FM TRACKING ADJUSTMENT

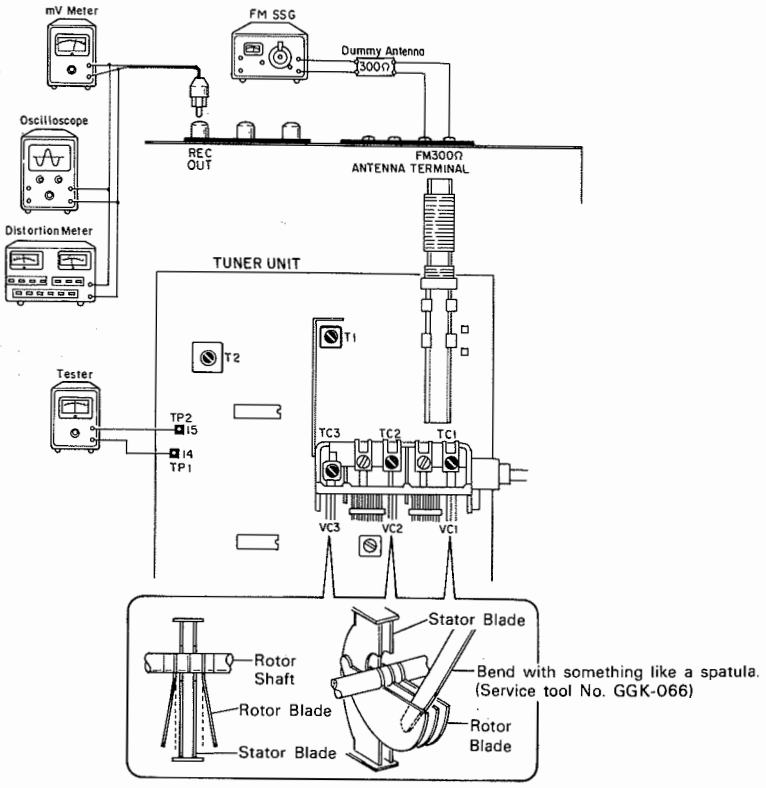
● Connection Diagram

Switch positions

Function switch ..... TUN
Band switch ..... FM
Mode switch ..... MONO

Preparations

1. Check the pointer that it is at the starting point (19th graduation from the left).
2. Turn the TC3 trimmer to the center position.
3. Turn TC1 and TC2 trimmers clockwise all the way, and then turn them back by about a quarter of a turn.



● To Adjust

1. Turn the tuning knob to receive noise at about 106 MHz.
2. Adjust the core below T2 until the tester pointer is at the center (noise center).
3. Set SSG at 400 Hz, 75 kHz deviations (100% modulation).
4. Apply a 106 MHz signal of 60 to 80 dB from SSG, and tune in the set to 106 MHz. Adjust the TC3 until the tester pointer is at the center.
5. Under the condition mentioned in Step 4, apply a signal of 30 to 40 dB, and adjust TC1 and TC2 until the signal meter (meter in the set casing) reads maximum.
6. Apply a 90 MHz signal of 60 to 80 dB from SSG, and tune in the set to 90 MHz. Adjust the VC3 rotor until the tester pointer is at the center.

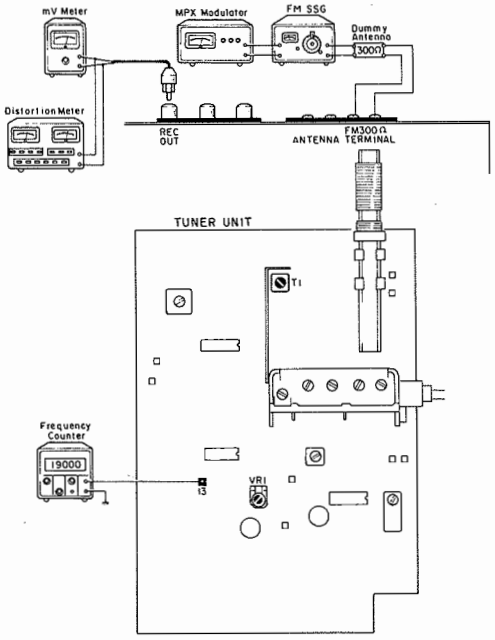
   Insert something like a spatula into the rotor blades, and bends them to the same proportions, making sure not to bend them inward of the dotted lines. (For easy adjustment, spread the blades wide first, and then bend them back inward.)
7. Under the condition mentioned in Step 6, apply a signal of 30 to 40 dB, and adjust VC1 and VC2 rotors until the signal meter reads maximum.
8. Repeat Steps 4 through 7 a few times until frequencies of 90 to 106 MHz can be received.
9. Under the condition mentioned in Step 7, adjust T1 until the signal meter reads maximum.
10. Apply a 98 MHz signal of 60 dB from SSG, and tune in the set to 98 MHz. Adjust the core above T2 to reduce distortion to a minimum.

FM MPX ADJUSTMENT

● Connection Diagram

Switch positions

Function switch ..... TUN
Band switch ..... FM
Mode switch ..... AUTO



● To Adjust

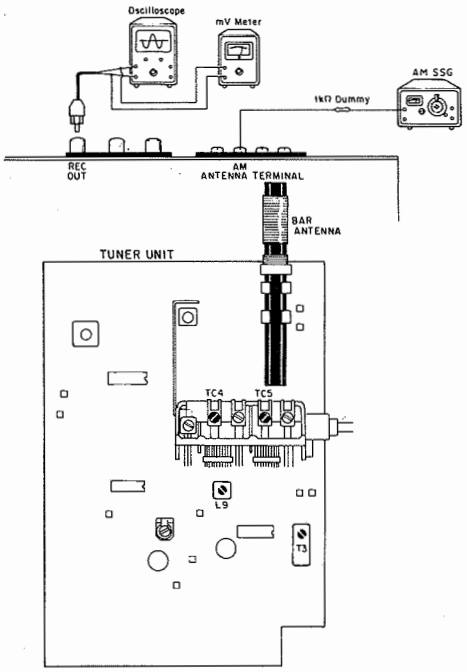
1. Set SSG and the main signal of MPX Modulator at 1 kHz, 67.5 kHz deviation. Also set the pilot signal at 19 kHz, 7.5 kHz deviation.
2. Add the signal of 98 MHz, 60 dB from SSG to the unit and tune in to 98 MHz on the dial scale.
3. Connect the frequency counter to the test point (No. 13). Cut SSG modulation, and adjust VR1 so that the frequency counter will be 19 kHz ± 20 Hz.
4. Pass the signal from MPX Modulator only through either L Channel or R Channel, and adjust T1 so that the distortion factor will be minimum.

AM ADJUSTMENT

● Connection Diagram

Switch positions

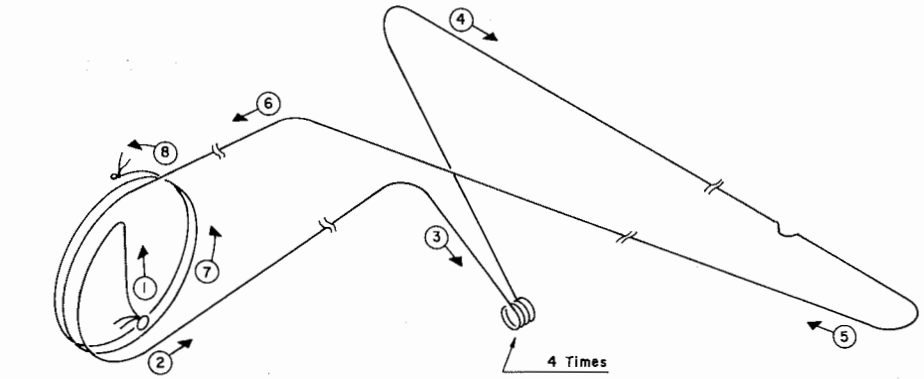
Function switch ..... TUN
Band switch ..... AM

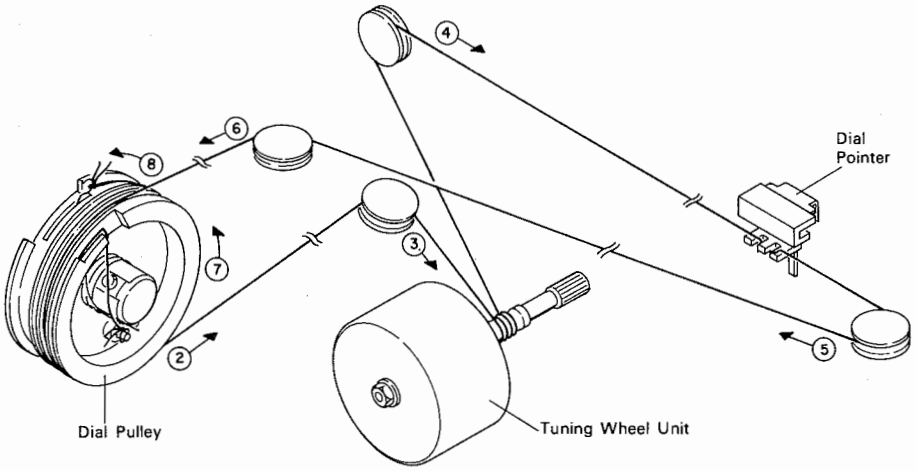


● **To Adjust**

1. Set SSG at 400 Hz, 30% modulation.
2. Add the output signal of 600 kHz, 60 dB from SSG to the unit, and tune in to 600 kHz on the dial scale.
3. Adjust L9 so that the output will be maximum.
4. Add the output signal of 1,400 kHz from SSG to the unit, and tune in to 1,400 kHz on the dial scale.
5. Adjust TC4 so that the output will be maximum.
6. Repeat (2) ~ (5) above several times, and adjust the output to be maximum at 600 kHz, 1,400 kHz.
7. Set SSG to an output of 30 dB, and adjust the Bar Antenna coil (600 kHz) and TC5 (1,400 kHz) repeatedly so that its output level is highest at 600 kHz and 1,400 kHz.
8. Add the output signal of 1,000 kHz from SSG to the unit, and tune in to 1,000 kHz on the dial scale.
9. Adjust T3 for the output to be maximum.

DIAL STRINGING



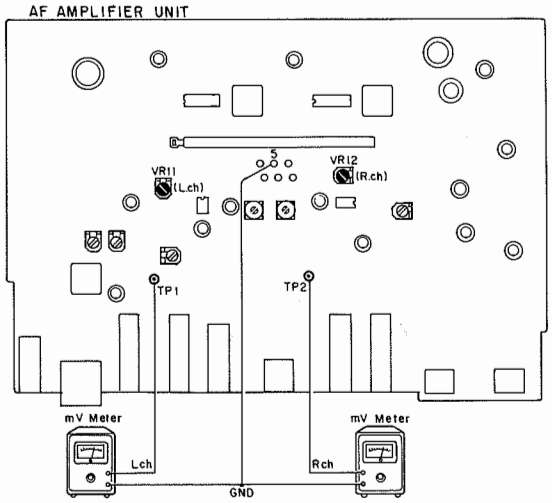


DOLBY PLAYBACK ADJUSTMENT

● Connection Diagram

Switch positions

Tape selector switch ..... NORMAL
Dolby NR switch ..... OUT



● To Adjust

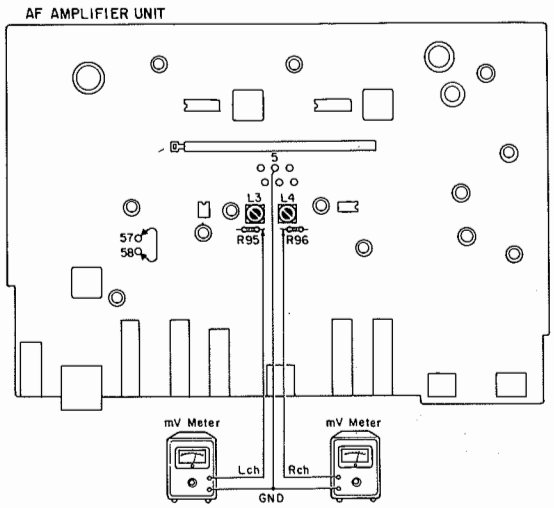
1. Play the Dolby level calibration tape (400 Hz, 200 nwb/m).
2. Adjust VR11 and VR12 until the mV meters read 580 mV.

TRAP ADJUSTMENT

● Connection Diagram

Switch positions

Tape selector switch ..... NORMAL
Dolby NR switch ..... OUT



● To Adjust

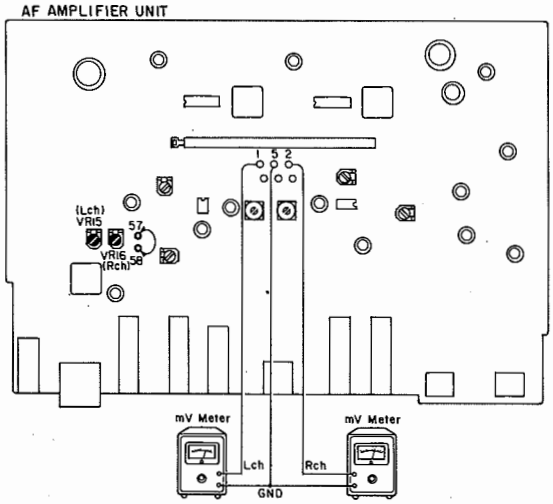
1. Check terminals 57 and 58 that they are shorted.
2. Insert a non-recorded tape into place, and depress the Pause Lever for recording.
3. Turn the Record Level Control knob counterclockwise all the way.
4. Adjust L3 and L4 until the mV meters read minimum.

BIAS ADJUSTMENT

● Connection Diagram

Switch positions

Tape selector switch ..... NORMAL
Dolby NR switch ..... OUT



● To Adjust

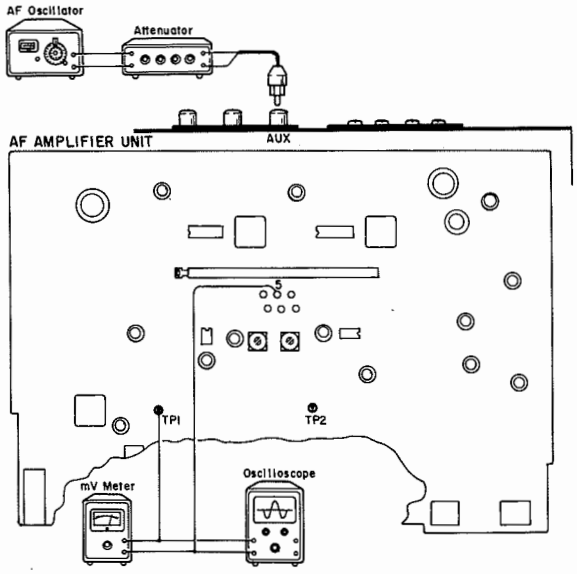
1. Check terminals 57 and 58 that they are shorted.
2. Insert a non-recorded tape into place, and depress the Pause Lever for recording.
3. Turn the Record Level Control knob counterclockwise all the way.
4. Adjust VR15 and VR16 until the mV meters read 450 μA (4.5 mV).

REC/PB FREQUENCY CHARACTERISTICS CHECK AND ADJUSTMENT

● Connection Diagram

Switch positions

Tape selector switch ..... NORMAL
Dolby NR switch ..... OUT
Function switch ..... AUX



● To Adjust

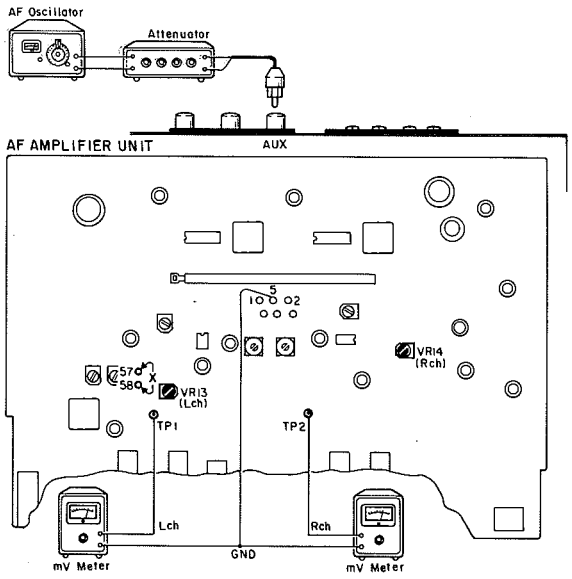
1. Apply a 1 kHz signal from the AF oscillator.
2. Insert a non-recorded tape into place, and depress the Pause Lever for recording.
3. Turn the Record Level Control knob until the Level Meter reads 0 dB.
4. Set the input signal at −20 dB with the attenuator.
5. Depress the Pause Lever again, and record for a few seconds.
6. Change the signal output of the AF oscillator to 10 kHz, and record for a few seconds.
7. Stop recording, and play the tape back.
8. Read the mV meter when the 1 kHz signal is reproduced.
9. Read the mV meter when the 10 kHz signal is reproduced. Read the mV meter for the level difference between the 1 kHz and 10 kHz readings.
10. If the 10 kHz reading is higher than the 1 kHz reading, increase the bias current mentioned in Paragraph 5.4; or if it is lower than the other, decrease the bias current. Increase or decrease 0.3 mV for a difference of 1 dB. Repeat the bias current adjustment until the readings of the 10 kHz and 1 kHz recording levels are the same.

RECORDING CURRENT ADJUSTMENT

● Connection Diagram

Switch positions

Tape selector switch ..... NORMAL
Dolby NR switch ..... OUT
Function switch ..... AUX



● To Adjust

1. Open terminals 57 and 58.
2. Apply a 400 Hz signal from the AF oscillator.
3. Insert a non-recorded tape into place, and depress the Pause Lever for recording.
4. Turn the Record Level Control knob until the output levels at TP1 and TP2 are −2.5 dB (580 mV).
5. Reconnect the mV meters to terminals 1 and 5, and to terminals 2 and 5, and adjust VR13 and VR14 until the mV meters read −63.8 dB (0.5 mV).

REC/PB LEVEL CHECK AND ADJUSTMENT

● Connection Diagram

See Fig. 10.

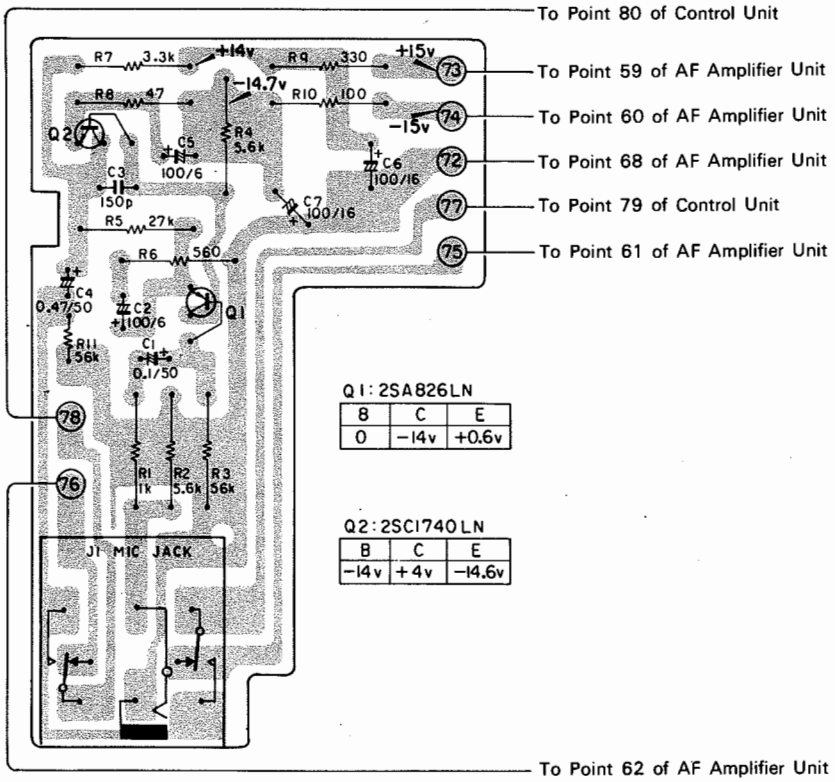
● To Adjust

1. Short terminals 57 and 58.
2. Apply a 400 Hz signal from the AF oscillator.
3. Insert a non-recorded tape into place, and depress the Pause Lever for recording.
4. Depress the Pause Lever again, and record for a few seconds.
5. Stop recording, and play the tape back.
6. Check TP1 and TP2 that their outputs are −2.5 dB ±1 dB.
7. If the outputs differ from the specified level by more than 1 dB, readjust the recording current

   If the outputs are higher than the specified level, decrease the recording current; and if the outputs are lower, increase the recording current.

MIC AMPLIFIER UNIT

● Parts Connection



Q1 : 2SA826LN

B	C	E
0	−14v	+0.6v

Q2 : 2SC1740LN

B	C	E
−14v	+4v	−14.6v

● Parts List

MISCELLANEOUS

Part No.	Symbol & Description	
2SA826LN-R	Q1	
2SC1740LN-R	Q2	
CKN-069	J1	Jack

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

RESISTORS

Part No.	Symbol & Description
RD1/4PS□□□J	R1 — R10
RD1/4VS□□□J	R11

CAPACITORS

Part No.	Symbol & Description
CEA0R1P50NL	C1
CEA101P6	C2, C5
CKDYB151K50	C3
CEAR47P50NL	C4
CEA101P16	C6, C7

● Parts List

MISCELLANEOUS

Part No.	Symbol & Description	
HA1137	IC1	
HA1138	IC2	
HA1156WP	IC3	
2SK49-H2	Q1	
2SC535-C	Q2	
2SC461-C	Q3, Q4	
2SA826LN	Q5, Q6	
1S1555 or 1S2076 or 1S2473	D1—D7	
CTH-037	L6, L7	Coil
CTF-071	L8	Micro Inductor
CTB-063	L9	Coil
CTF-038	CF1, CF2	Ceramic Filter
CCP-057	VR1	Semi-fixed, 5 kΩ (B)
CCK-011	TC1—TC4, VC1—VC4	Variable Condenser
CTC-073	T1	IF Transformer
CTC-074	T2	Coil
CTE-085	T3	IF Transformer
HXA-101	T4	Antenna Unit
CSG-112	S1	Switch
	L1—L5	Coil

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

RESISTORS

Part No.	Symbol & Description
RD1/8PS□□□J	R1—R58

CAPACITORS

Part No.	Symbol & Description
CCDUJ150K50	C1
CCDSL220K50	C2
CCDUJ180K50	C3
CKDYF103Z25	C4, C8, C12, C14—C17, C28, C55, C61, C62
CCDCH150K50	C5, C11
CGBR75K500	C6
CCDRH180K50	C7
CCDLH080F50	C9
CCDCH330K50	C10
CCDSL101K50	C13
CKDYF473Z25	C18—C20, C25, C27, C35, C37, C50, C58, C63, C67
CEA2R2P50	C21
CCDSL470K50	C22
CEA4R7P35	C23, C52
CEA010P50	C24, C32, C33
CSZAR33M35	C26, C31
CKDBC473K25	C29, C56
CQSH511J50	C30
CEA100P16	C34, C60
CEA221P16	C36
CQMA273K50	C38, C39
CKDYB561K50	C40, C41
CKDYB222K50	C42, C43
CKDYB152K50	C44, C45
CSZAR22M35	C46, C47
CEA101P6R3	C48
CCDUJ060F50	C49
CEA470P6R3	C51
CEA101P16	C53
CCDSL221K50	C54
CKDBC333K25	C57
CEA330P16	C59
CQMA103K50	C64
CQSH351J50	C65
CCDRH150K50	C66

AF AMPLIFIER UNIT

● Parts List

NOTE:
When ordering resistors, first covert 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	*56×10¹*	*561*	*RD1/4PS* 5 6 1 *J*
47kΩ	*47×10³*	*473*	*RD1/4PS* 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	*562×10¹*		*RN1/4SR* 5 6 2 1 *F*

MISCELLANEOUS

Part No.	Symbol & Description	
NJM4558DD	IC1, IC3, IC4	
NJM4559D	IC2	
NE646BN	IC5, IC6	
2SC1740LN	Q1—Q7	
2SA826LN	Q8	
2SD468	Q9	
2SC1061	Q10	
1N60	D1—D4	
⚠ SR1K-2 or	D5—D8	
SIB01-01 or		
1S1886		
1S1555 or	D9, D12	
1S2076 or		
1S2473		
WZ-157	D10	
BZ-150	D11	
U504	SR1	
CTF-061	L1, L2	Ferri-Inductor, 8.2 mH
CTH-014	L3, L4	Coil, 30 mH
CTF-029	L5	Ferri-Inductor, 10 mH
CWX-305	F1, F2	Filter Unit
CWX-306	OSC	Oscillator Unit
CCS-185	VR3, VR4	Volume, 20 kΩ (A)
CCS-186	VR5	Volume, 20 kΩ (A)
CCP-056	VR11,VR12	Semi-fixed, 10 kΩ (B)
CCP-057	VR13,VR14	Semi-fixed, 5 kΩ (B)
CCP-058	VR15,VR16	Semi-fixed, 100 kΩ (B)
CSH-059	S1	Switch
CSK-023	S2, S5, S6	Switch
CSK-024	S3	Switch
CSK-025	S4	Switch
CSK-027	S8	Switch
⚠ CEK-042	FU1	Fuse, 125V 1A
CKN-070	J1	Jack

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

RESISTORS

Part No.	Symbol & Description
RD1/4PS□□□J	R1—R130, R135, R143, R144
⚠ RS1P□□□K	R131, R133
⚠ RS2P□□□K	R132
⚠ RS1P□□□J	R134
RD1/2PS□□□J	R136,R137

CAPACITORS

Part No.	Symbol & Description
CEAR22P50NL	C1, C2, C11, C12
CEA330P16	C3, C4, C13, C14, C67, C68
CQMA822J50	C5, C6
CQMA222J50	C7, C8
CEA1R0P50	C9, C10, C81, C82
CEA100M16NP	C15, C16, C73, C74
CQMA124K50	C17, C18
CSZAR68M35	C19, C20
CQMA103K50	C21, C22, C85, C89
CQMA473K50	C23, C24
CKDYB681K50	C25, C26
CEA2R2P50NL	C27, C28
CEA470P6	C29, C30
CQMA472J50	C31, C32, C43, C44
CEA100P16	C33, C34, C41, C42, C47—C50, C53, C54, C91
CEA101P16	C35,C36,C77,C78,C84,C99
CEA1R0P50NL	C37, C38
CQMA273J50	C39, C40
CQMA562J50	C45, C46
CQMA473J50	C51, C52
CQMA104K50	C55, C56
CSZAR33M35	C57, C58
CEA221P10	C59, C60
CKDYB821K50	C61, C62
CSZA1R0M35	C63, C64
CSZA0R1M35	C65, C66
CQMA183J50	C69, C70
CQMA153J50	C71, C72
CCDSL820K50	C75, C76
CEA3R3P50	C79, C80
CEA470P16	C83
CQMA472K50	C86
CKDY8101K50	C87, C97, C98
CEA2R2P50	C88
CEA4R7P25NL	C90
⚠ CEA222P16	C92
CEA101P35	C93
CEA100P35	C94
CEA102P16	C95
CEA471P16	C96
CSZAR47M35	C100, C103

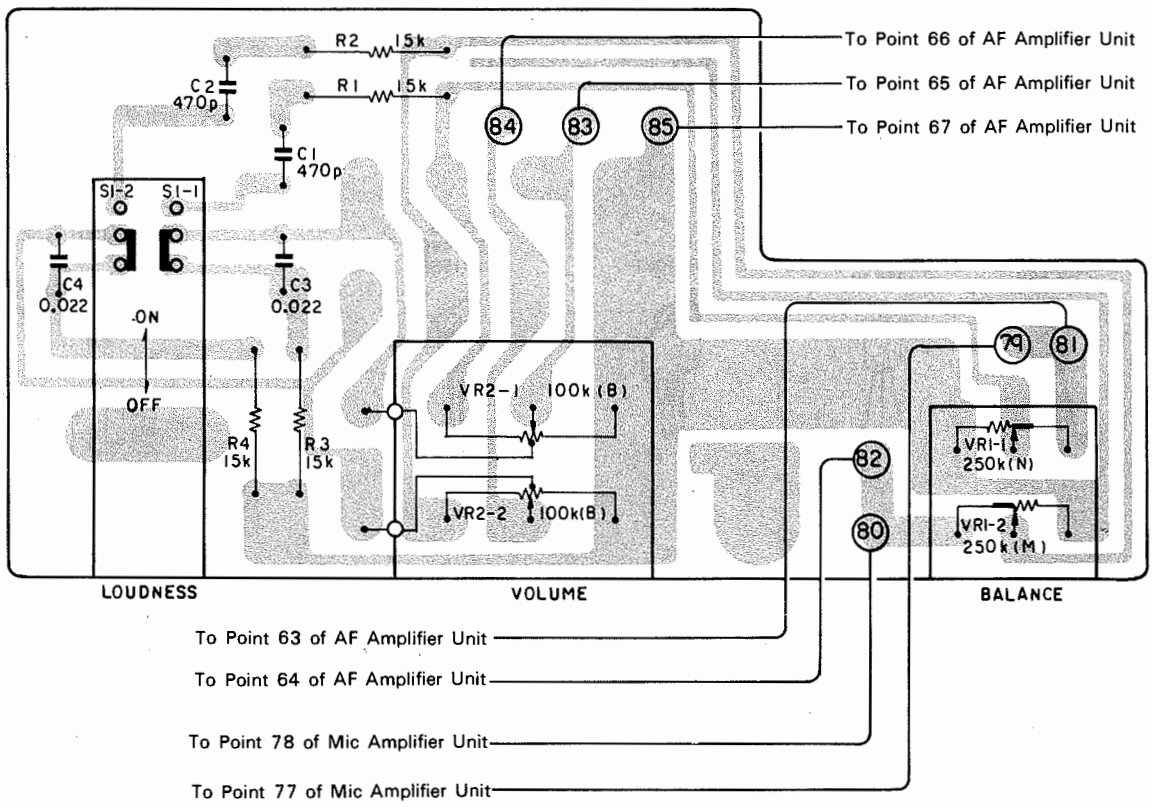
List of changed parts information will be furnished whenever necessary and you are requested to amend parts number in this parts list.

List of Changed Parts for Factory Modification

Symbol	Part No.	Description

CONTROL UNIT

● Parts Connection



● Parts List

MISCELLANEOUS

Part No.	Symbol & Description	
CCS-187	VR1	Volume, 250 kΩ (MN)
CCV-009	VR2	Volume, 100 kΩ (B)
CSK-026	S1	

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

RESISTORS

Part No.	Symbol & Description
RD1/4PS□□□J	R1 — R4

CAPACITORS

Part No.	Symbol & Description
CKDYB471K50	C1, C2
CQMA223K50	C3, C4

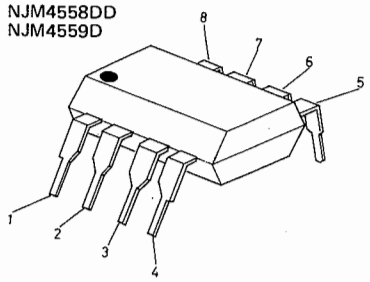
● IC's and Transistors

2SC733

2SA641
2SC828
2SC945
2SC1740LN
2SA826LN

2SA683
2SD468

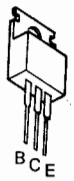
NJM4558DD
NJM4559D



2SC461
2SC535

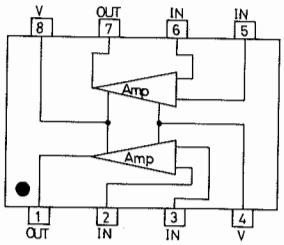
2SK49

2SC1061

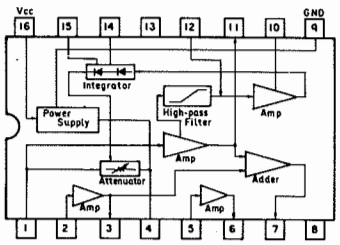


2SC495
2SC1449
2SC1568

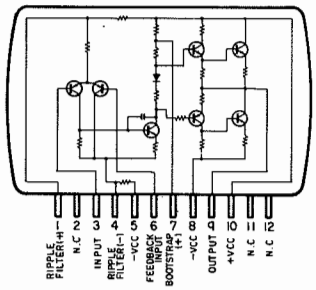
NJM4558DD
NJM4559D



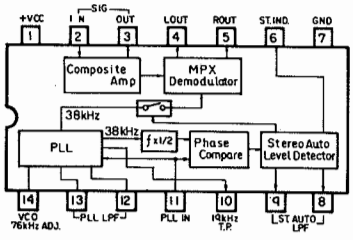
NE646BN



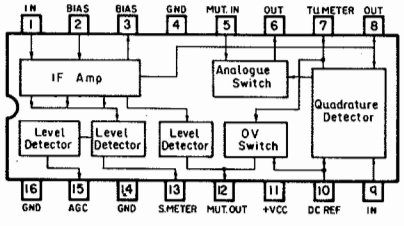
S1, 1125H



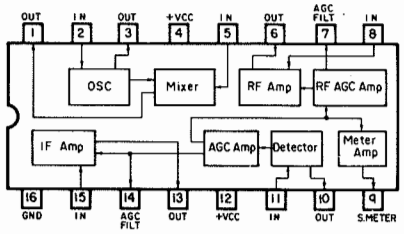
HA1156WP



HA1137

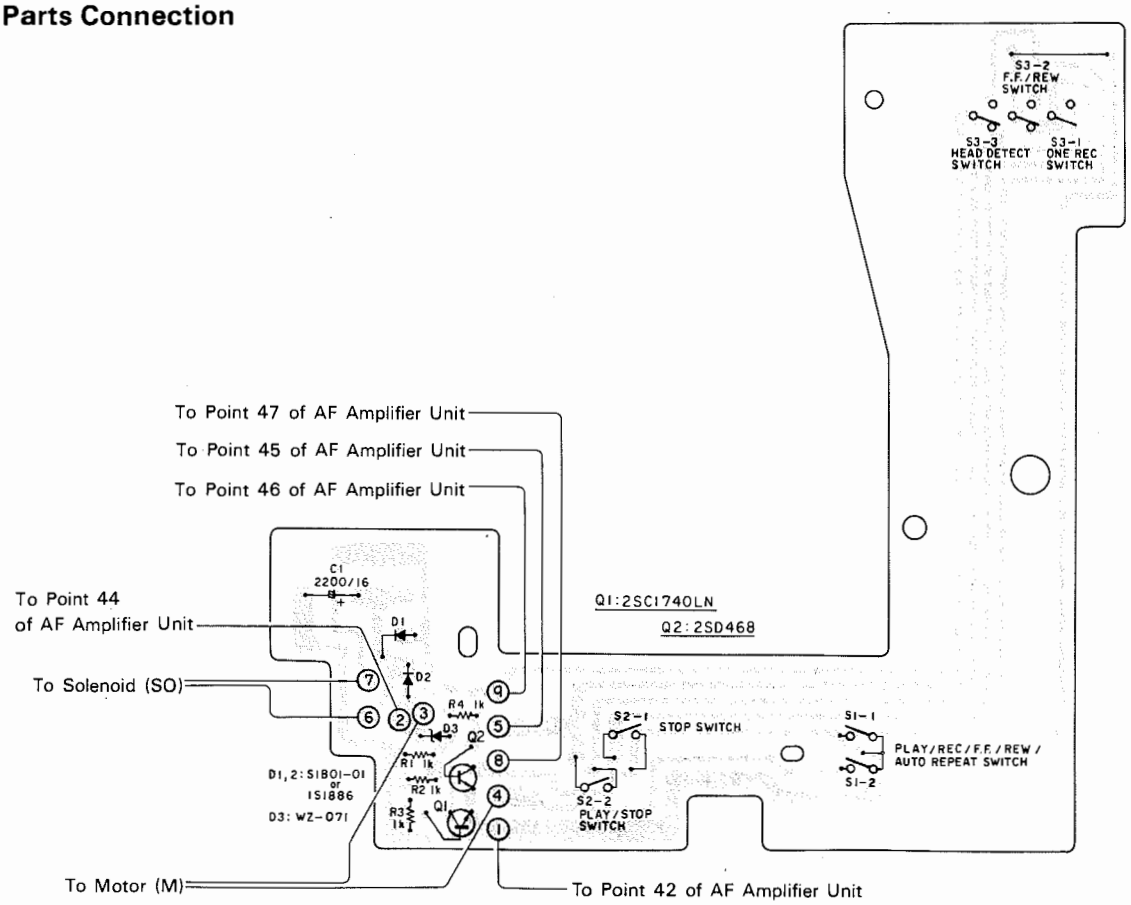


HA1138



SENSING UNIT (CWX-288)

● Parts Connection



● Parts List

MISCELLANEOUS

Part No.	Symbol & Description
2SC1740LN	Q1
2SD468-C	Q2
SIB01-01 or 1S1886	D1, D2
WZ-071	D3

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

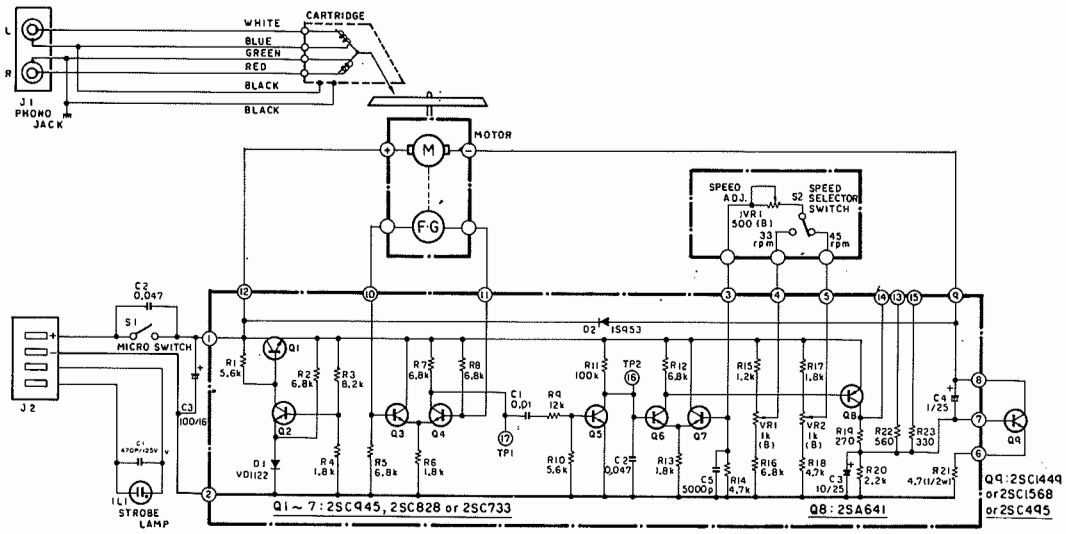
RESISTORS

Part No.	Symbol & Description
RD1/4VS□□□J	R1 — R4

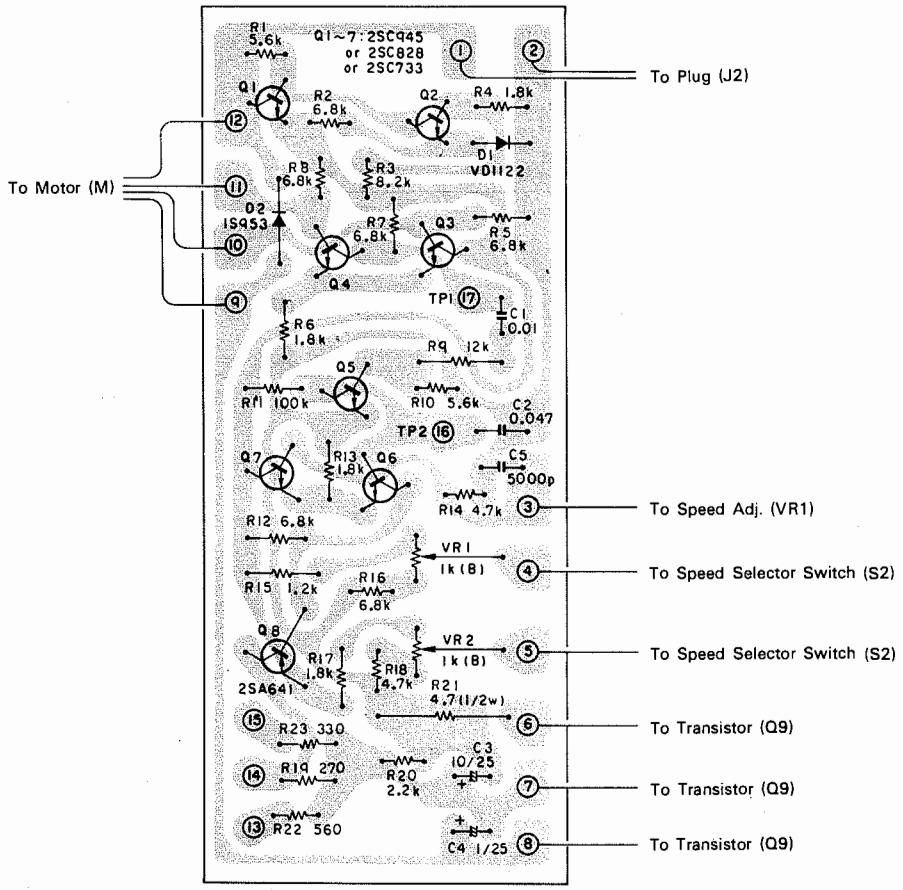
CAPACITORS

Part No.	Symbol & Description	
HCH-107	C1	Electrolytic 2200/16V

● Circuit Diagram



● Parts Connection



PLAYER UNIT (KH-8855)

● Parts List

TRANSISTORS, DIODES AND VOLUMES

Part No.	Symbol & Description	
2SC733 or	Q1—Q7	
2SC828 or		
2SC945		
2SA641	Q8	
2SC495 or	Q9	
2SC1449 or		
2SC1568		
VD1122	D1	
1S953	D2	
HCP-104	VR1, VR2	Volume, 1 kΩ (B)

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

RESISTORS

Part No.	Symbol & Description
RD1/4VS□□□J	R1—R20, R22, R23
RD1/2PS□□□J	R21

CAPACITORS

Part No.	Symbol & Description
CQMA103M50	C1
CQMA473M50	C2
CEA100P25	C3
CEA010P25	C4
CCDSL502K50	C5

● Miscellaneous Parts List

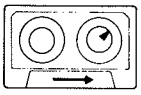
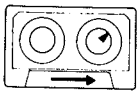
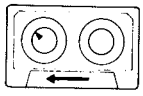
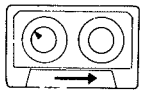
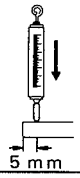
Part No.	Symbol & Description	
HCG-101	C1	Ceramic 470p/AC125V
CQMA473K50	C2	
CEA101P16	C3	
HEL-101	IL1	Lamp
HCS-101	VR1	Volume, 500Ω (B)
HXM-104	M	Motor
HSF-101	S1	Switch
HSG-103	S2	Switch
HXA-141	J1	Jack, 2P
HKS-101	J2	Connector

MISCELLANEOUS PARTS LIST

Part No.	Symbol & Description	
CPB-044	HD1	Head
CPB-055	HD2	Head
CAW-050	ME1	Meter
CAW-049	ME2	Meter
CEL-084	IL1	Lamp, 14V 60mA
CEL-091	IL2, IL3	Lamp, 12V 55 mA
SEL104RC	D1, D3	LED
SEL304GC	D2	LED
⚠ CCG-018	C1	Ceramic 0.01/AC125V
⚠ CTT-121	T1	Power Transformer
⚠ CSK-028	S1	Switch
CSG-113	S2	Switch
CXM-056	M	Motor
CXP-024	SO	Solenoid
CDE-139	J1	Shield Cord (KH-8855, KH-8833)

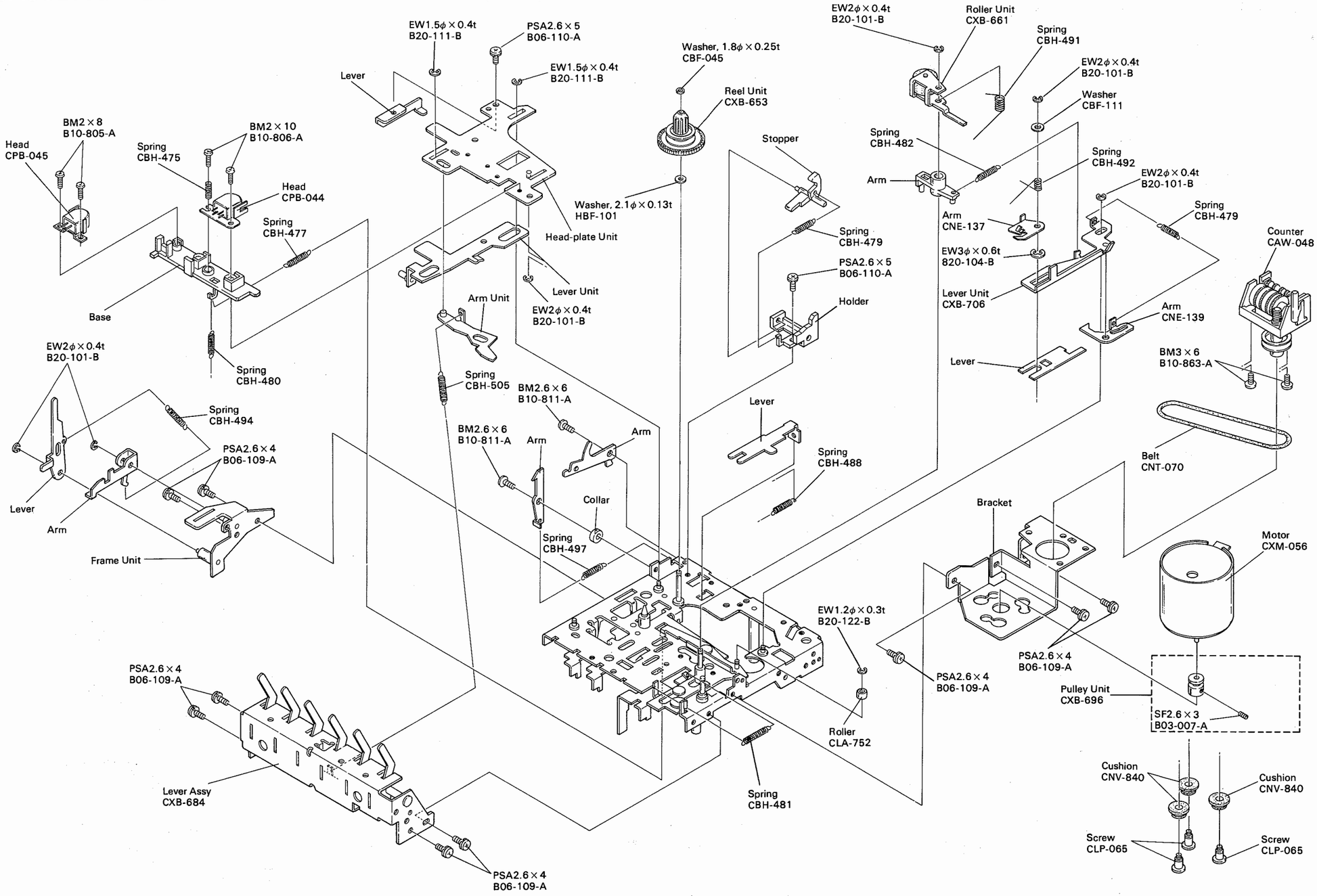
Part No.	Symbol & Description	
CKN-072	J1	Jack, 2P (KH-858)
CDE-140	J2	Shield Cord (KH-8855, KH-8833)
CKA-005	J3	Jack, 4P
CKN-071	J4	Jack, 6P
CKE-002	J5	Jack, 4P
CKN-072	J6	Jack, 2P
⚠ CDE-505	J7	Connector (KH-8855)
⚠ CDE-506	J7	Connector (KH-8833)
⚠ CDG-030	J8	AC Cord
⚠ CKP-007	J9	AC Socket (KH-858)

CHECK POINTS OF CASSETTE MECHANISM

Confirm the following items when replacing parts of the cassette mechanism.	■ Tape speed deviation: 3,000 ± 75 Hz (4.76 cm/s ± 2.5%) Using an STD-301, measure the speed at the start and end of winding and take the maximum value. Measuring time shall be 5 ~ 6 seconds.	■ Wow and flutter: Less than 0.3% (RMS) Less than 0.2% (WRMS) Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ~ 6 seconds.
■ Fast forward and rewinding time: Less than 120 seconds Using an C-60, set to fast forward and rewind, and measure the time with a stop watch.	■ Winding torque: 38 ~ 58 g•cm  Using a cassette type torque meter (120 g•cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.	■ F.F. torque: 90 ~ 150 g•cm  Using a cassette type torque meter (160 g•cm), measure the value when the tape stops in the F.F. mode.
■ REW torque: 90 ~ 150 g•cm  Using a cassette type torque meter (160 g•cm), measure the value when the tape stops in the REW mode.	■ Back tension torque: 2~5 g•cm  After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.	■ Pinch roller pressure: 170 ~ 230g
■ Lever operating force Play, Stop ..... Less than 700g F.F. ..... Less than 2,900g REW, Eject, Auto Repeat .....2,300g REC, Pause ..... 900g  	■ Clearance between flywheel and flywheel bracket 0.05 ~ 0.25 mm	

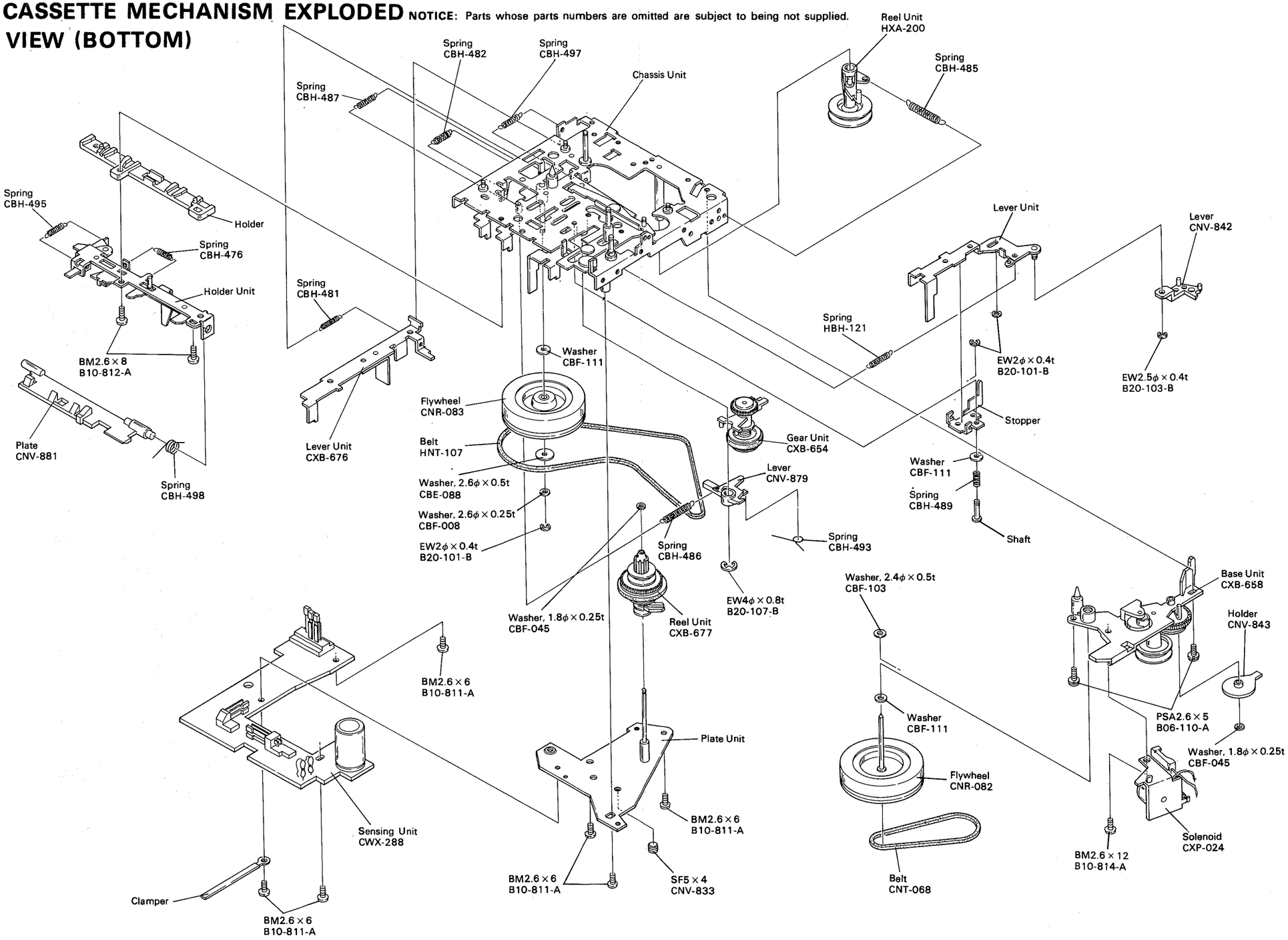
CASSETTE MECHANISM EXPLODED VIEW (TOP)

NOTICE: Parts whose parts numbers are omitted are subject to being not supplied.



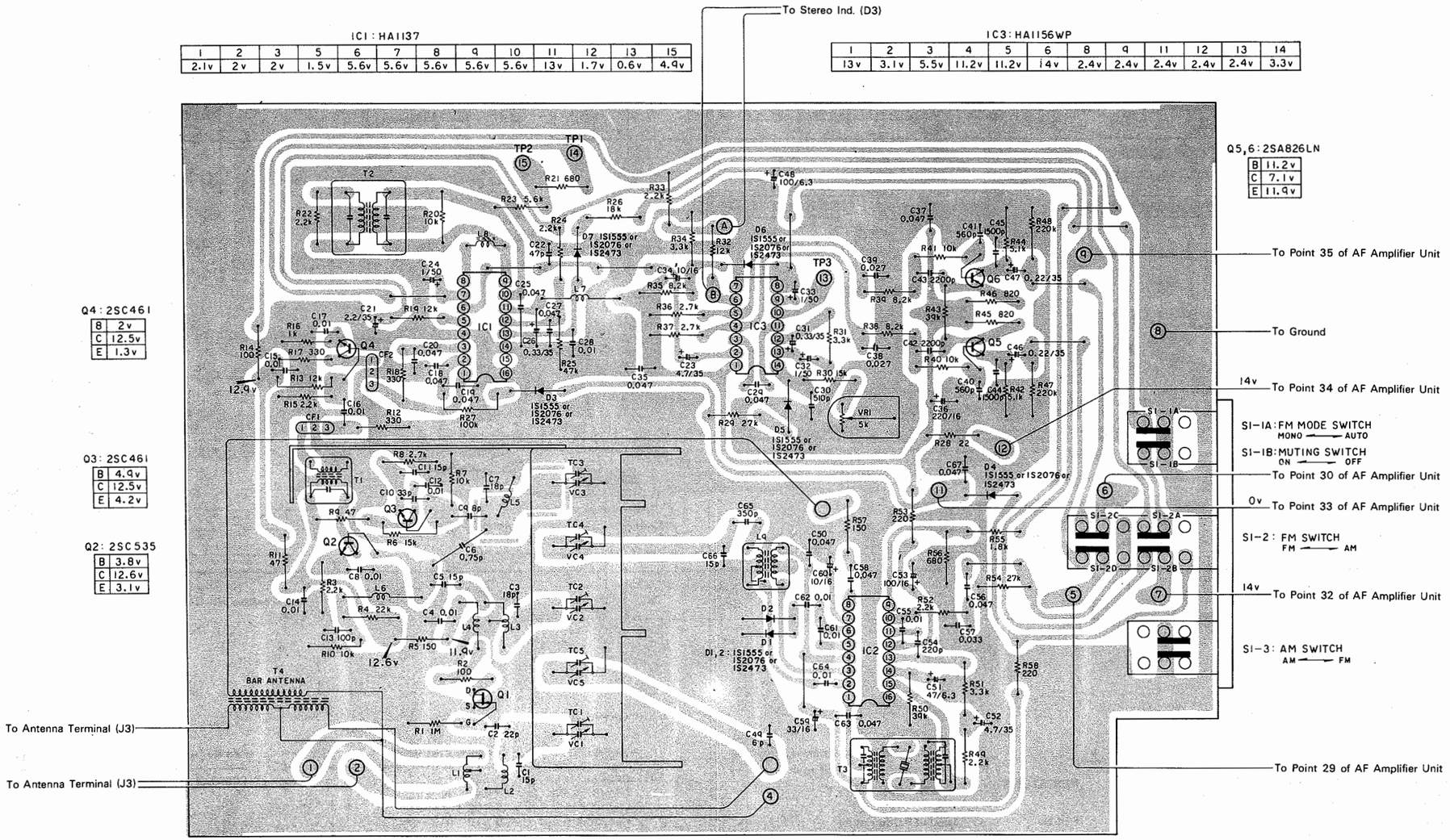
CASSETTE MECHANISM EXPLODED VIEW (BOTTOM)

NOTICE: Parts whose parts numbers are omitted are subject to being not supplied.



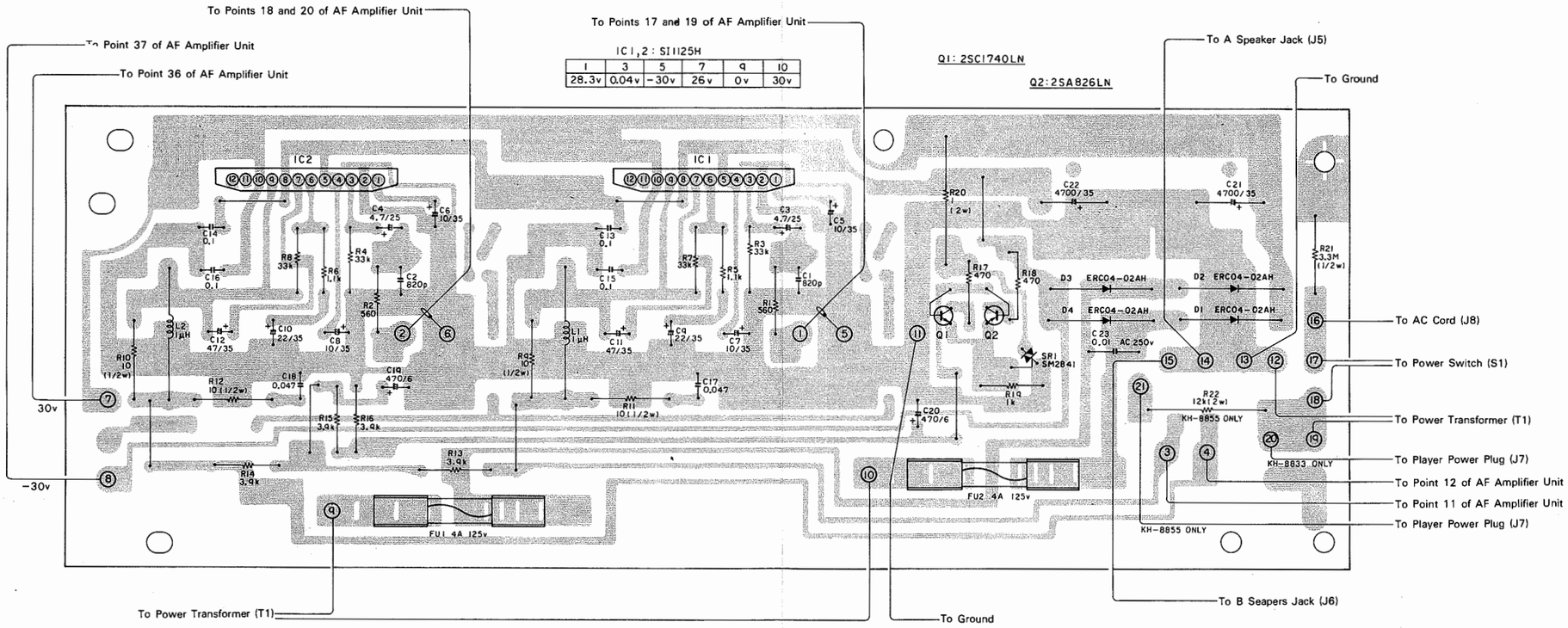
TUNER UNIT

● **Parts Connection**



MAIN AMPLIFIER UNIT

● **Parts Connection** **KH-8855 (CWK-195)**
KH-8833, KH-858 (CWK-197)



● **Parts List**

MISCELLANEOUS

Part No.	Symbol & Description	
⚠ SI-1125H	IC1, IC2	
2SC1740LN	Q1	
2SA826LN	Q2	
⚠ ERC04-02AH	D1—D4	
SM2841	SR1	Triac
⚠ CEK-043	FU1, FU2	Fuse, 125V 4A

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

RESISTORS

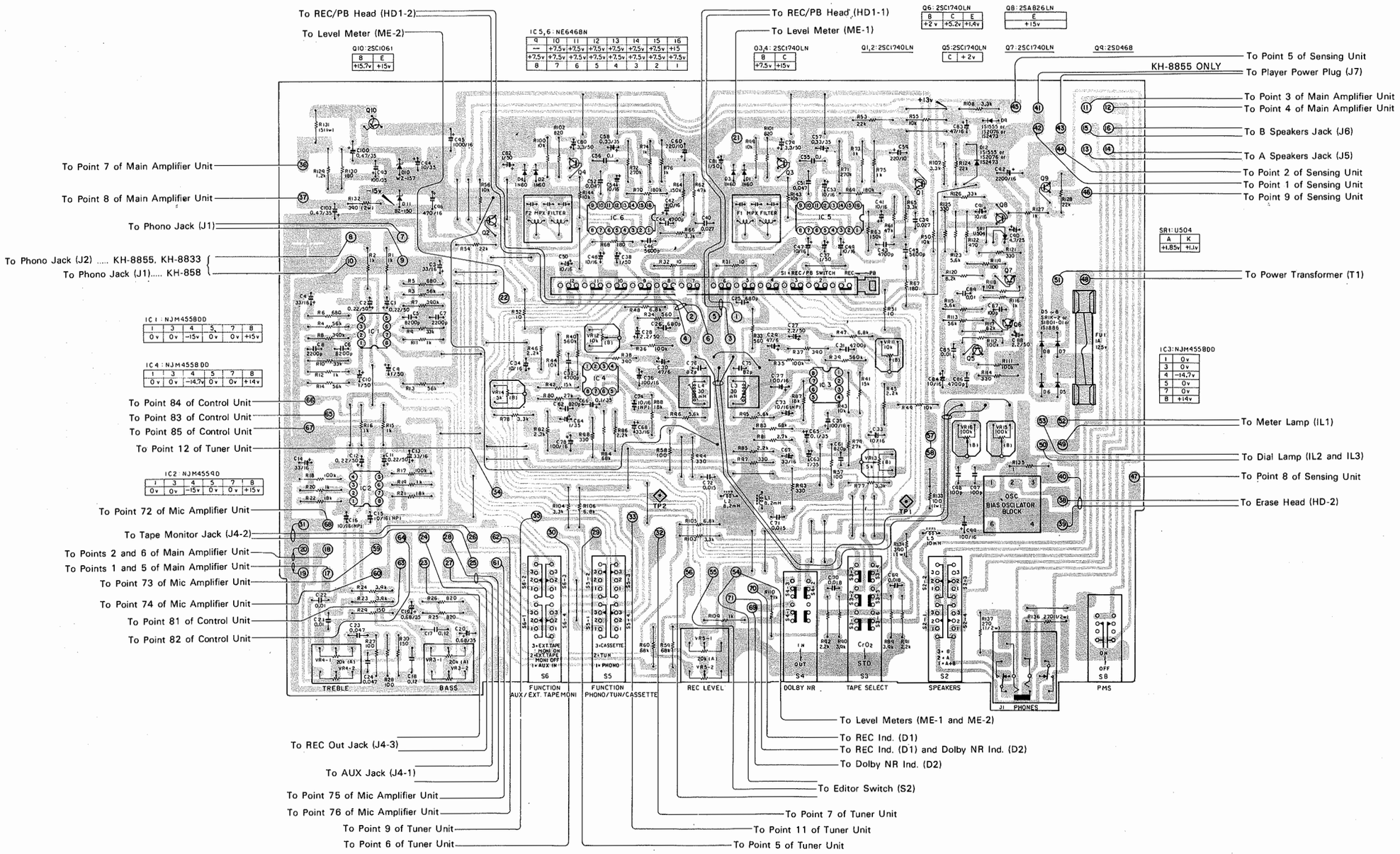
Part No.	Symbol & Description
RD1/4PS□□□J	R1—R8, R13—R19
RD1/2PS□□□J	R9—R12
⚠ RN2P□□□K	R20
⚠ RD1/2PS□□□J	R21
⚠ RS2P□□□K	R22 (KH-8855)

CAPACITORS

Part No.	Symbol & Description	
CKDYB821K50	C1, C2	
CEA4R7P25NL	C3, C4	
CEA100P35	C5—C8	
CEA220P35	C9, C10	
CEA470P35	C11, C12	
CQMA104K50	C13—C16	
CQMA473K50	C17, C18	
CEA471P6	C19, C20	
⚠ HCH-103 or CCH-033	C21, C22	Electrolytic 4700/35V
⚠ CCG-003	C23	Ceramic 0.01/AC250V

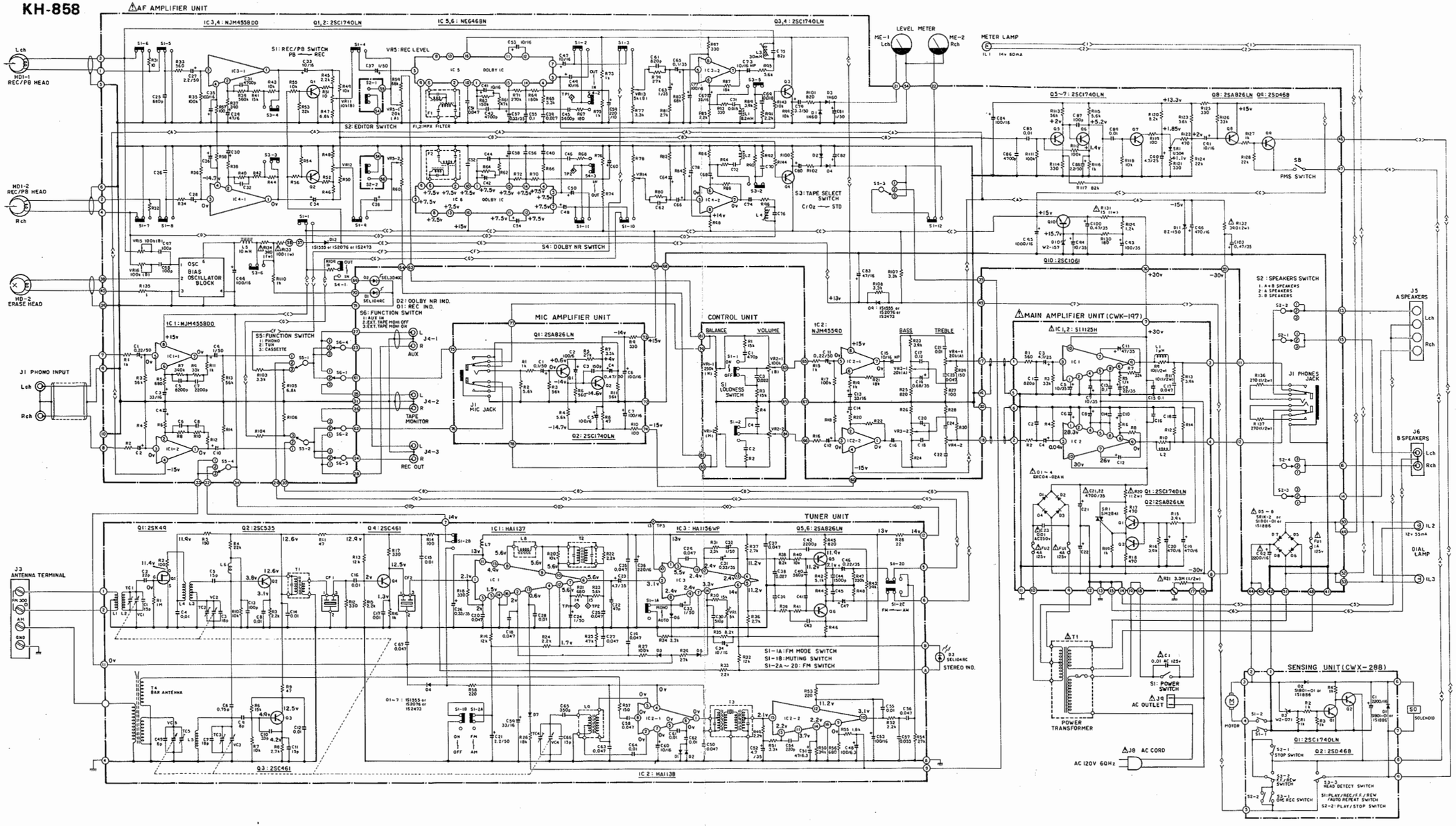
AF AMPLIFIER UNIT

● Parts Connection



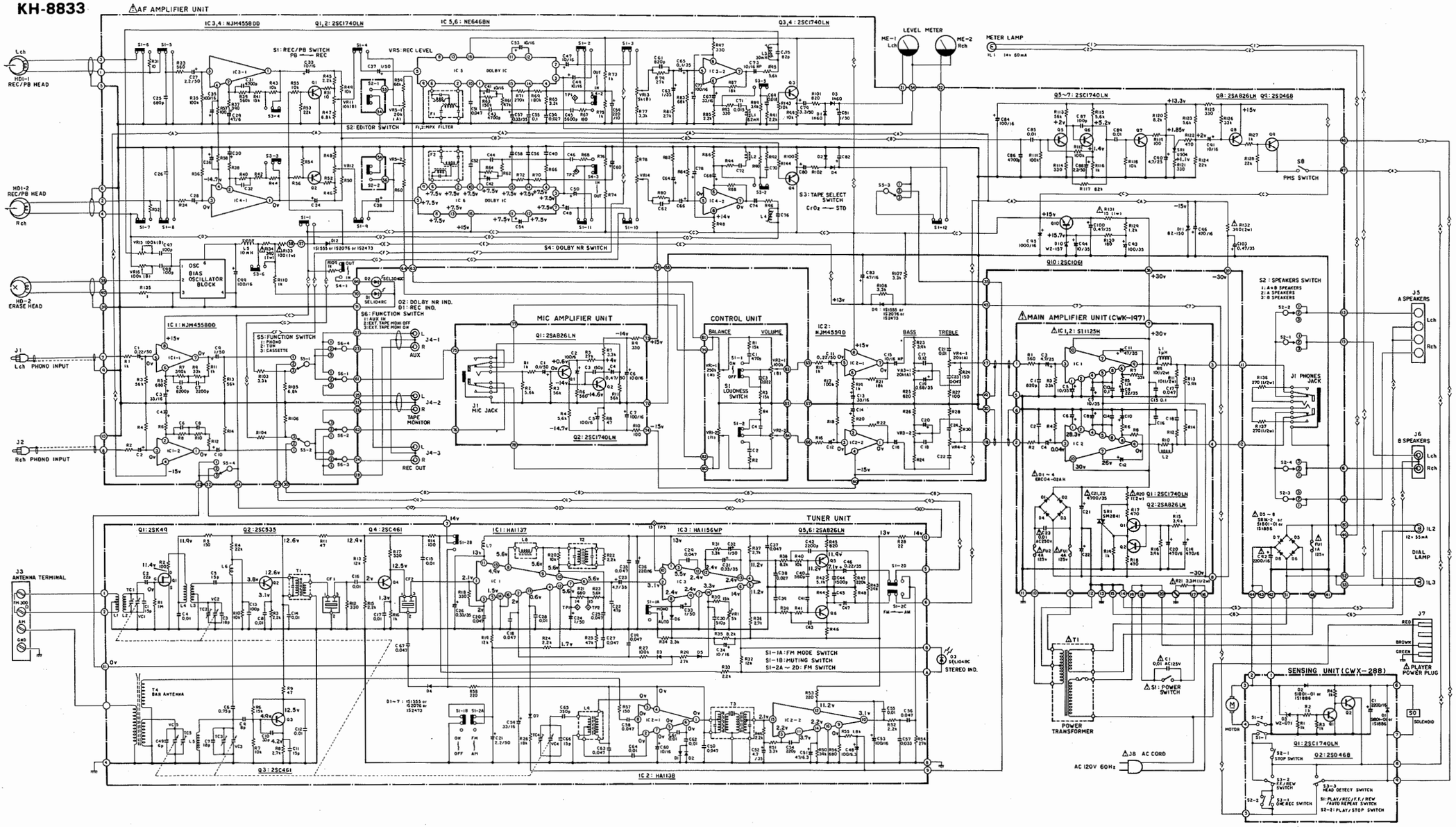
Centrex KH-858KU/-8833KU/-8855KU

KH-858



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

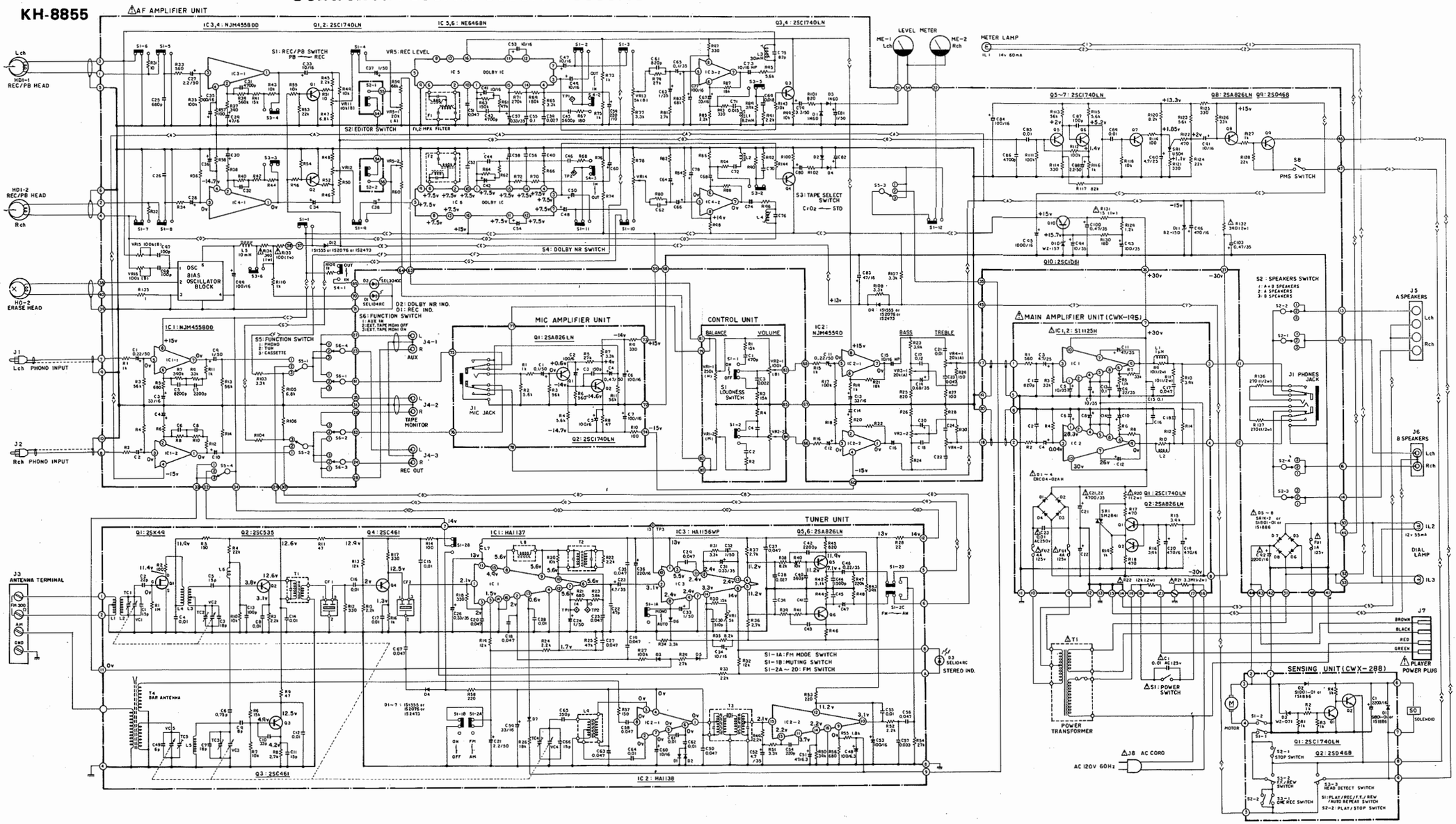
KH-8833



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

Centrex KH-858KU/-8833KU/-8855KU

KH-8855



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