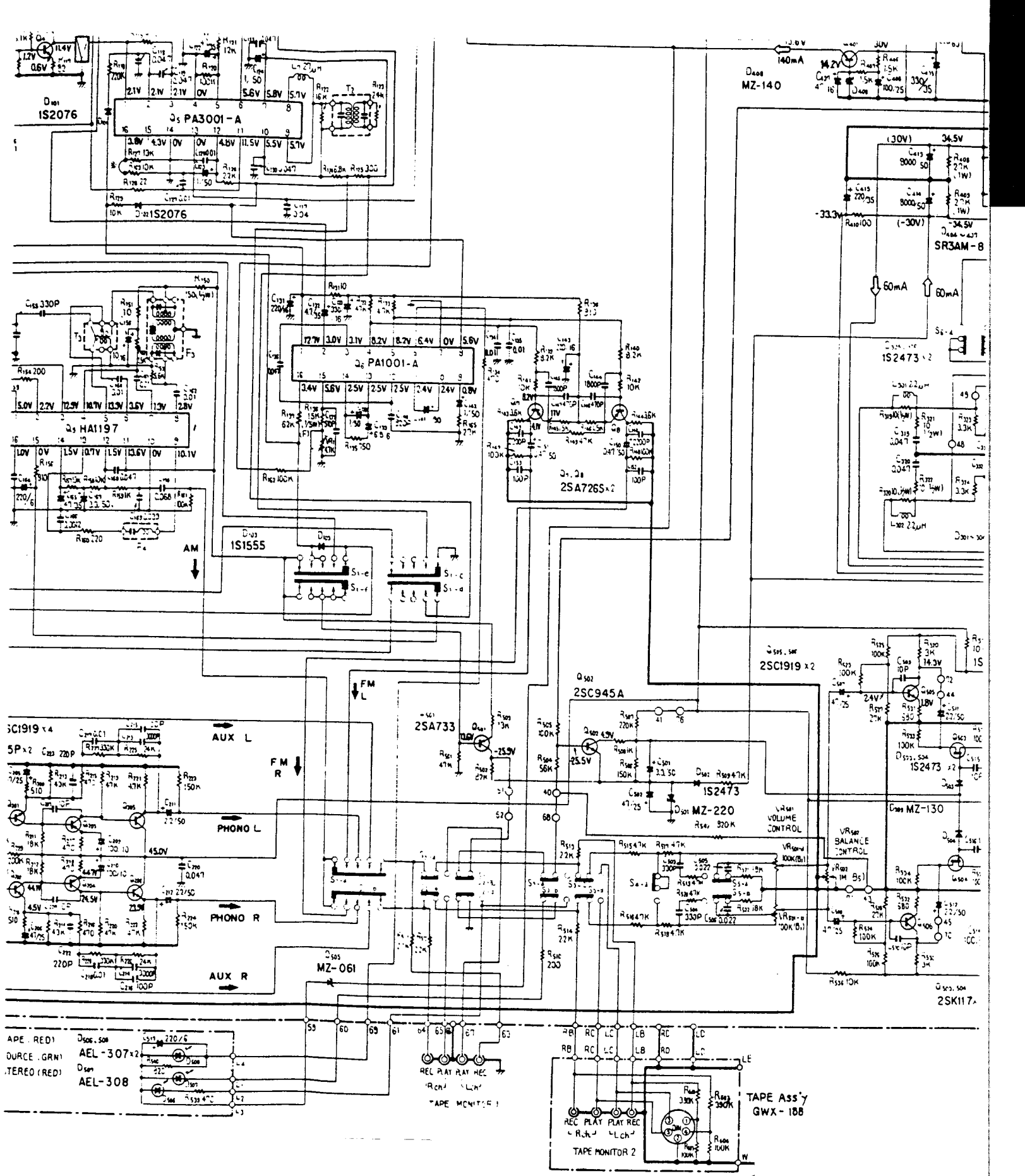
- AUX: AT 30W + 30W 8 Ω OUTPUT (1KHz)
- L ch: NO INPUT SIGNAL
- PHONO: NO INPUT SIGNAL
- R ch: 30W OUTPUT

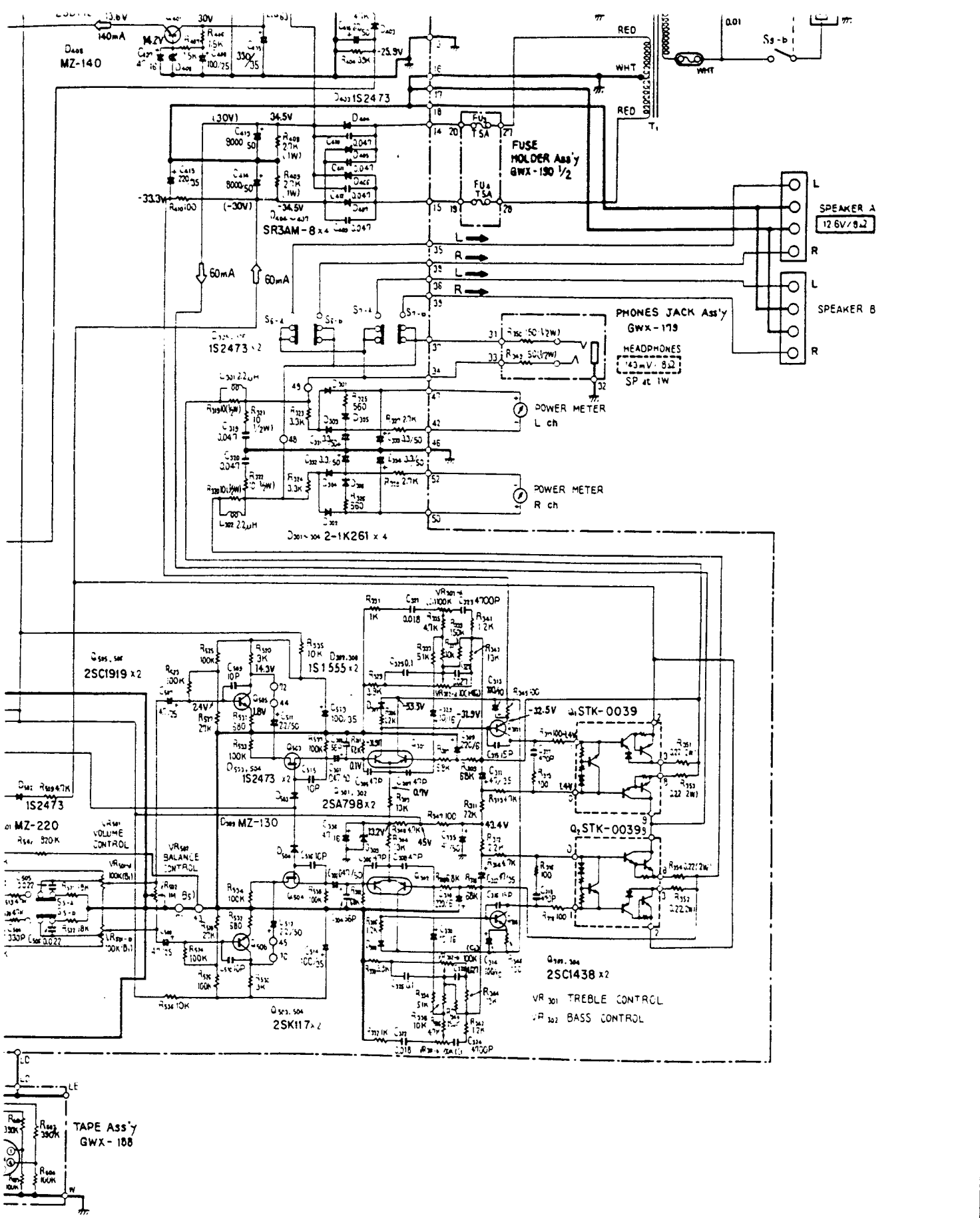
Automatic diagram, but the actual improvements in design.



INDICATOR Assy
GWX-177







B

C

D

5

6

6

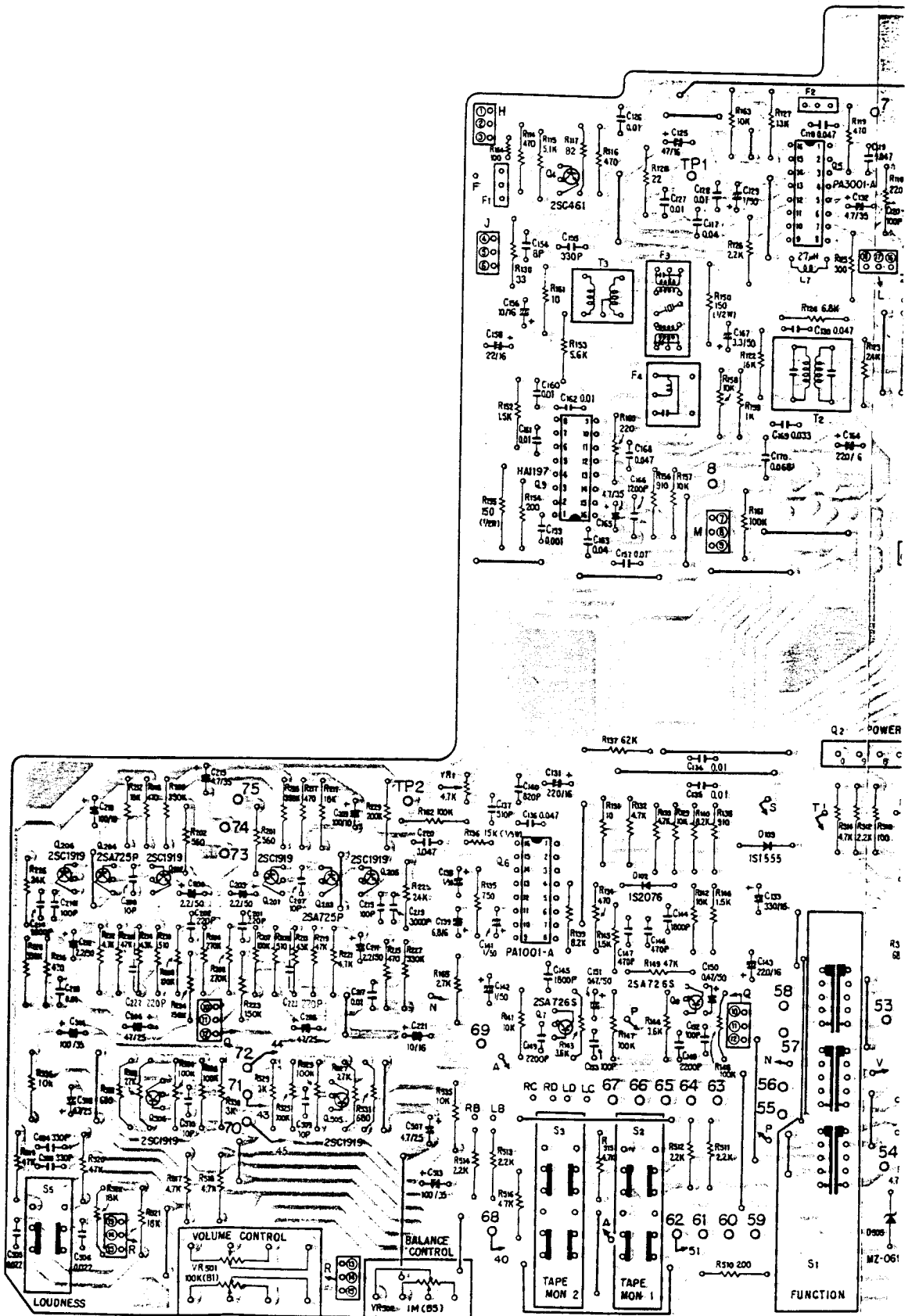
2.2 MAIN BOARD ASSEMBLY (GWM-120)

A

B

C

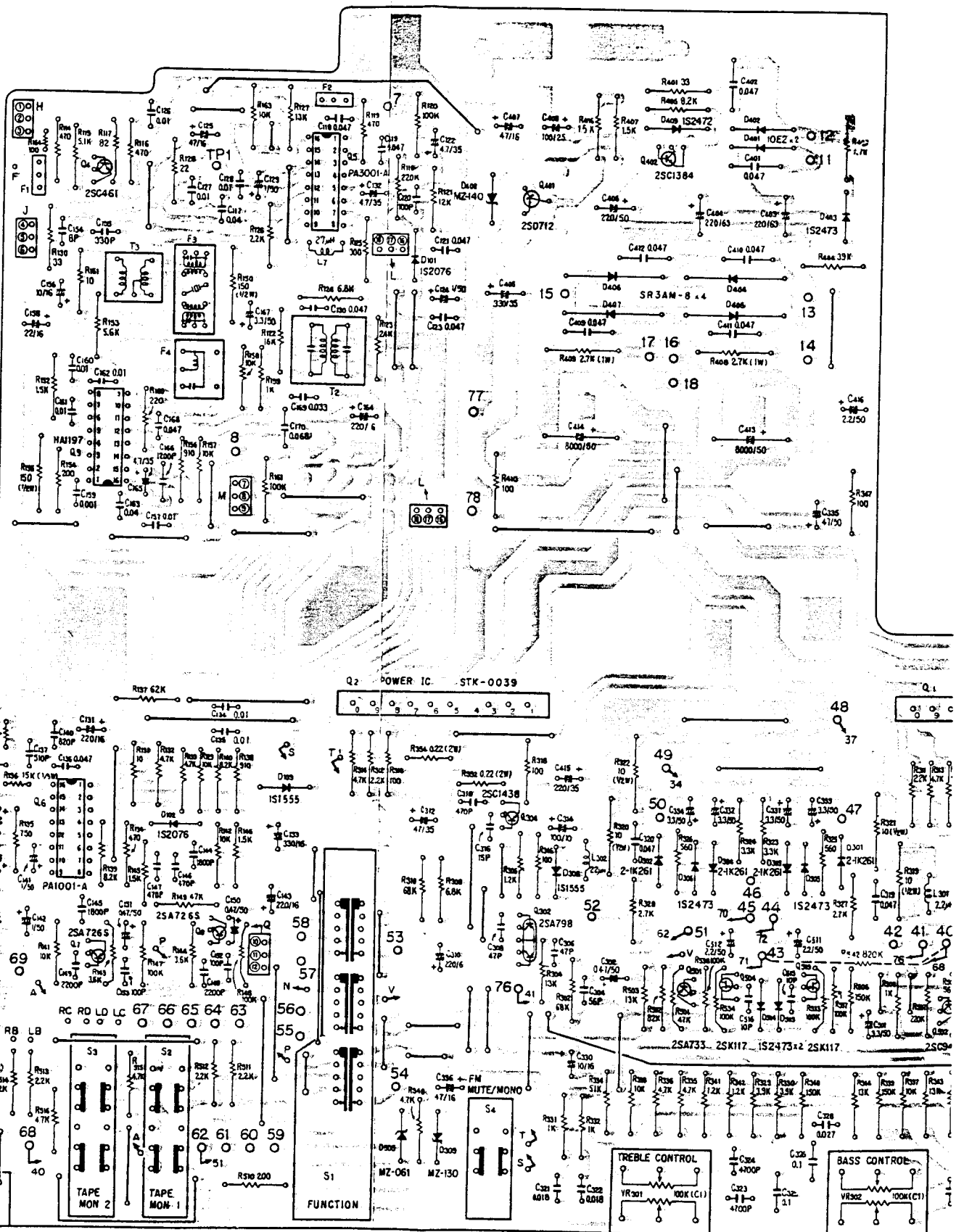
D

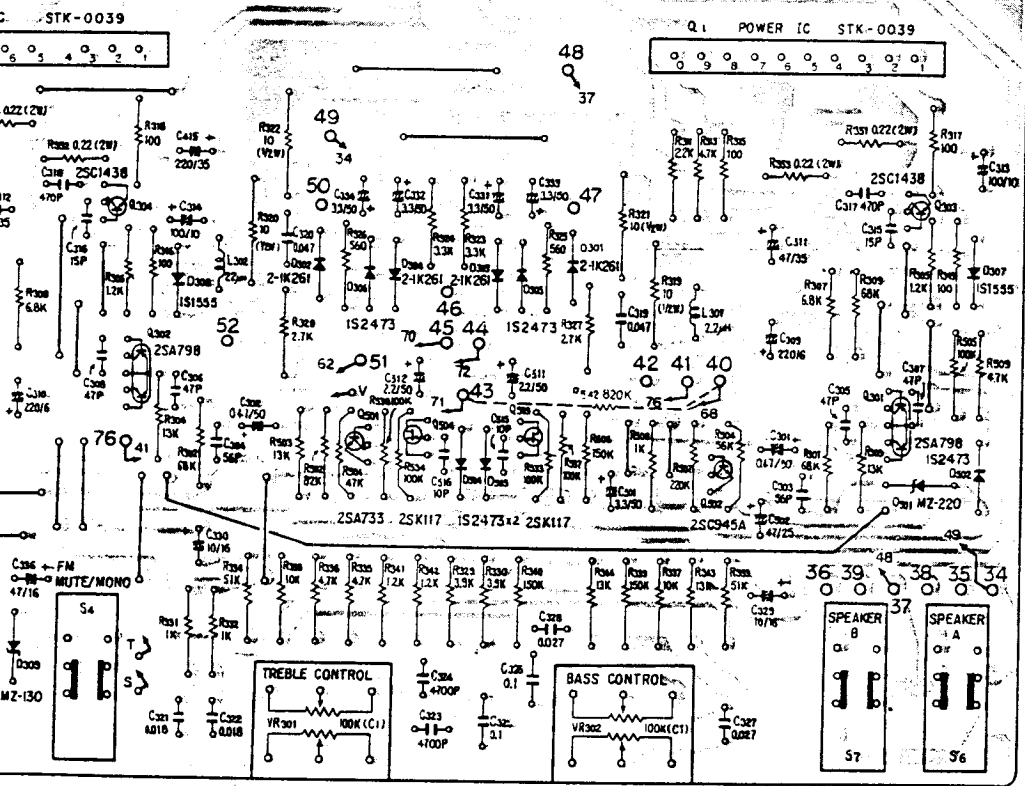
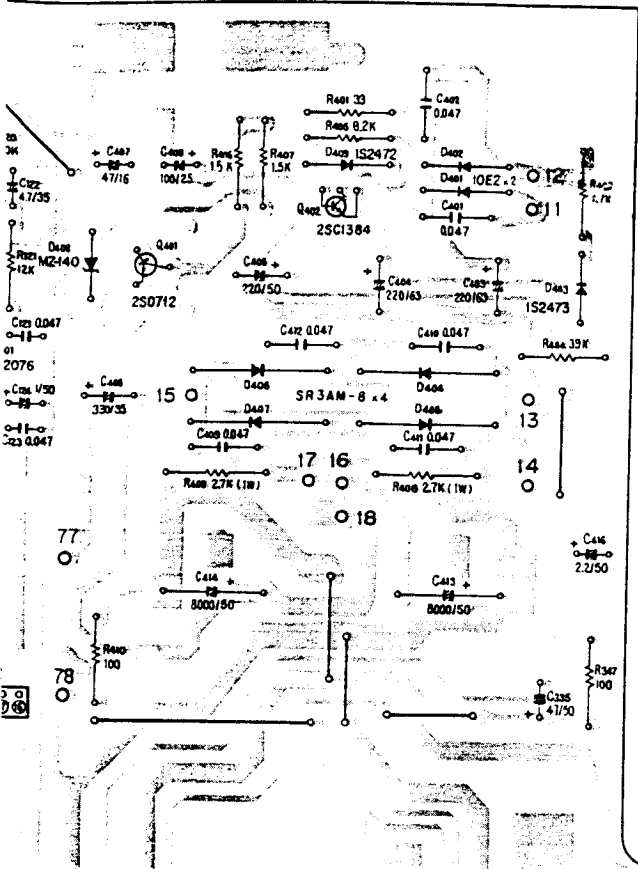


1

2

3



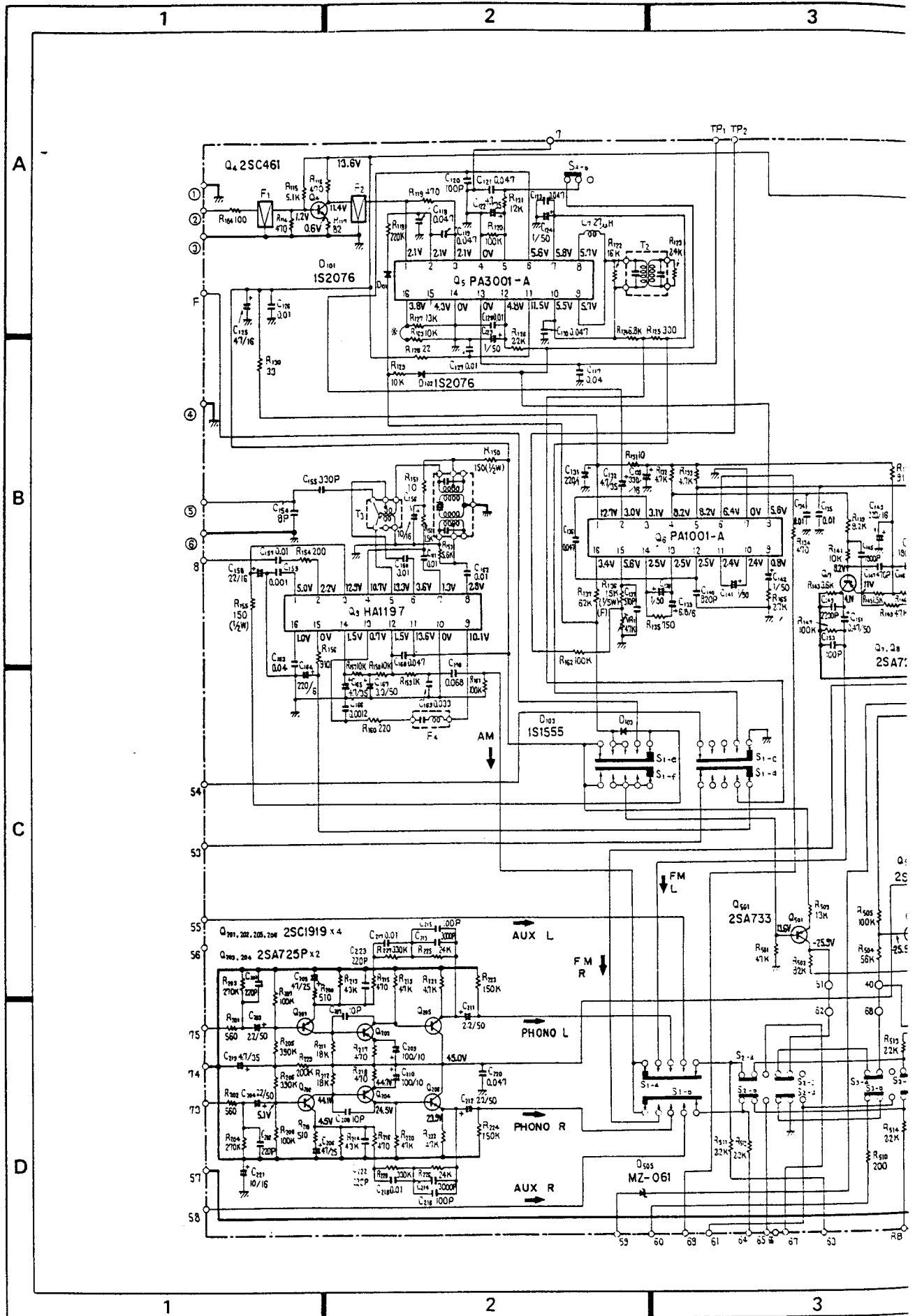


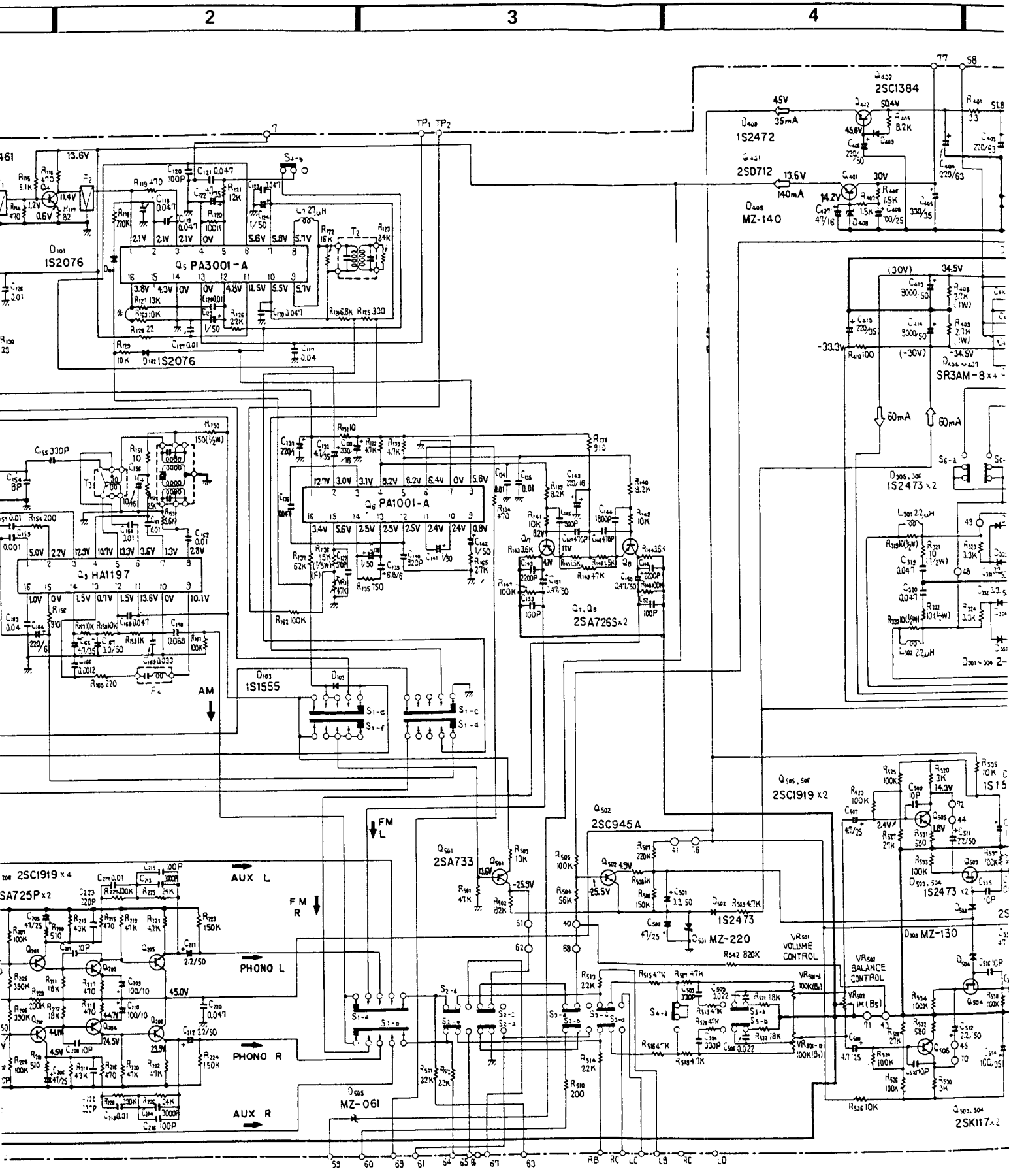
A

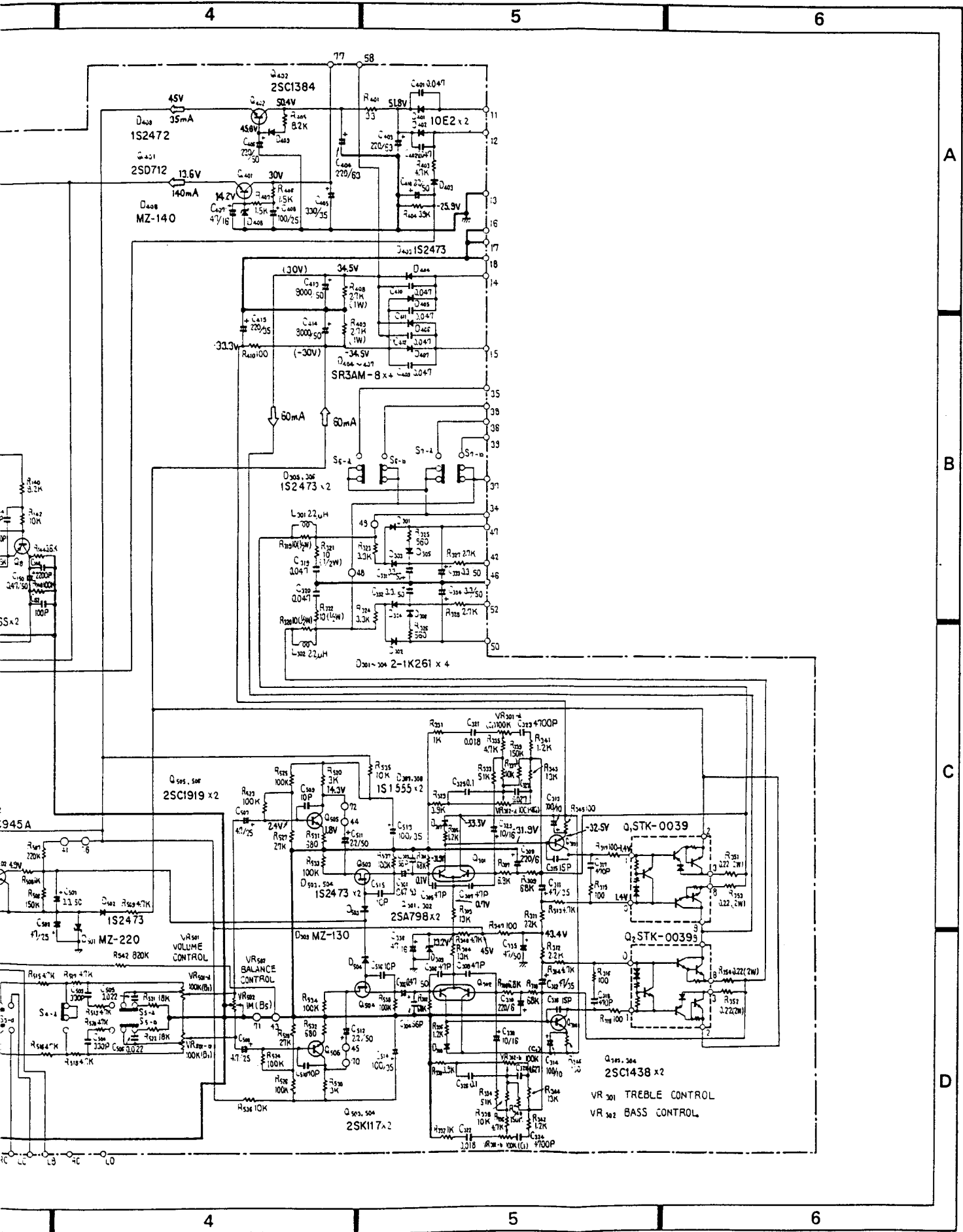
B

C

D







A
B
C
D

Parts List of Main Board Assembly (GWM-120)

COILS AND FILTERS

Part No.	Symbol & Description
ATF-013	F1, F2 FM ceramic filter
ATF-034	F3 AM ceramic filter
ATF-038	F4 455 kHz BPF
ATE-040	T2 FM DET
ATB-013	T ₁ AM osc. coil
ATH-022	L7 Micro inductor

SWITCHES

Part No.	Symbol & Description
ASE-107	S1 Slide rotary (FUNCTION)
ASG-140	S2, S3 Dual push (TAPE MONITOR 1, 2)
ASG-138	S4, S5 Push (MODE/FM MUTE, LOUDNESS)
ASG-139	S6, S7 Dual push (SPEAKERS A, B)

CAPACITORS

Part No.	Symbol & Description
CCDSL 221K 50	C201, C202, C222, C223
CEANL 2R2P 50	C203, C204, C211, C212, C511, C512
CEANL R47M 50	C301, C302
CEANL 470P 25	C205, C206
CCDSL 100F 50	C207, C208, C509, C510, C515, C516
CEA 101P 10	C209, C210, C313, C314
CKDYA 302J 50	C416
(CQMA 302J 50)	C213, C214
CCDSL 101K 50	C215, C216, C120, C152, C153
CKDYA 103J 50	C217, C218, C134, C135
(CQMA 103J 50)	
CEA 4R7P 35	C219, C122, C132, C165
CKDYF 473Z 50	C220, C319, C320, C118, C119, C121, C123
CKDYF 473Z 50	C130, C168
CEA 100P 16	C221, C156
CCDSL 560K 50	C303, C304
CCDSL 470K 50	C305 - C308
CEA 220P 6	C309, C310
CEA 470P 35	C311, C312
CCDSL 150K 50	C315, C316
CCDSL 471K 50	C317, C318
CQMA 183J 50	C321, C322
CQMA 472J 50	C323, C324
CQMA 104J 50	C325, C326
CQMA 273J 50	C327, C328
CEANL 100P 16	C329, C330
CEA 3R3P 50	C331 - C334, C167, C501
CEA 470P 16	C336, C125, C407

Part No. Symbol & Description

CEA 470P 50	C335
CKDYF 403Z 50	C117, C163
CKDYF 103Z 50	C126 - C128, C157, C160 - C162
CEA 221P 16	C131, C143
CEA 331P 16	C133
CQMA 473K 50	C136
COSH 511J 50	C137
CEANL 010M 50	C138, C141
CSZA 8R8M 6	C139
CKDYB 821K 50	C140
CKDYB 182K 50	C144, C145
CKDYB 471K 50	C146, C147
CKDYB 222K 50	C148, C149
CCDXL 080F 50	C154
CEA 220P 16	C158
CKDYB 102K 50	C159
CEA 221P 6	C164
CKDYB 122K 50	C166
CQMA 683K 50	C170
ACG-009	C401, C402, C409 - C412 Ceramic 0.047/150V
CEA 221P 63	C403, C404
CEA 331P 35	C405
CEA 221P 50	C406
CEA 101P 25	C408
ACH-082	C413, C414 Electrolytic 8000/50V
CEA 221P 35	C415
COSH 331J 50	C155
CQMA 333K 50	C169
CEA 2R2P 50	C416
CCDSL 331K 50	C503, C504
CQMA 223J 50	C505, C506
CEANL 4R7P 25	C507, C508
CEA 101P 35	C513, C514
CEA 010P 50	C124, C129, C142
CEA R47P 50	C150, C151
CEA 470P 25	C502

Note: When ordering resistors, convert the resistance value into code form and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description
C92-051	VR1 Semi-fixed 4.7k-8
ACV-186	VR301, VR302 Variable (TREBLE, BASS)
ACV-161	VR501 Variable (VOLUME)
ACT-019	VR502 Variable (BALANCE)
RD%PS 000J	R114 - R135, R137 - R149, R151 - R154
RD%PS 000J	R156 - R163, R165, R201 - R204, R209 - R229
RD%PS 000J	R323 - R346, R348, R403 - R407, R501 - R538
RD%PS 000J	R301 - R314, R542
RD%PS 000J NL	R205 - R208

OTHERS

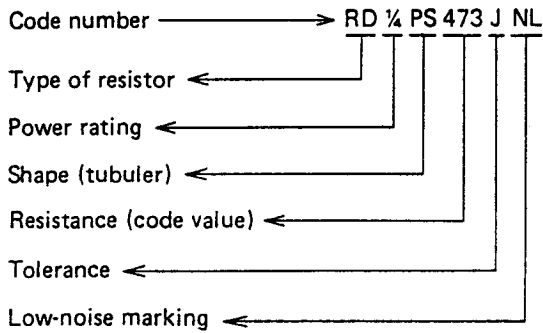
Part No.	Symbol & Description	Description
RD%PS 000J	R150, R155, R319, R320	IC socket
RD%VS 000J	R184	Heat sink
RN%SQ 0000 F	R136	Union nut
RF%PS 000J	R321, R322	Washer/nut
RF%PS 000J	R315 - R318, R347, R401, R410	
RS1P 000J	R408, R409	
ACN-030	R351 - R354 Wire wound 0.22/2W	

SEMICONDUCTORS

Part No.	Symbol & Description
2SC461-8 or C	Q4
PA3001-A	Q5
PA1001-A	Q6
2SA726S-G or F	Q7, Q8
(2SA750-E or F)	
HA1197	Q9
2SC1919-G or F	Q201, Q202, Q205, Q206, Q505, Q506
(2SC1400-E)	Q203, Q204
2SA725P-F or G	Q301, Q302
2SA798-F or G	
2SC1438-V or B	Q303, Q304
2SD712-C or D	Q401
(2SD313-D or E)	
2SC1384-Q or R	Q402
2SA733-Q or R	Q501
2SC945A-Q or R	Q502
2SK117-GR or Y	Q503, Q504
(2SK34-C or D)	
1S2076	D101, D102
(1S2473)	
(1S1555)	
1S1555	D103, D403, D502 - D504, D305 - D308
(1S2473)	
2-1K261	D301 - D304
MZ-130	D309
(WZ-130)	
10E2	D401, D402
(SIB01-02)	
SR3AM-8	D404 - D407
(30D4)	
MZ-140	D408
(WZ-140)	
1S2472	D409
(1S1554)	
MZ-220	D501
(WZ-220)	
MZ-061	D505
(WZ-061)	

RESISTANCE VALUE CODES

Code numbers of resistors used in Pioneer equipment are expressed in the following way:—



Furthermore, in the list of parts found in the Service Manual, the resistance (code value) part of the above code number is expressed as □□□ or □□□□.

Resistors included in the Service Manual list of parts

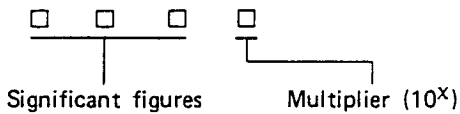
Ex. RD 1/4 PS □□□ JNL

When ordering resistor components, first ascertain the actual resistance value from the circuit diagram, and then convert it into code no. form as shown in the following examples.

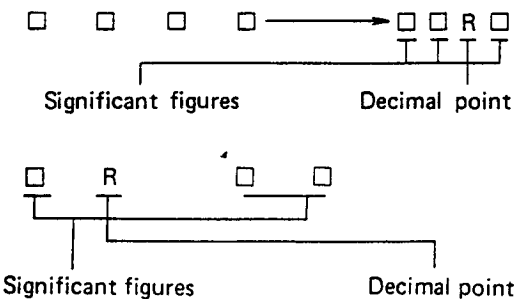
For further details on code numbers, refer to "Tuning Fork" VOL. 1.

Ex. 1 For □□□□ Codes

* General resistors



* Resistors with fractional values

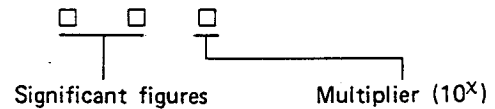


Ex. 1

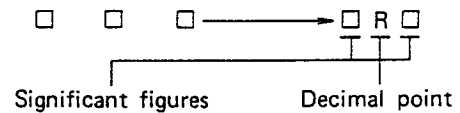
Nominal resistance (Ω)	Significant figure (three figures)	Multiplier (10 ^X)	Resistance value code
5.1	510	.....	5R10
5.62	562	.....	5R62
10	100	.....	10R0
22.5	225	.....	22R5
110	110	x10 ⁰	1100
1k (1000)	100	x10 ¹	1001
1.56k (1560)	156	x10 ¹	1561
10k (10000)	100	x10 ²	1002
33.6k (33600)	336	x10 ²	3362
112k (112000)	112	x10 ³	1123
1M (1000000)	100	x10 ⁴	1004
1.56M (1560000)	156	x10 ⁴	1564

Ex. 2 For □□□ Codes

* General resistors



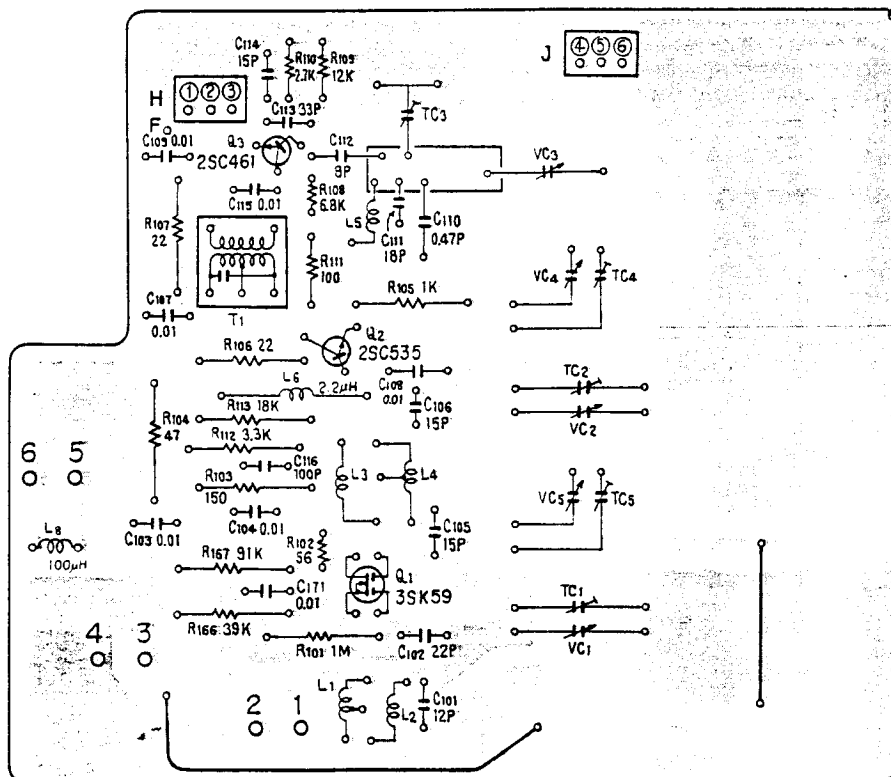
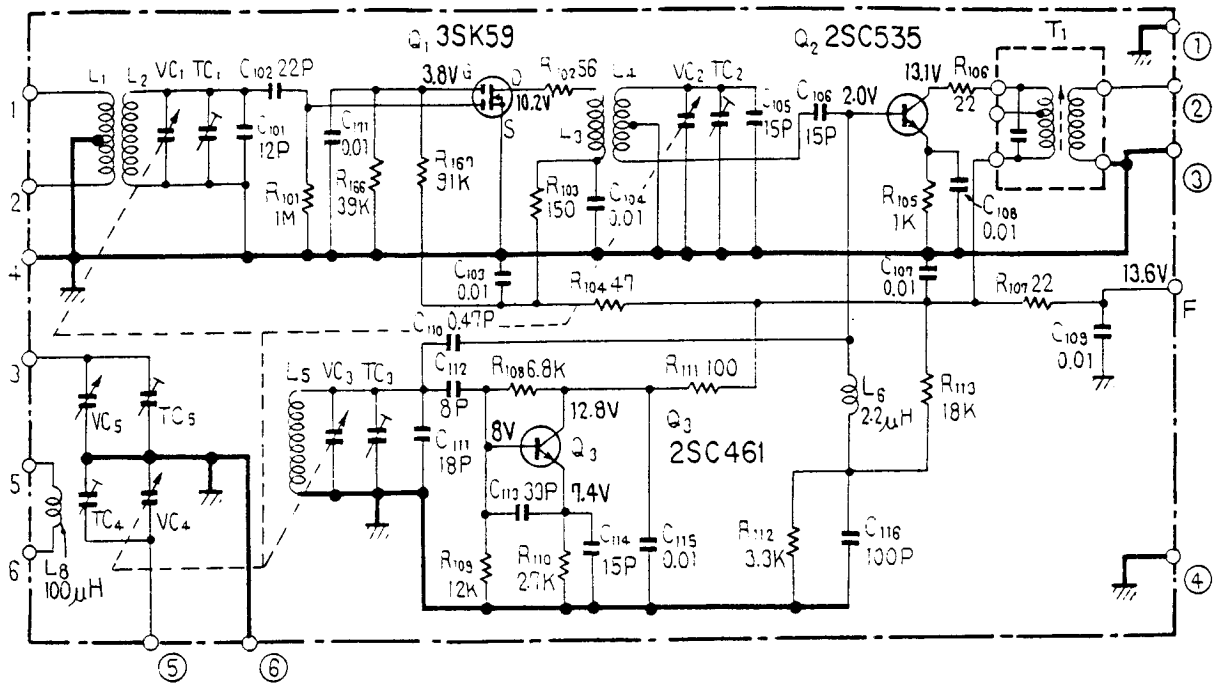
* Resistors with fractional values



Ex. 2

Nominal resistance (Ω)	Significant figure (two figures)	Multiplier (10 ^X)	Resistance value code
0.5	05	.....	0R5
1.5	15	.....	1R5
1	01	x10 ⁰	010
22	22	x10 ⁰	220
330	33	x10 ¹	331
1k (1000)	10	x10 ²	102
5.6k (5600)	56	x10 ³	562
68k (68000)	68	x10 ³	683
820k (820000)	82	x10 ⁴	824
1M (1000000)	10	x10 ⁵	105
2.2M (2200000)	22	x10 ⁵	225

2.3 FM FRONT-END (GWB-102)



Parts List of FM Front-end (GWB-102)

COILS AND TRANSFORMERS

Part No.	Symbol & Description		
T24-028	L6	Choke coil	2.2 μ H
T24-030	L8	Choke coil	100 μ H
ATE-039	T1	FM IFT	

CAPACITORS

Part No.	Symbol & Description		
ACK-012	VC	Tuning capacitor	
ACM-006	TC3	Ceramic trimmer	
CCDUJ 120K 50	C101		
CCDSL 220K 50	C102		
CKDYF 103Z 50	C103, C104, C107–C109, C115, C171		
CCDUJ 150K 50	C105		
CCDSL 150K 50	C106		
CGB R47K 500	C110		
CCDPH 180K 50	C111		
CCDLH 080F 50	C112		
CCDCH 330K 50	C113		
CCDCH 150K 50	C114		
CCDSL 101K 50	C116		

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

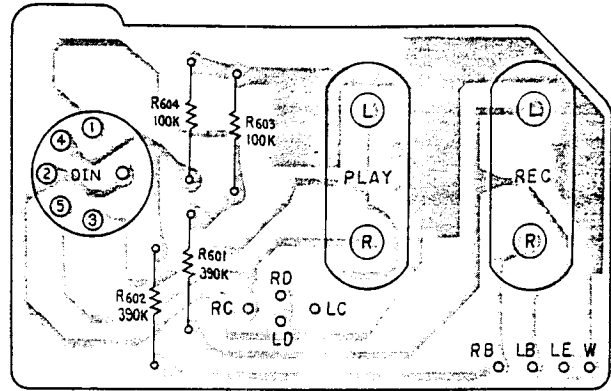
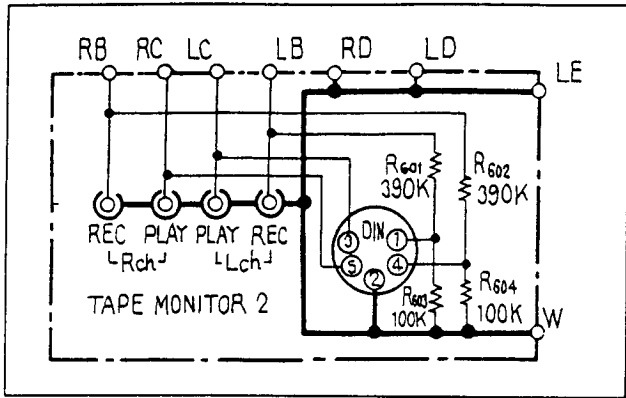
RESISTORS

Part No.	Symbol & Description		
RD $\frac{1}{2}$ PS $\square\square\square$ J	R101, R103–R107, R112, R113, R166, R167		
RD $\frac{1}{2}$ VS $\square\square\square$ J	R102, R108–R111		

SEMICONDUCTORS

Part No.	Symbol & Description		
3SK59-Y or GR	Q1		
2SC535-A or B	Q2		
2SC461-B or C	Q3		

2.4 TAPE ASSEMBLY (GWX-188)



Parts List

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

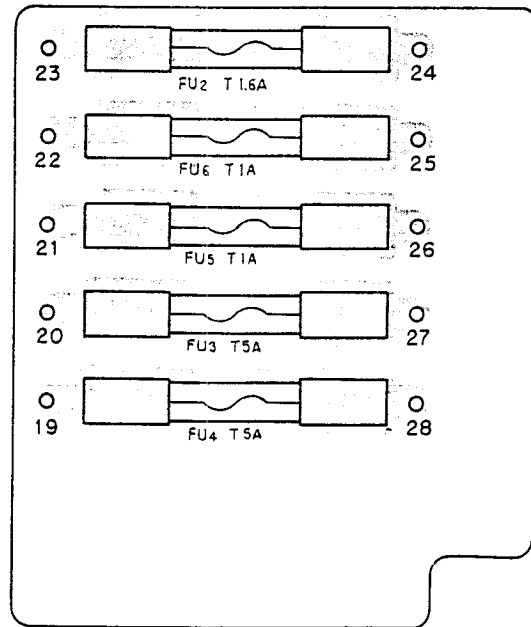
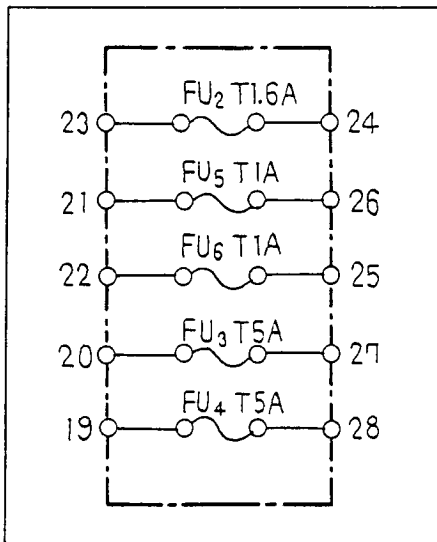
RESISTORS

Part No.	Symbol & Description
RD4PS □□□ J	R601 - R604

OTHERS

Part No.	Description
AKB-045	Terminal (TAPE 2)
AKP-011	Connector socket (REC/PLAY)

2.5 FUSE HOLDER ASSEMBLY (GWX-190)



Parts List

Part No.	Description
AKR-010	Fuse clip