ADDITIONAL

Service Manual

PIONEER®

ORDER NO.
ARP-056-0

RG DYNAMIC PROCESSOR

RG-9 HE, HB

MODEL RG-9 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
S	110V, 120V, 220V and 240V (switchable)	General export model
S/G	110V, 120V, 220V and 240V (switchable)	U.S. military model
HE	220V and 240V (switchable)	Europe model
HB	220V and 240V (switchable)	United kingdom model

- The basic performance of the RG-9/HE and HB types is the same as the RG-9/KU type.
- This additional service manual is applicable to the RG-9/HE and HB types, please refer to the RG-9/KU type service manual <ARP-054> with the exception of this supplement.

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1. SPECIFICATIONS

Processor Section

Maximum Output Voltage 6.5V
(1kHz, T.H.D.: 0.5% R_L: 47kΩ, DYNAMIC EXPANSION: 16dB)
Total Harmonic Distortion 0.05%
(Output: 1V, 1kHz, DYNAMIC EXPANSION: 16dB)
Dynamic Expansion 4, 7, 10, 13 16dB
Gain

DYNAMIC EXPANSION	4dB	7dB	10dB	13dB	16dB
Upward Gain	+2dB	+4dB	+6dB	+8dB	+10dB
Downward Gain	−2dB	−3dB	−4dB	−5dB	−6dB

Impulse Response
Attack Time 0.3msec
Release Time 120msec
Input Impedance . . . . . 50kΩ (20Hz to 20kHz)
Output Impedance 300Ω (1kHz)
Residual Noise 10μV
(IHF A, DYNAMIC EXPANSION: 16dB)
Signal to Noise Ratio (IHF A, Short-circuited, DYNAMIC EXPANSION: 16dB) . . . . . 100dB (at 1V)
116dB (at 6.5V)

Miscellaneous

Power Requirements . . . . . AC 220V/240V (switchable) 50/60Hz
Power Consumption 10W
Dimensions . . . . . 420(W) x 99(H) x 336(D) mm
16-9/16(W) x 3-7/8(H) x 13-1/4(D) in
Weight . . . . . 4.6 kg (10 lb 2oz)

Furnished Parts

Connection cord with pin plugs 2
Operating instructions 1

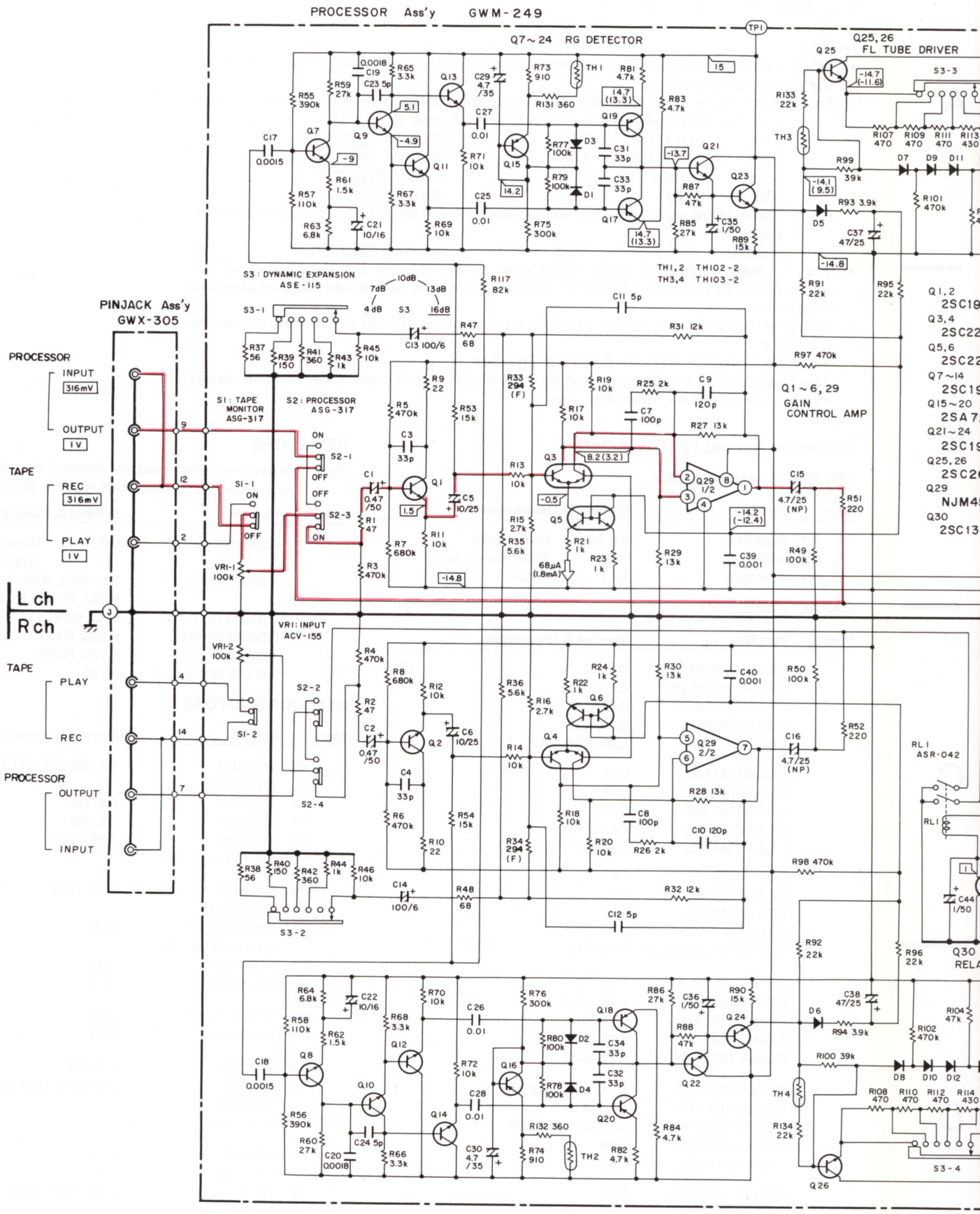
NOTE:
Specifications and the design subject to possible modification without notice due to improvements.

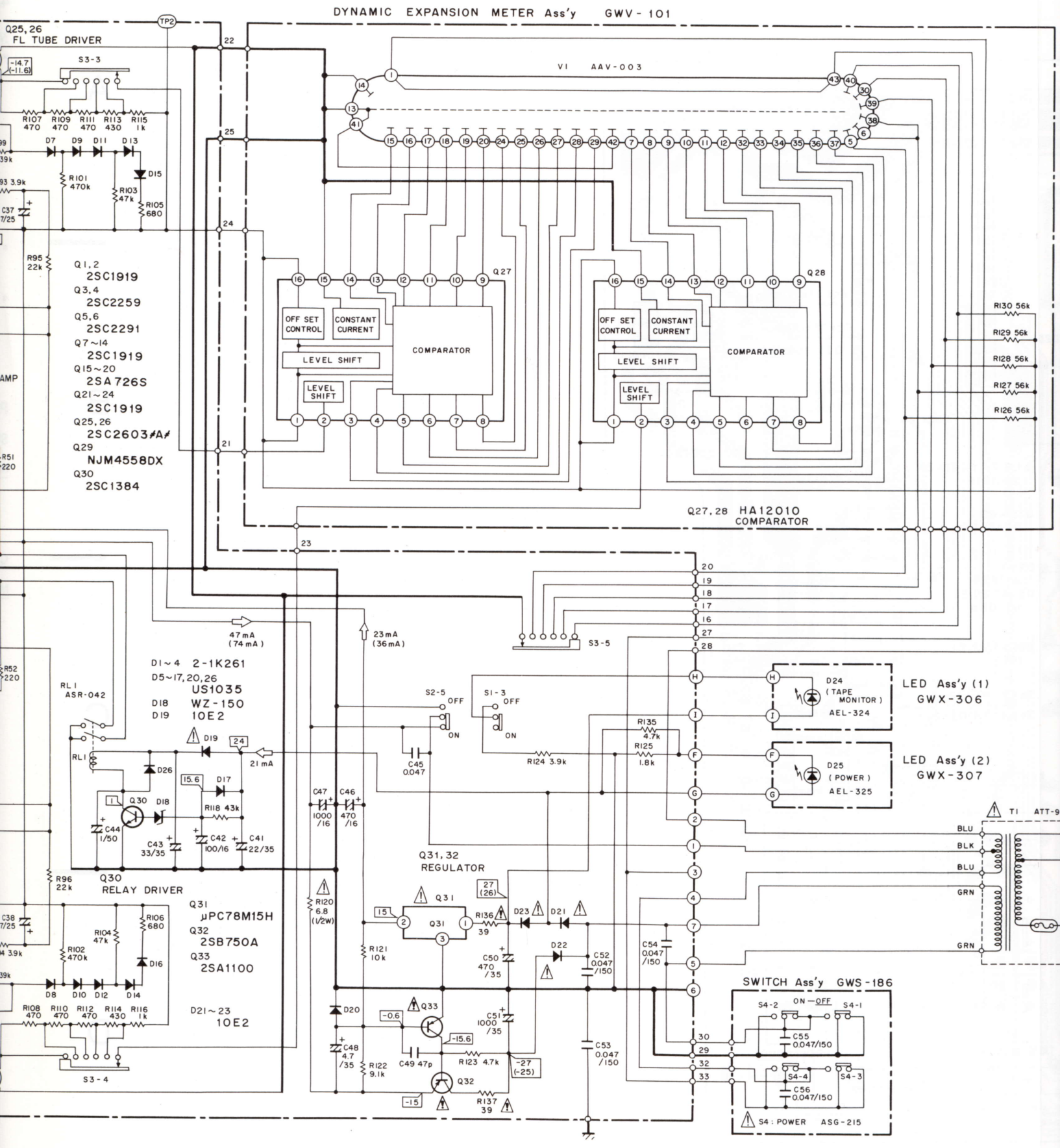
2. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	Symbol & Description	Part No.			Remarks
		KU type	HE type	HB type	
	Processor assembly	GWM-134	GWM-249	GWM-249	
	Front panel assembly	ANM-121	ANM-185	ANM-185	
⚠ ★	Power transformer (120V)	ATT-588	.....	.....	
⚠ ★	Power transformer (220V, 240V)	.....	ATT-904	ATT-904	
⚠	AC socket (AC OUTLET)	AKP-038	AKP-026	AKP-044	
⚠	AC power cord	ADG-052	ADG-041	ADG-051	
⚠ ★★	Line voltage selector	.....	AKX-057	AKX-057	
⚠ ★★	Fuse T2A	.....	AEK-017	.....	
⚠	Fuse holder	.....	AKR-038	.....	
	Screw	.....	VCZ30P100FMC		
	Operating instructions	ARB-463	ARE-035	ARB-490	
	Packing case	AHE-010	AHE-047	AHE-047	

3. SCHEMATIC DIAGRAM




DYNAMIC EXPANSION METER Ass'y GWV-101
Q25,26 FL TUBE DRIVER
S3-3
R107 470 R109 470 R111 470 R113 430 R115 1k
D7 D9 D11 D13 D15
R101 470k R103 47k R105 680
R95 22k
Q1,2 2SC1919
Q3,4 2SC2259
Q5,6 2SC2291
Q7~14 2SC1919
Q15~20 2SA726S
Q21~24 2SC1919
Q25,26 2SC2603#A#
Q29 NJM4558DX
Q30 2SC1384
VI AAV-003
Q27
Q28
OFF SET CONTROL
CONSTANT CURRENT
LEVEL SHIFT
COMPARATOR
R130 56k
R129 56k
R128 56k
R127 56k
R126 56k
Q27,28 HA12010 COMPARATOR
47mA (74mA)
23mA (36mA)
S3-5
D1~4 2-1K261
D5~17,20,26 US1035
D18 WZ-150
D19 10E2
RL1 ASR-042
S2-5 OFF ON
S1-3 OFF ON
C45 0.047
R124 3.9k
R135 4.7k
R125 1.8k
D24 (TAPE MONITOR) AEL-324
LED Ass'y (1) GWX-306
D25 (POWER) AEL-325
LED Ass'y (2) GWX-307
T1 ATT-9
BLU BLK BLU GRN GRN
C47 1000/16 C46 470/16
C44 1/50 C43 33/35 C42 100/16 C41 22/35
R118 43k
Q30 RELAY DRIVER
R96 22k
Q31,32 REGULATOR
Q31 μPC78M15H
Q32 2SB750A
Q33 2SA1100
D21~23 10E2
R120 6.8 (1/2W)
R121 10k
R136 39
C50 470/35
C52 0.047/150
C54 0.047/150
C53 0.047/150
C51 1000/35
C48 4.7/35
R122 9.1k
C49 47p
R123 4.7k
R137 39
SWITCH Ass'y GWS-186
S4-2 ON—OFF S4-1
C55 0.047/150
S4-4 S4-3
C56 0.047/150
S4: POWER ASG-215
R102 470k R104 47k R106 680
D8 D10 D12 D14 D16
R108 470 R110 470 R112 470 R114 430 R116 1k
S3-4

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

1. RESISTORS :
Indicated in Ω, 1/4W, ±5% tolerance unless otherwise noted
k : kΩ, M : MΩ, (F) : ±1%, tolerance

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
V : Signal voltage at 1V output (1 kHz)
: DC voltage (V) at no input signal
Value in ( ) is DC voltage at 6.5V output (S3 → 16dB)
⇦ mA : DC current at no input signal

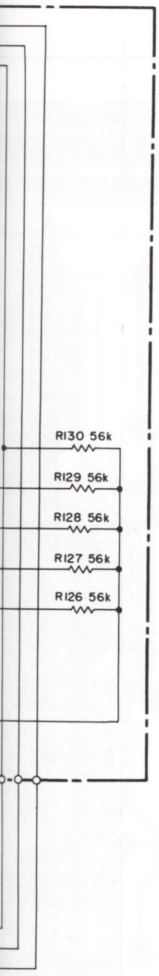
4. OTHERS :
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

SWITCHES

S1	TAPE MONITOR	ON – <u>OFF</u>
S2	PROCESSOR	<u>ON</u> – OFF
S3	DYNAMIC EXPANSION	4 dB – 7dB – 10dB – 13 dB – <u>16dB</u>
S4	POWER	ON – <u>OFF</u>
S5	LINE VOLTAGE SELECTOR	<u>AC220V</u> – AC240V

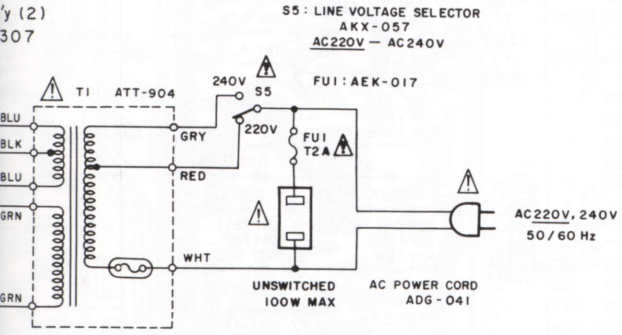
The underlined indicates the switch position.

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

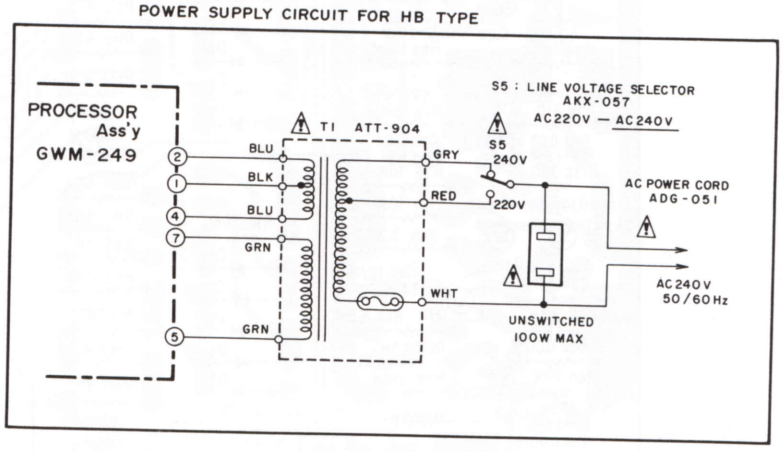


'y (1)
306

'y (2)
307

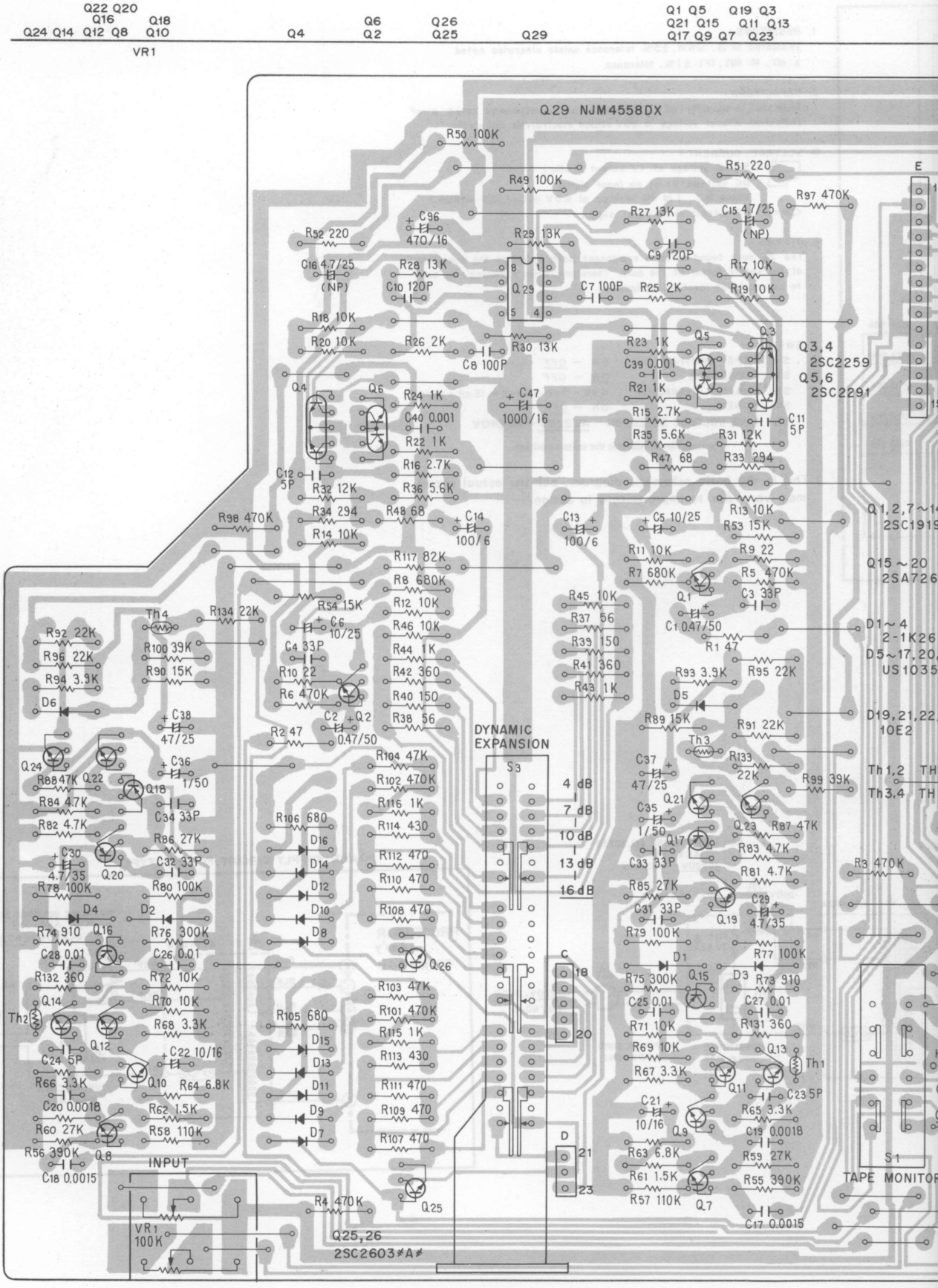


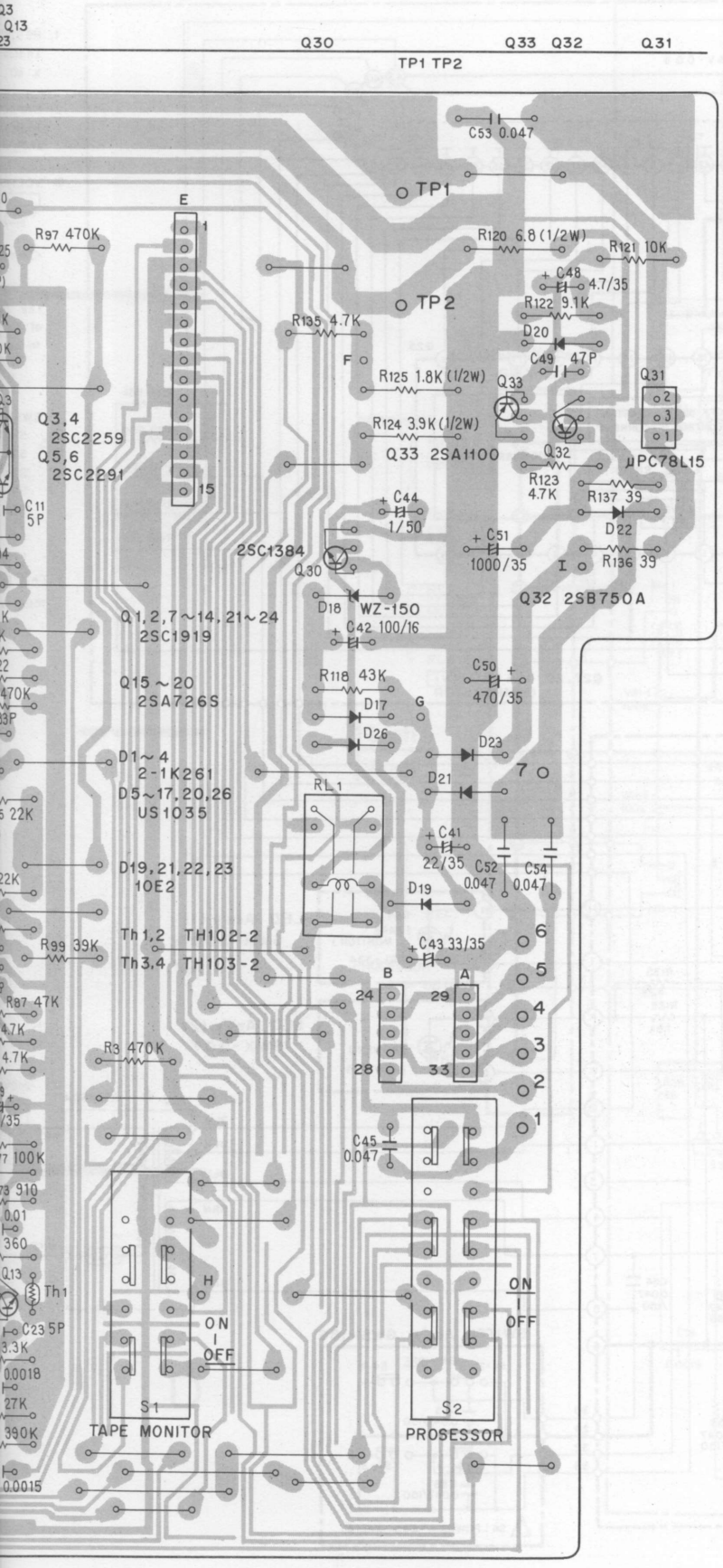
POWER SUPPLY CIRCUIT FOR HB TYPE



4. PROCESSOR ASSEMBLY (GWM-249)

4.1 P.C. BOARD




Q30
Q33 Q32
Q31
TP1 TP2
C53 0.047
TP1
TP2
R97 470K
R120 6.8 (1/2W)
R121 10K
C48 4.7/35
R122 9.1K
D20
C49 47P
R135 4.7K
R125 1.8K (1/2W)
Q33
Q31
R124 3.9K (1/2W)
Q33 2SA1100
Q32
μPC78L15
R123 4.7K
R137 39
D22
R136 39
Q3,4 2SC2259
Q5,6 2SC2291
C11 5P
C44 1/50
C51 1000/35
2SC1384
Q30
D18 WZ-150
Q32 2SB750A
C42 100/16
Q1,2,7~14,21~24 2SC1919
R118 43K
C50 470/35
Q15~20 2SA726S
D17
D26
D23
D21
D1~4 2-1K261
D5~17,20,26 US1035
RL1
C41 22/35
C52 0.047
C54 0.047
D19,21,22,23 10E2
D19
Th1,2 TH102-2
Th3,4 TH103-2
C43 33/35
R99 39K
R87 47K
R3 470K
C45 0.047
ON
OFF
S1
TAPE MONITOR
S2
PROSESSOR
Th1
C23 5P
0.0018
0.0015

4.2 PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 x 10^1*	*561*	*RD¼PS 5 6 1 J*
47kΩ	*47 x 10^3*	*473*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 100*	*5621*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*

  ★★ GENERALLY MOVES FASTER THAN ★.

  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

Processor Assembly (GWM-249)

SWITCHES AND RELAY

Mark	Part No.	Symbol & Description	
★★	ASG-317	S1, S2	Push switch
★★	ASE-115	S3	Slide rotary switch
★★	ASR-042	RL1	Relay

CAPACITORS

Mark	Part No.	Symbol & Description
	CEANL R47M 50	C1, C2
	CEANL 100M 25	C5, C6
	CEANL 101M 6	C13, C14
	CEA100M 16L	C21, C22
	CEA 4R7M 50L	C29, C30, C48
	CEA 010M 50L	C44
	CEA 220M 35L	C41
	CEA 330M 35L	C43
	CEA 101M 16L	C42
	CEA 471M 35L	C50
	CEA 102M 35L	C51
	CEA 471M 16L	C46
	CEA 102M 16L	C47
	CEANL 470M 25	C37, C38
	CEANL NP 4R7M 25	C15, C16
	CEANL 010M 50	C35, C36
	COMA 102J 50	C39, C40
	COMA 152J 50	C17, C18
	COMA 182J 50	C19, C20
	COMA 103J 50	C25–C28
	CCDSL 050C 50	C11, C12, C23, C24
	CCDSL 101J 50	C7, C8
	CCDSL 330J 50	C3, C4, C31–C34
	CCDSL 470J 50	C49
	COSA 121J 50	C9, C10
	CKDYF 473Z 50	C45
	ACG-009	C52–C54

RESISTORS

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

Mark	Part No.	Symbol & Description	
★	ACV-155	VR1	Variable resistor (100k-B)
	RD¼PM □□□J	R1–R32, R35–R118, R121–R123, R131–R135	
	RN¼PQ □□□□J	R33, R34	
	RD¼PS □□□J	R136, R137	
	RD½PS □□□J	R124, R125	
⚠	RD½PS 6R8J	R120	

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC1919 (2SC1845)	Q1, Q2, Q7–Q14, Q21–Q24
★★	2SC2259	Q3, Q4
★★	2SC2291	Q5, Q6
★★	2SA726S (2SA992)	Q15–Q20
★★	2SC2603 (2SC945A)	Q25, Q26
★★	NJM4558DX (μPC4558C)	Q29
★★	2SC1384-S	Q30
⚠ ★★	μPC78L15	Q31
★★	2SB750A	Q32
★★	2SA1100	Q33
★	2-1K261	D1–D4
★	US1035 (1S1555) (1S2076)	D5–D17, D20, D26
★	WZ-150 (MZ-150)	D18
⚠ ★	10E2 (S1B01-02)	D19, D21–D23
	TH 102-2	Th1, Th2
	TH 103-2	Th3, Th4