KH-3500 HG

PIONEER STEREO MUSIC CENTRE

SERVICE MANUAL

Original

SPECIFICATIONS

Semi-Conductors	AF: 41 Transistors, 10 diodes RF: 1 IC, 9 transistors, 8 diodes

AMPLIFIER SECTION

Continuous Power Output (40 Hz~40 kHz, both channels driven)	10W + 10W/8Ω, 12W + 12W/4Ω
Total Harmonic Distortion (Continuous Rated Power Output)	No more than 1%
Output Impedance	8Ω (Speaker and headphones)
Input Level	MIC: 0.5 mV LINE (AUX): 75 mV
Input Impedance	MIC: 600Ω (Matching Impedance) LINE (AUX): More than 50kΩ

RADIO SECTION

Frequency Range	FM: 88~108 MHz MW: 525~1,605 kHz LW: 150~350 kHz
Sensitivity	FM: 2.5μV (IHF) MW: 160μV/m (Bar Antenna IHF) LW: 500μV/m (Bar Antenna)

TAPE DECK SECTION

Cartridge	PHILIPS-type cassette (C-30, C-60, C-90)
Wow and Flutter	0.15% (WRMS)
Rewind Time	Approx. 95 sec. (C-60)
Fast Forward Time	Approx. 95 sec. (C-60)
Cross Talk	More than 60dB
Signal to Noise Ratio	More than 45dB
Erasing Ratio	More than 60dB

PHONO SECTION

Speed	Two speed: 33-1/3 and 45 rpm
Wow and Flutter	Less than 0.08%
Motor	4 pole synchronous type
Cartridge	PC-135 induced magnet type Stylus point: 0.6 mil diamond Stylus for replacement: PN-135 Tracking force: 1.8g to 2.3g
Power Requirements	AC 220/240V 50 Hz
Power Consumption	Less than 55W
Dimensions (WxHxD)	510 x 235 x 420mm (20-1/8 x 9-1/4 x 16-1/2 in.)
Weight	13.6 kg (30 lbs)

PIONEER

CONTENTS

1. PARTS LOCATION

• Main Unit

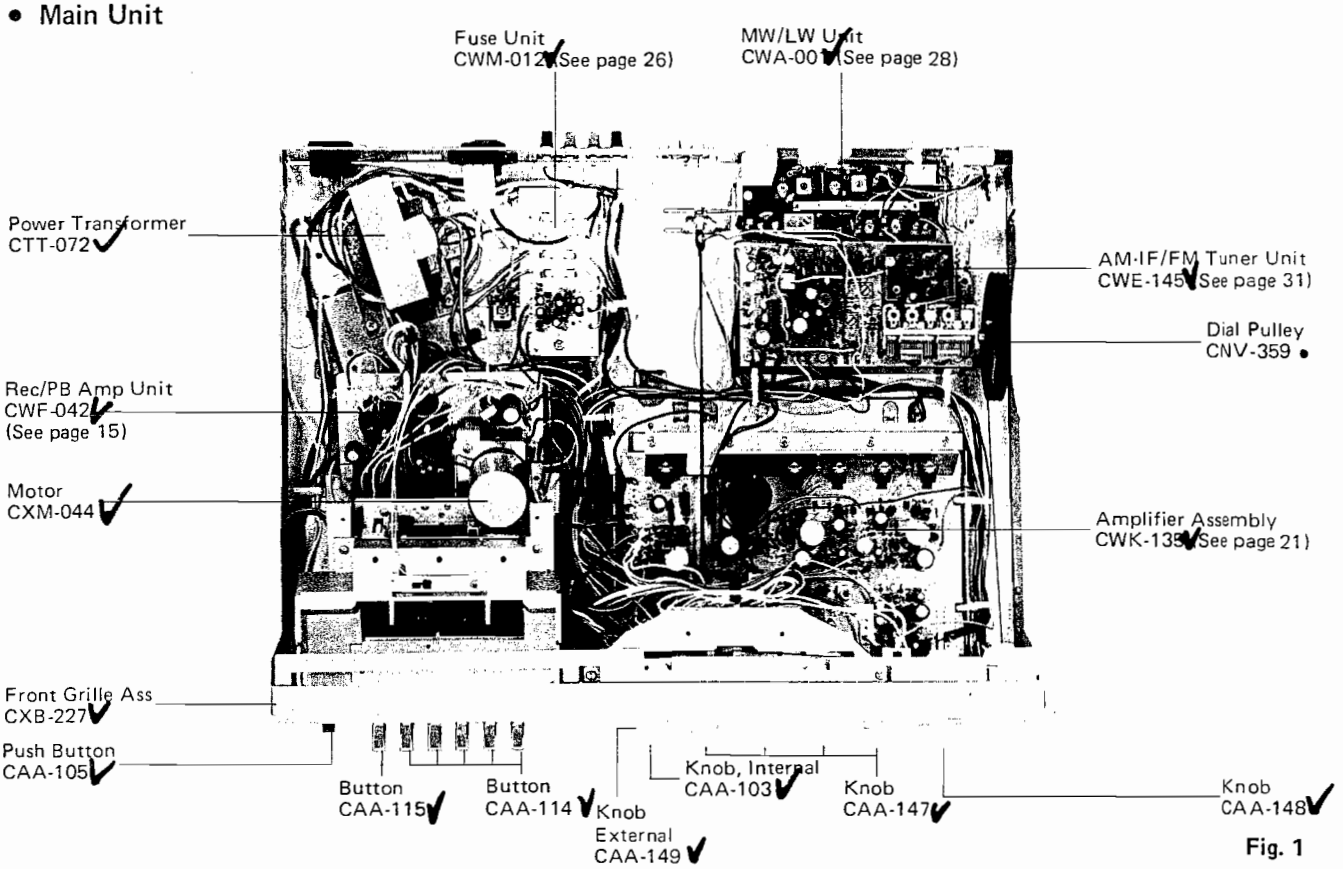


Fig. 1

• Player Unit

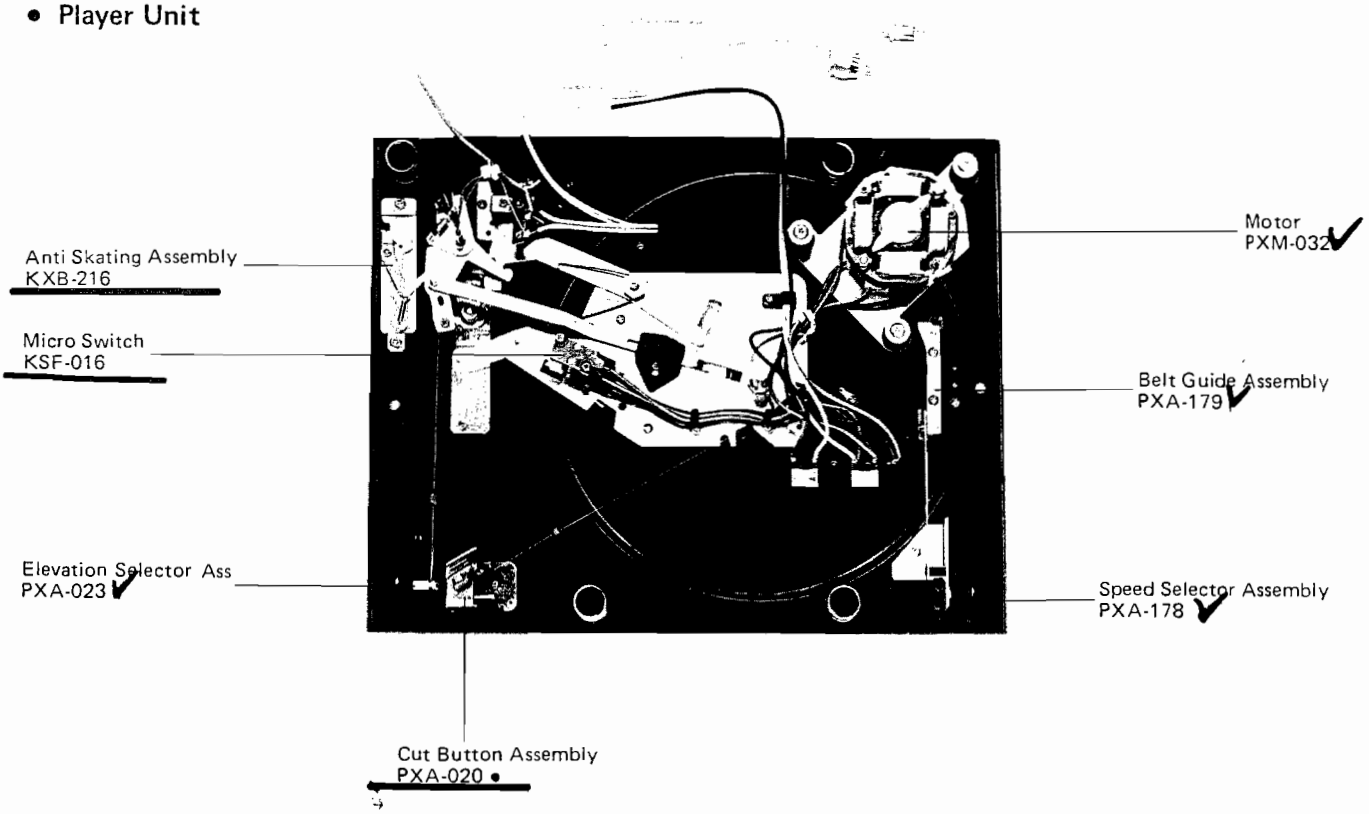


Fig. 2

2. CIRCUIT DESCRIPTION

- **Circuit Block Diagram in Playback Mode**

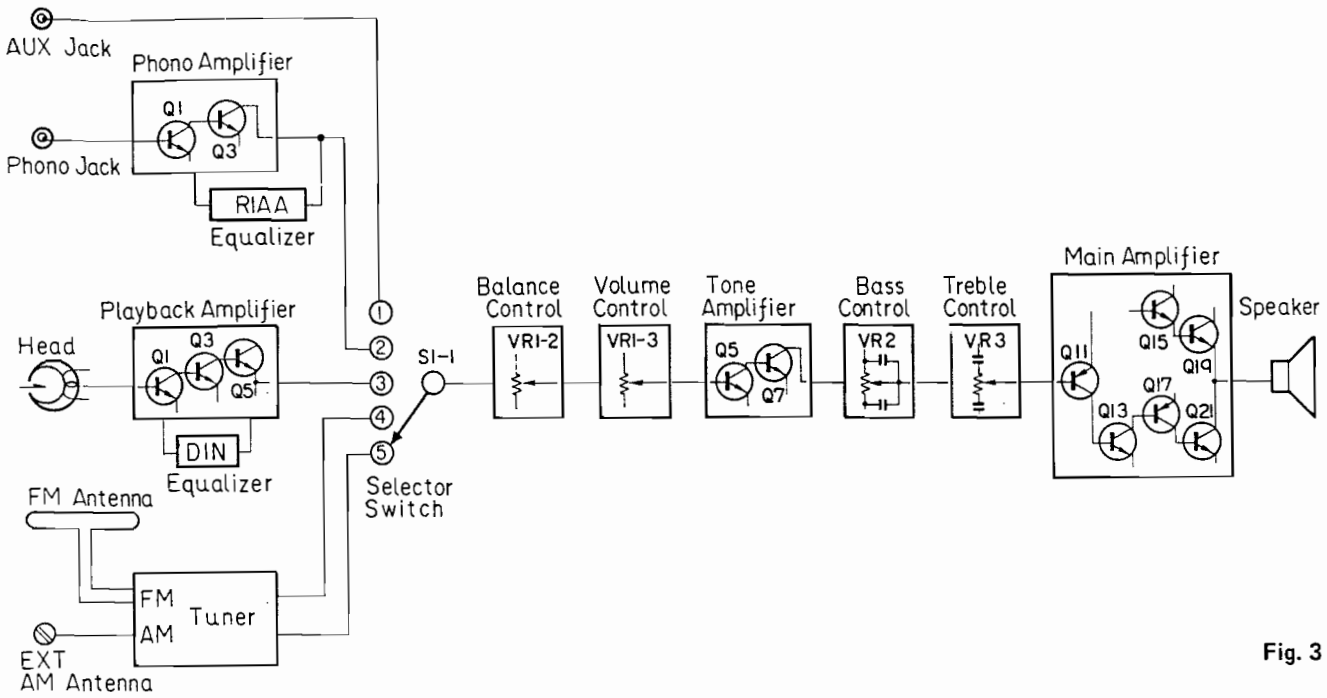


Fig. 3

Selector switch S1-1, is used to select AM, FM, TAPE, PHONO and AUX modes of operation. When TAPE is selected, the signal from the cassette tape is amplified by the playback amplifier (3-stage direct connection amplifier). When PHONO is selected, the signal is amplified by the phono amplifier (2-stage direct connection amplifier). Going through VR1 this signal is amplified by the tone amplifier (gain 30 dB) and transmitted to the tone control (VR2, 3). It is further amplified by the main amplifier (gain 31 dB) and then sent to the speaker. Figures 4-A and 4-B illustrate the characteristics of the equalizer of the playback amplifier and the phono amplifier.

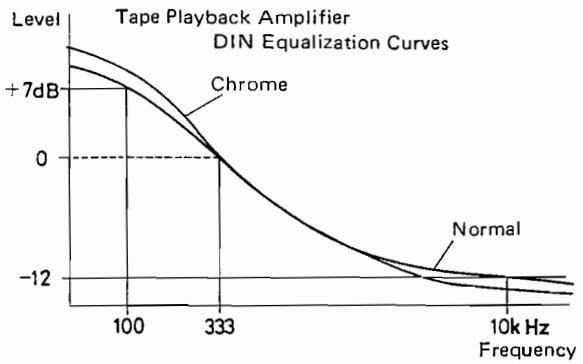


Fig. 4-A

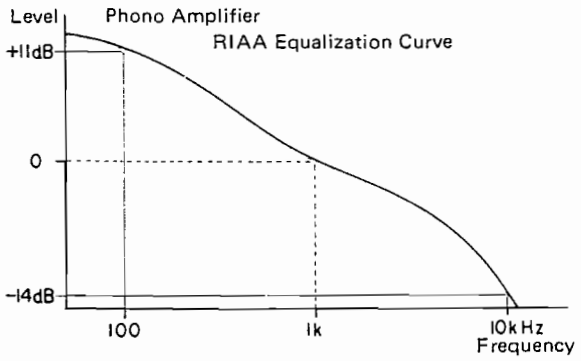


Fig. 4-B

• Circuit Block Diagram in Record Mode

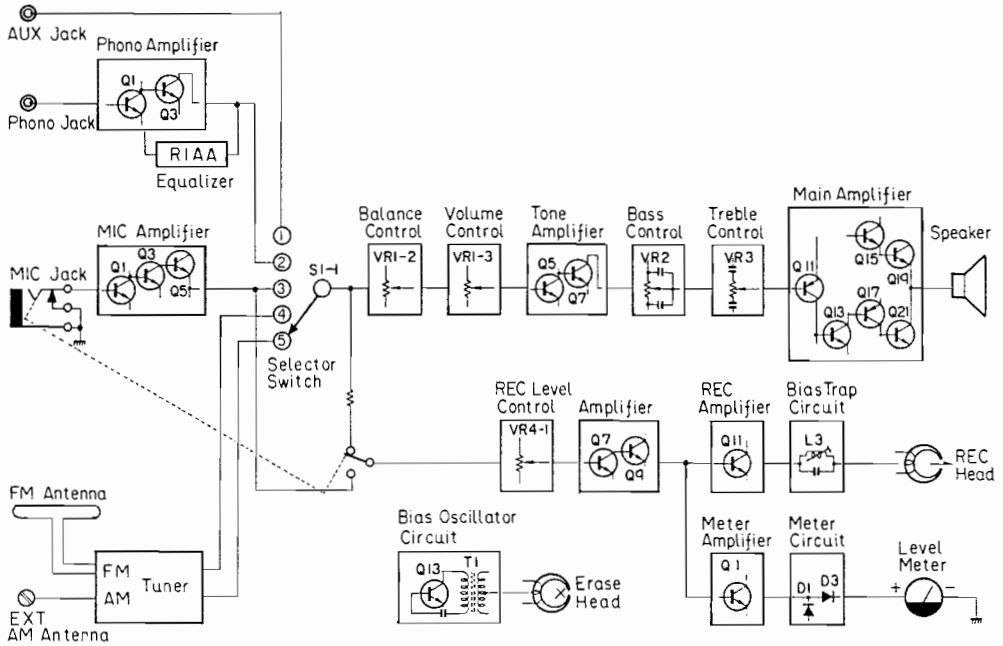


Fig. 5

Signals selected by selector switch S1-1 undergo level control of VR4-1 (REC level control), amplified by the direct connection amplifier and then transmitted to the REC amplifier. These signals are finally sent to the REC head. The bias oscillator (Q13) oscillates at about 60kHz. When a microphone is inserted into the MIC jack, the MIC jack switch is automatically changed and only microphone signal is recorded regardless of the position of the selector switch. To monitor MIC signals from the main amplifier, set the selector switch at TAPE.

• Level Meter Circuit

Signals transmitted to the 2-stage direct connection amplifier (Q7, 9) are amplified, and the emitter follower circuit (Q1) are regulated, and the two diodes (D1, 3) perform half-wave, voltage doubler rectifier circuit and actuate the level meter. This level meter functions during both recording and playback (Fig. 6).

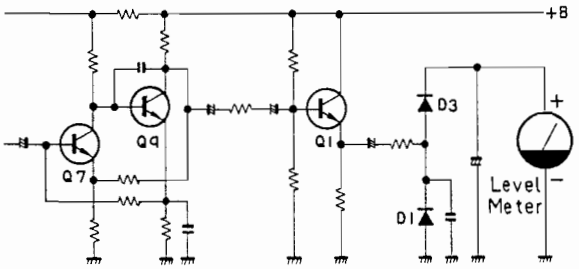


Fig. 6

• Full Auto Stop Circuit

As long as the tape is running, magnet turns, reed switch (S3) repeats ON-OFF, Q14 also repeats ON-OFF and a pulse is emitted. By means of this pulse, the electrical potential of "A" repeats rise and fall at a voltage lower than 7V. When the magnet stops turning (tape stops running), the electrical potential of "A" rises and capacitor C59 is charged. Then Q15 and 16 becomes ON and the solenoid is actuated. When the solenoid creates suction, the interlooked lever starts motion to actuate the auto stop mechanism. S4 is interlocked with the PAUSE lever, and so designed that the solenoid does not function even if the tape stops running while S5 is pushing the PAUSE lever. S5 is interlocked with the PLAY lever, and with the PAUSE lever engaged, F.F. and REW can be performed and the auto stop circuit functions when the tape comes to the end.

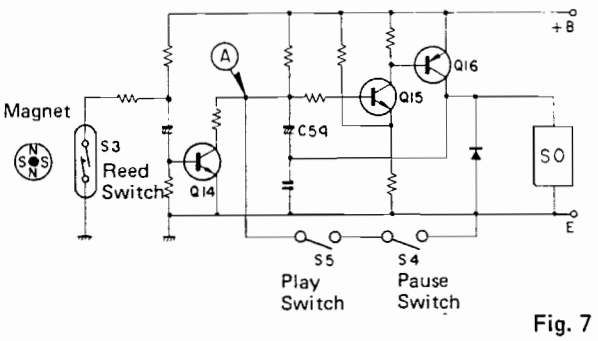


Fig. 7

- **FM/AM (MW and LW) Tuner Block Diagram**

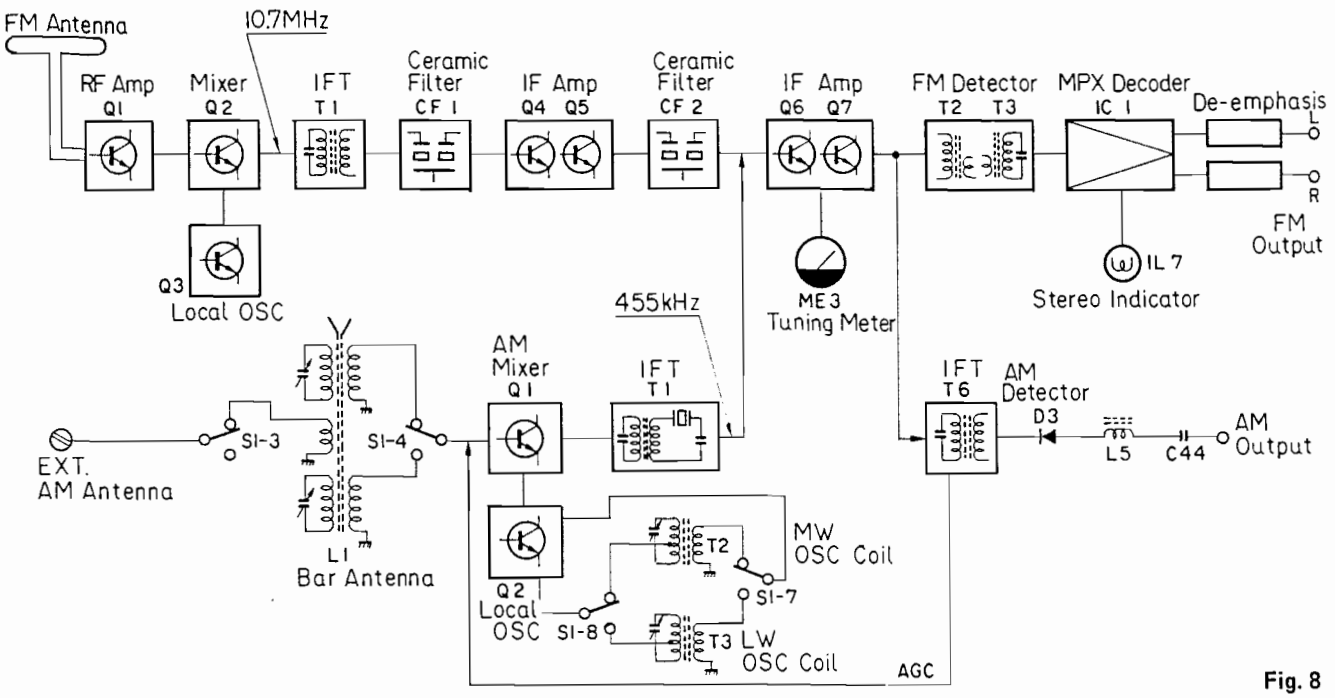


Fig. 8

3. DISASSEMBLY

- **Cabinet Disassembly**

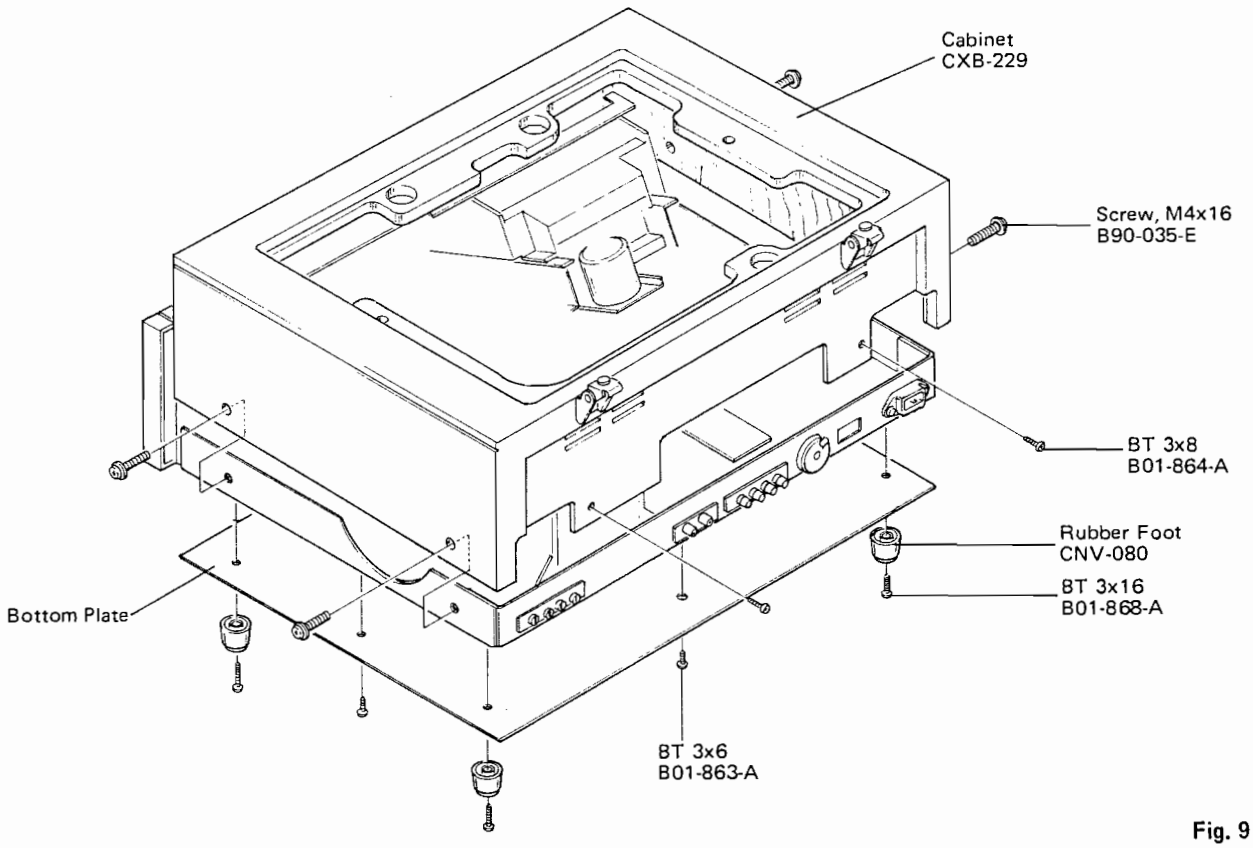


Fig. 9

- **Repalcement of Buttons**

When replacing buttons (REC, REW, F.F., PLAY, STOP/EJECT and PAUSE), pull them straight out. Do not bend or turn the levers to avoid deformation.

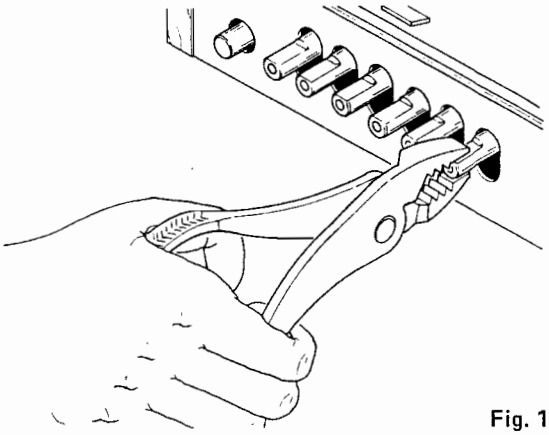


Fig. 10

4. ADJUSTMENT

4.1 RECORD BIAS AND BIAS TRAP ADJUSTMENT

- **Connection Diagram**

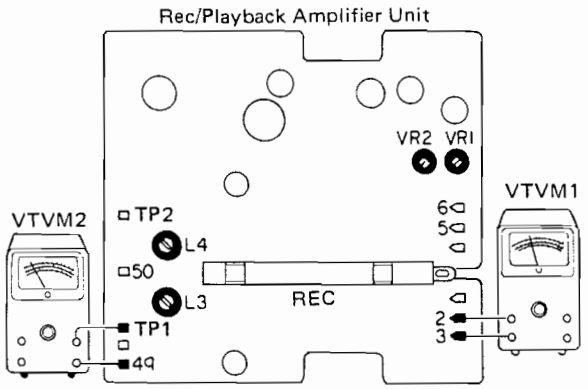


Fig. 11

- **To Adjust**

1. Set the TAPE SELECTOR switch to normal position.
2. Put the tape in recording condition by pushing the RECORD lever.
   Adjust trap coil L3 so that the fluctuation of VTVM2 needle is minimal.
3. Adjust VR1 to keep the fluctuation of VTVM1 at 400μA (4.0mV).
4. Adjust Rch in a similar manner.

NOTES:
1. Make these adjustments in non-signaling condition.
2. If the rec/playback frequency characteristic does not meet the standard value, adjust the bias current by the following steps:
   - 2.1 When the frequency is lower than standard, make it 30μA per 1dB lower than 400μA (4.0mV).
   - 2.2 When the frequency is higher than standard, make it 30μA per 1dB higher than 400μA (4.0mV).

4.2 TO CHECK RECORD CURRENT

- **Connection Diagram**

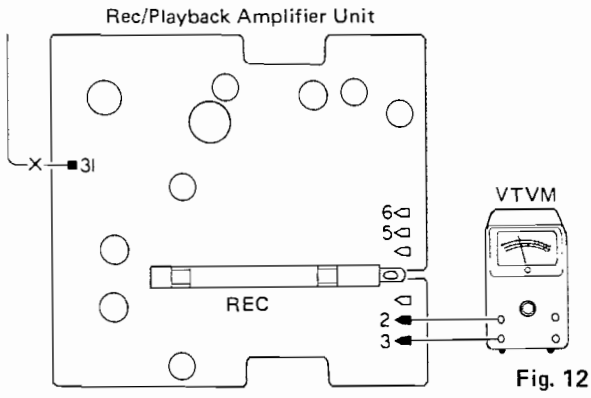
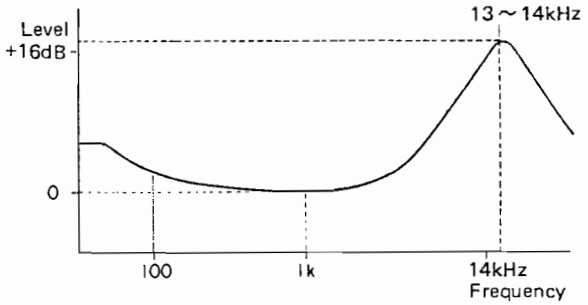


Fig. 12



- **To Adjust**

Fig. 13

1. Set the TAPE SELECTOR switch to normal position.
2. Disconnect the lead wire of No. 31 bias current of the rec/playback amplifier unit.
3. Add 1kHz, −18dB input signal to the AUX terminal and set the selector switch (S1) at AUX.
4. In recording condition by pressing rec lever, adjust rec level control so that the record level meter indicates 0VU. After the adjustment, VTVM needle indicates 45μA (0.45mV). Next, when the input is adjusted to 14kHz, record current rises to about +16dB. At the rise limit, the record current is 13kHz to 14kHz.

NOTE: Check rec/playback frequency specifications at −20VU record level.

4.3 FM IF ADJUSTMENT

- Connection Diagram

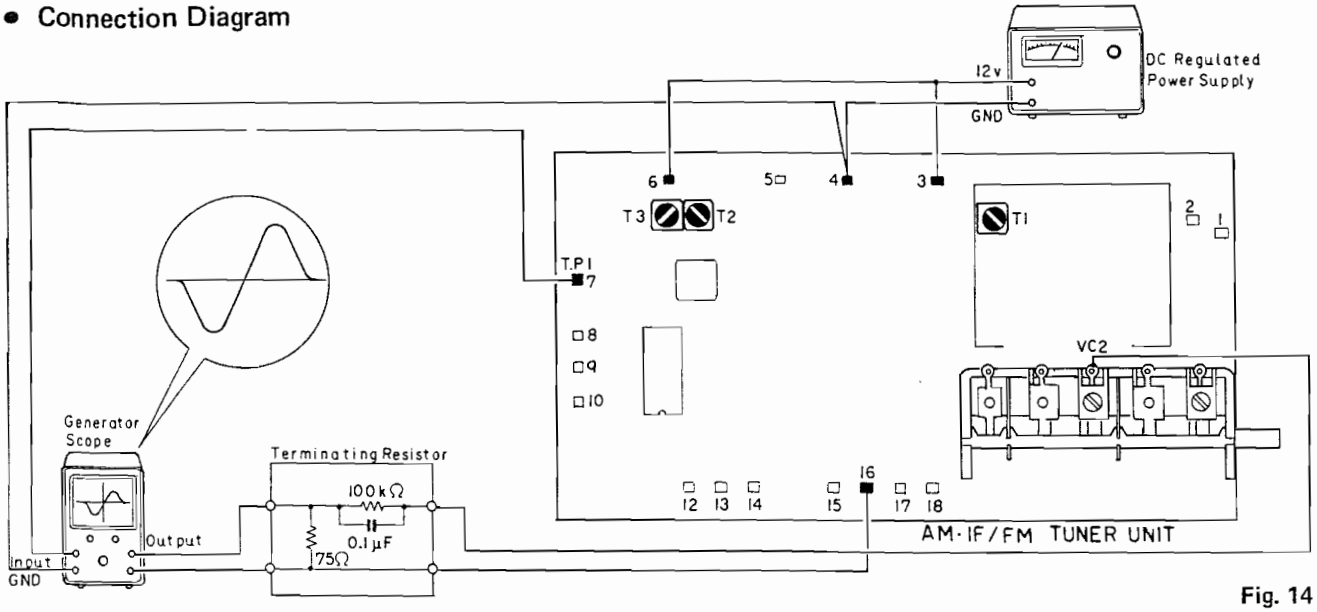


Fig. 14

- To Adjust

1. Feed a signal of 40 to 60dB from the generator scope to the RF circuit variable capacitor "hot" side (VC2) or a signal of about 100dB may be applied directly to the antenna terminals.
2. Tune the core (white) of IFT T1 to obtain maximum "S" wave on the generator scope.
3. Adjust the cores of T2 (gray) and T3 (blue) so that maximum amplitude and optimum linearity are obtained.
4. When increasing the generator scope output, check to make sure the waveform, does not collapse. If a significant tendency to collapse is noted, repeat the adjustments of 2 and 3.

NOTE: 1. If other waves appear, in addition to the S curve, adjust the variable capacitor slightly to remove spurious traces.
2. It is not essential to match the 10.7MHz marker to the S curve center point.

4.4 FM TRACKING ADJUSTMENT

- Connection Diagram

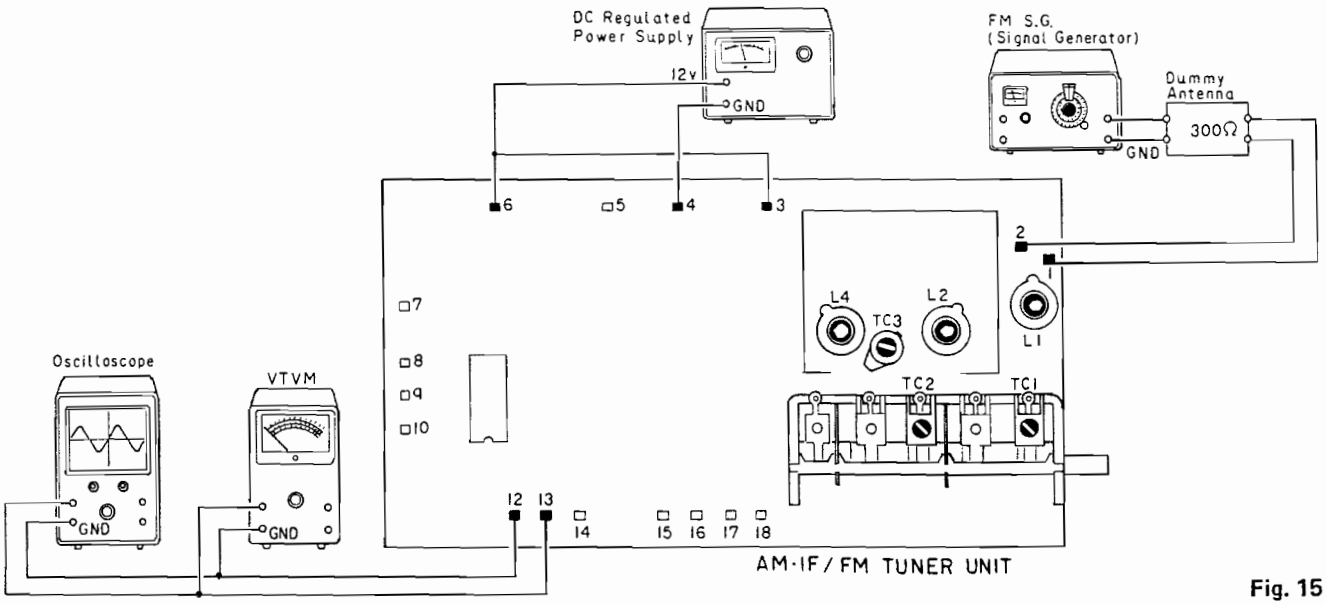


Fig. 15

- To Adjust

1. Set the variable capacitor to maximum capacity position and set the signal generator at 87MHz, 30% modulation at 400Hz, with a signal level of 20 to 40 dB.
2. Adjust L4 to obtain maximum low frequency output from the tuner.
3. Set the variable capacitor to minimum capacity position, and apply a 109MHz signal from the signal generator. Tune TC3 for maximum high frequency tuner output.
4. Repeat procedures 1 through 3 to establish the band width of 87 to 109MHz.
5. Set signal generator frequency at 90MHz and tune the variable capacitor for maximum reception. Peak the output by adjustment of L1 and L2.
6. Set signal generator frequency at 106MHz and tune to the signal with the variable capacitor. Peak the output by adjustment of TC1 and TC2.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
87MHz	Maximum capacity	L4	OSC
109MHz	Minimum capacity	TC3	OSC
90MHz	Tuned position	L1 L2	ANT RF
106MHz	Tuned position	TC1 TC2	ANT RF

4.5 FM MPX ADJUSTMENT

- Connection Diagram

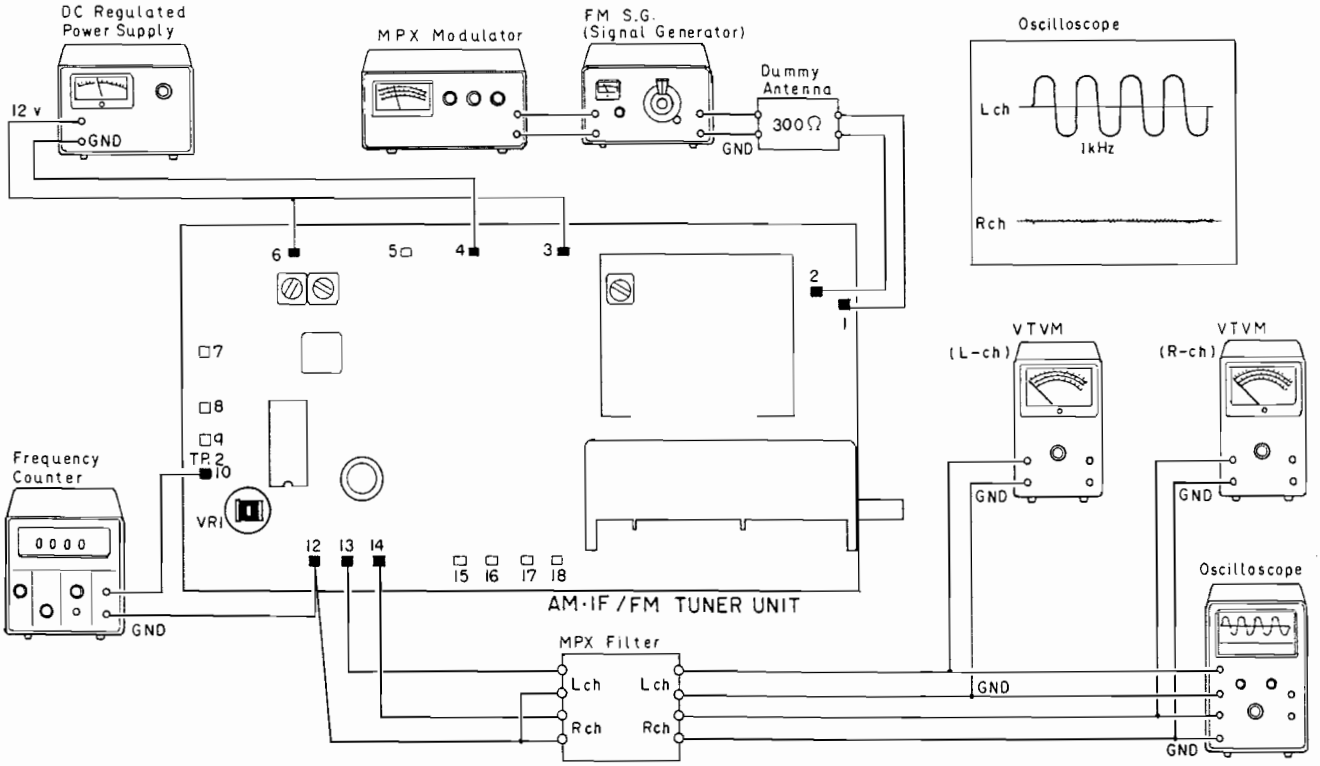


Fig. 16

- To Adjust

1. Apply a 98MHz non-modulation signal with an output level of 60dB from the signal generator to adjust VR1 so that the frequency counter indicates 19kHz ±20Hz.
2. Select signal generator modulation as follows:
   Modulation frequency
   1kHz
   Percentage of modulation
   Pilot 10% (7.5kHz Dev.)
   Main 100% (6.75kHz Dev.)
3. Tune to a 98MHz signal.
4. Set the signal generator level to 60dB and select L-side modulation. Make sure separation is optimum (R-side output at minimum). Similarly ascertain L-side output.

NOTE: Alignment can be made without an MPX filter, however, adjustment will be difficult owing to the effects of the 19kHz and 38kHz carrier leak.

4.6 AM (MW AND LW) IF ADJUSTMENT

- Connection Diagram

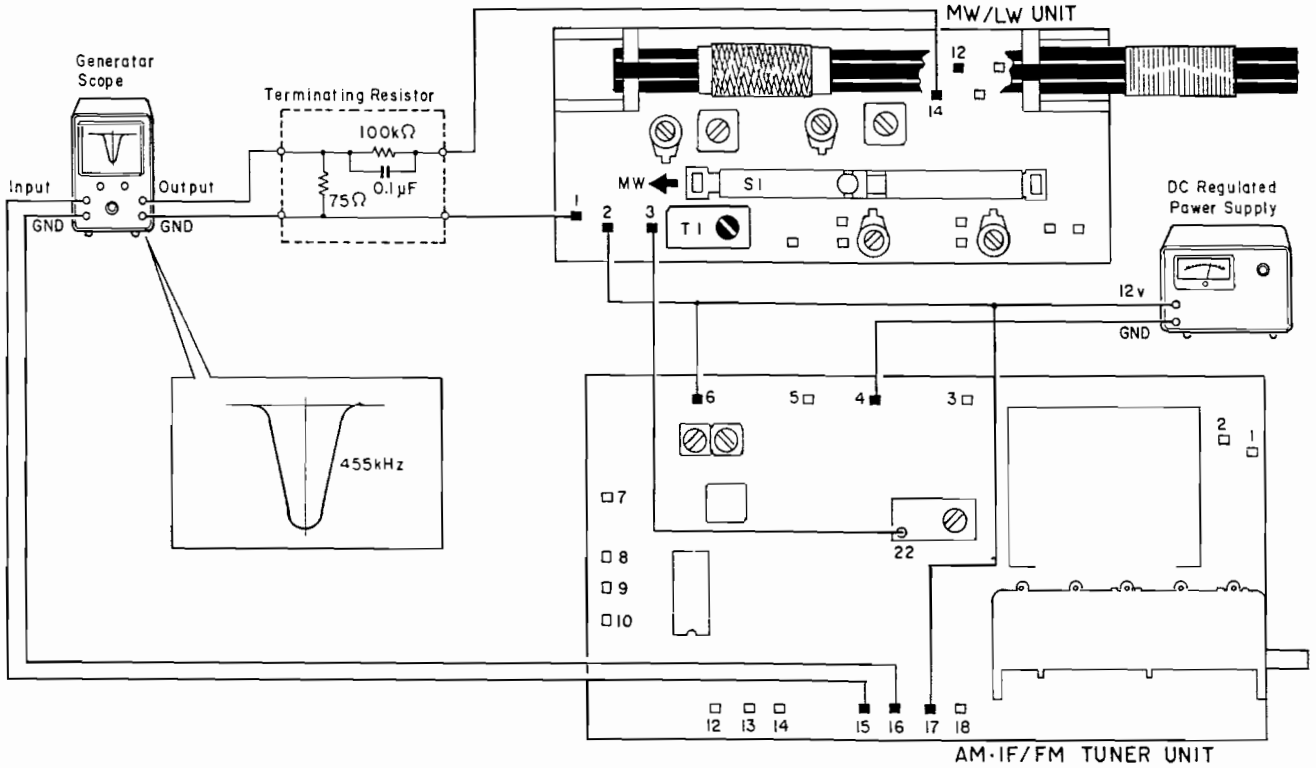


Fig. 17

- To Adjust

1 Apply a 455kHz signal with an output level of 40~60dB from the generator scope to adjust T1 so that maximum amplitude and symmetrical waveform are obtained on the generator scope.

4.7 MW TRACKING ADJUSTMENT

- **Connection Diagram**

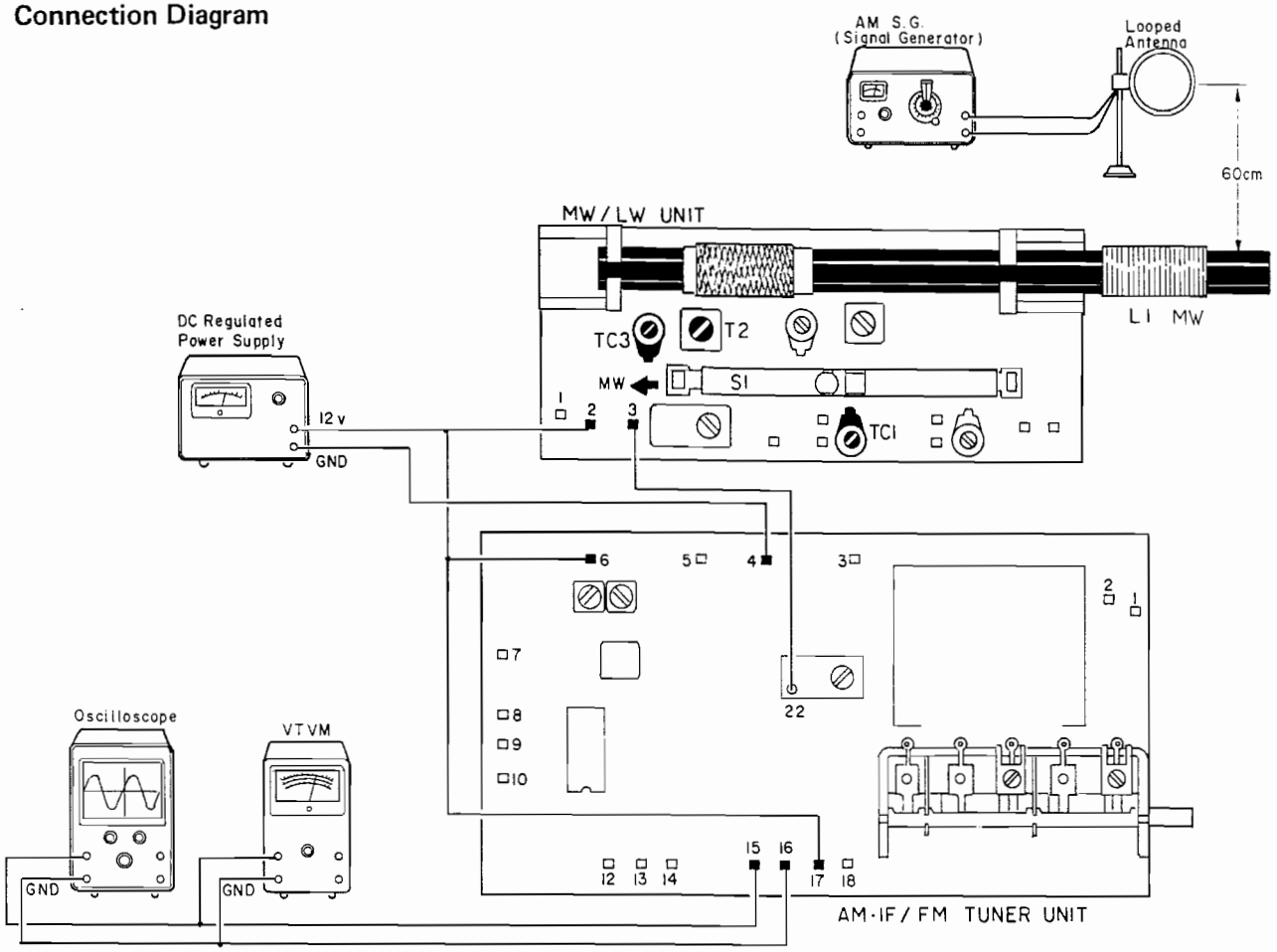


Fig. 18

- **To Adjust**

1. Select the MW/LW selector switch to MW position.
2. Set the variable capacitor at maximum capacity and apply a 510kHz signal from the signal generator (30% modulation at 400Hz). Adjust the oscillator coil T2 for maximum tuner output.
3. Set the variable capacitor at minimum capacitance and apply a signal of 1,650kHz. Adjust trimmer capacitor TC3 for maximum tuner output.
4. Repeat procedures 2 and 3 to establish the band width of 510 to 1,650kHz.
5. Apply a signal of 600kHz and tune the variable capacitor for maximum reception; peak the output by adjusting the position of the bar antenna coil.
6. Apply a signal of 1,400kHz and tune the variable capacitor for maximum reception; peak the output by adjustment of the trimmer capacitor TC1.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
510kHz	Maximum capacity	T2	OSC
1,650kHz	Minimum capacity	TC3	OSC
600kHz	Tuned position	Bar antenna	ANT
1,400kHz	Tuned position	TC1	ANT

4.8 LW TRACKING ADJUSTMENT

- Connection Diagram

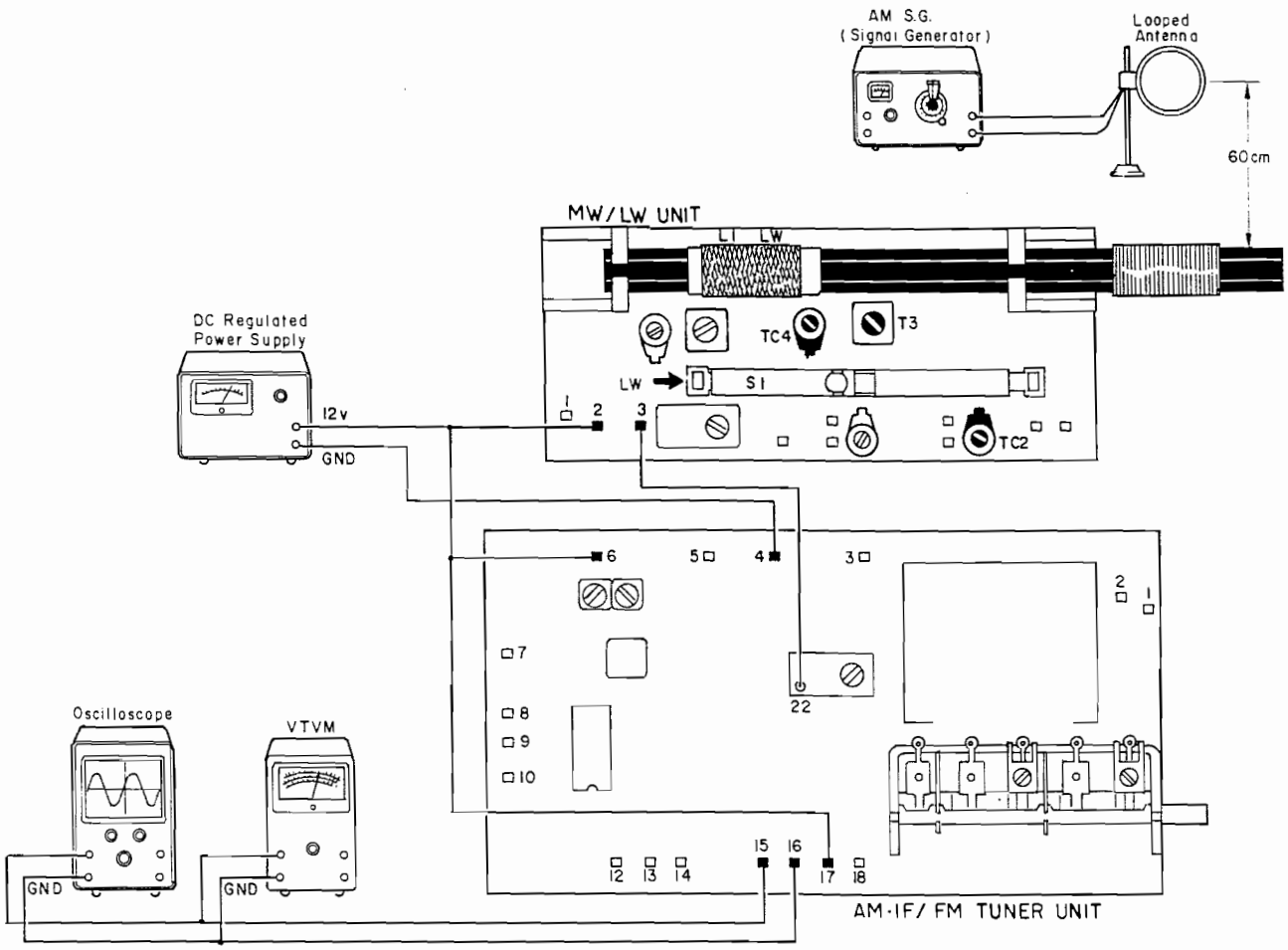


Fig. 19

- To Adjust

1. Select the MW/LW selector switch to LW position.
2. Set the variable capacitor at maximum capacity and apply a 140kHz signal from the signal generator (30% modulation at 400Hz). Adjust the oscillator coil T3 for maximum tuner output.
3. Set the variable capacitor at minimum capacitance and apply a signal of 370kHz. Adjust trimmer capacitor TC4 for maximum tuner output.
4. Repeat procedures 2 and 3 to establish the band width of 140 to 370kHz.
5. Apply a signal of 160kHz and tune the variable capacitor for maximum reception; peak the output by adjusting the position of the bar antenna coil.
6. Apply a signal of 340kHz and tune the variable capacitor for maximum reception; peak the output by adjustment of the trimmer capacitor TC3.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
140kHz	Maximum capacity	T3	OSC
370kHz	Minimum capacity	TC4	OSC
160kHz	Tuned position	LW Bar antenna	ANT
340kHz	Tuned position	TC3	ANT

4.9 DRIVE CAM UNIT ADJUSTMENT

As shown in Fig. 20, adjust the drive cam unit so the center of its nontoothed part intersects the line from the center shaft to the drive cam center. Adjust by turning the hex nut a little at a time.

NOTE: It is not necessary to loosen the screw in the center of the hex nut.

4.10 SIGNAL BAR ADJUSTMENT

Adjust when the tonearm auto-return does not operate or the tonearm return is too rapid. Adjust so the signal bar begins to push plate 1 when the tonearm is at a point 64 mm from the center shaft.

Turn the screw in the (↷) direction when plate 1 is pushed too soon. Turn the screw in the (↶) direction when plate 1 is pushed too late.

4.11 SWITCH CAM ADJUSTMENT

Adjust so the turntable starts to rotate when the tonearm is near the outer edge of the turntable.

If the following incorrect movements (items A, B, C, D) are found, move the switch cam in the arrow-indicated direction such as to A↑, B←, C→, and D↓, according to the respective item to be adjusted.

A↑: When the tonearm is operating and the switch cam and switch lever are not contacting.

B←: When the tonearm is too far from the right position toward the center when the turntable starts rotating.

C→: When the tonearm is too far from the right position toward the outside edge when the turntable starts rotating.

D↓: When the switch cam and switch lever are contacting but the arm movement is not smooth.

Try to move the switch cam in various ways to find out right position if there are two more incorrect movements.

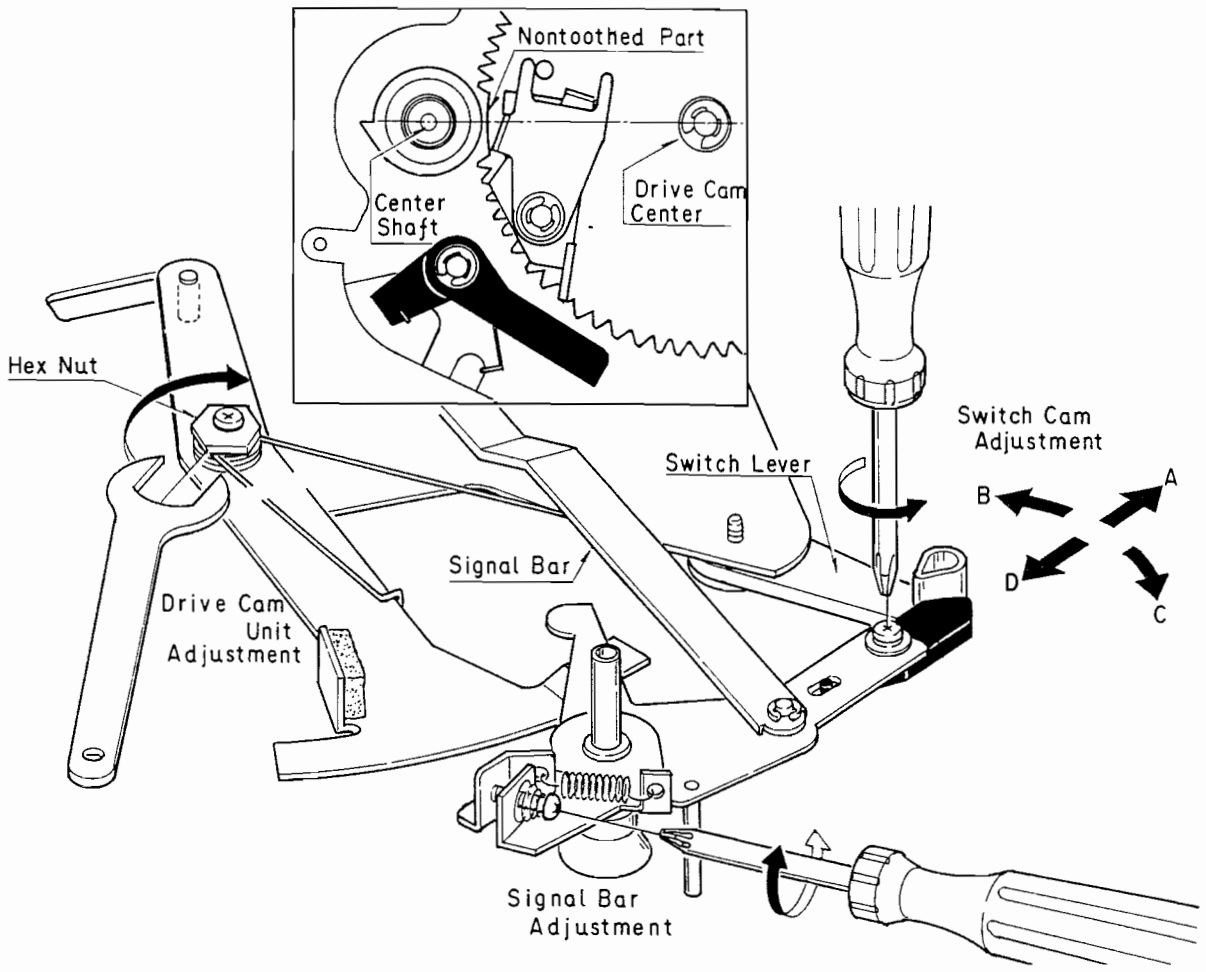


Fig. 20

5. DIAL STRINGING

NOTICE: Before dial string, set the tuning shaft fully counter-clockwise (low frequency).

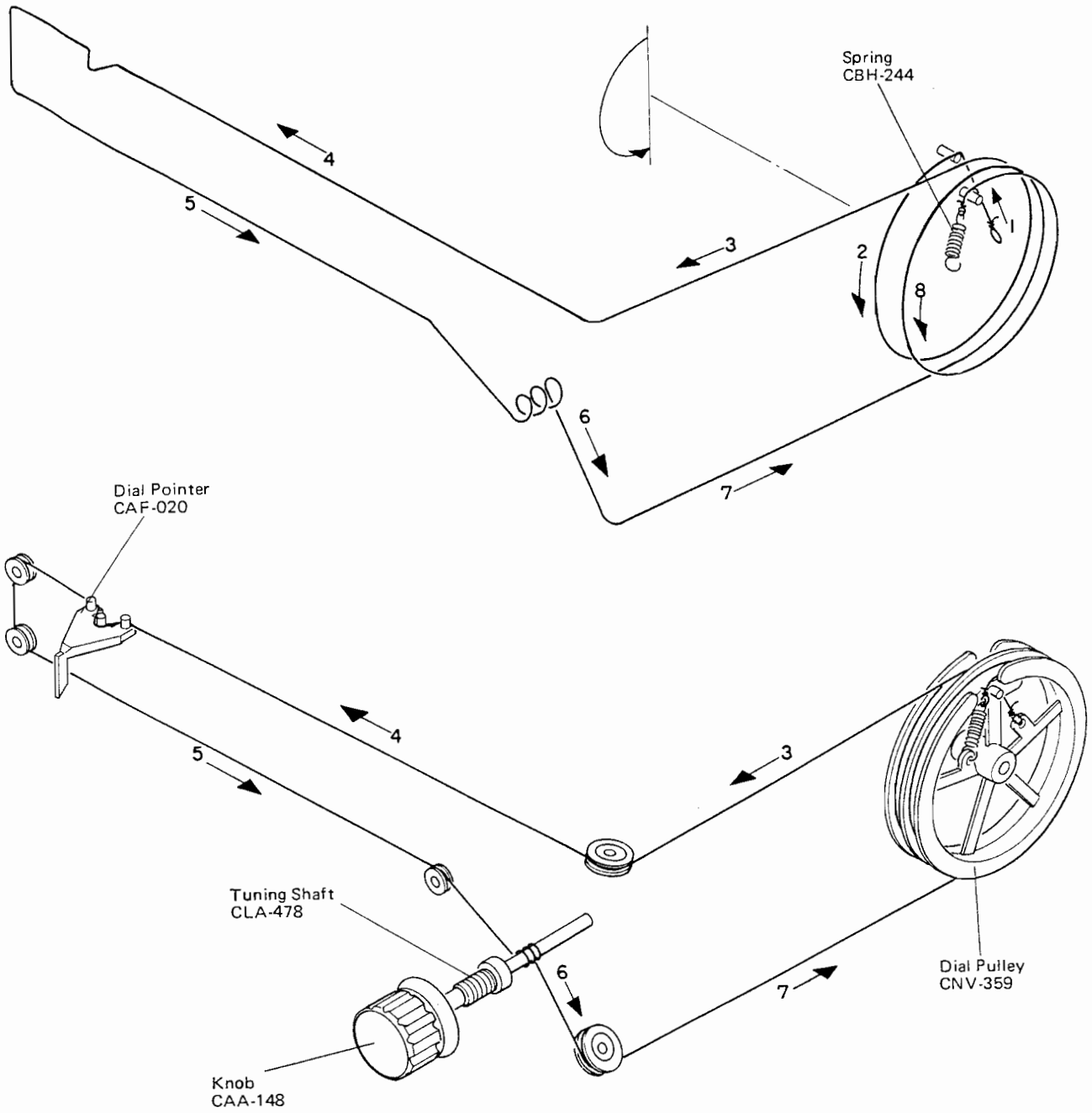
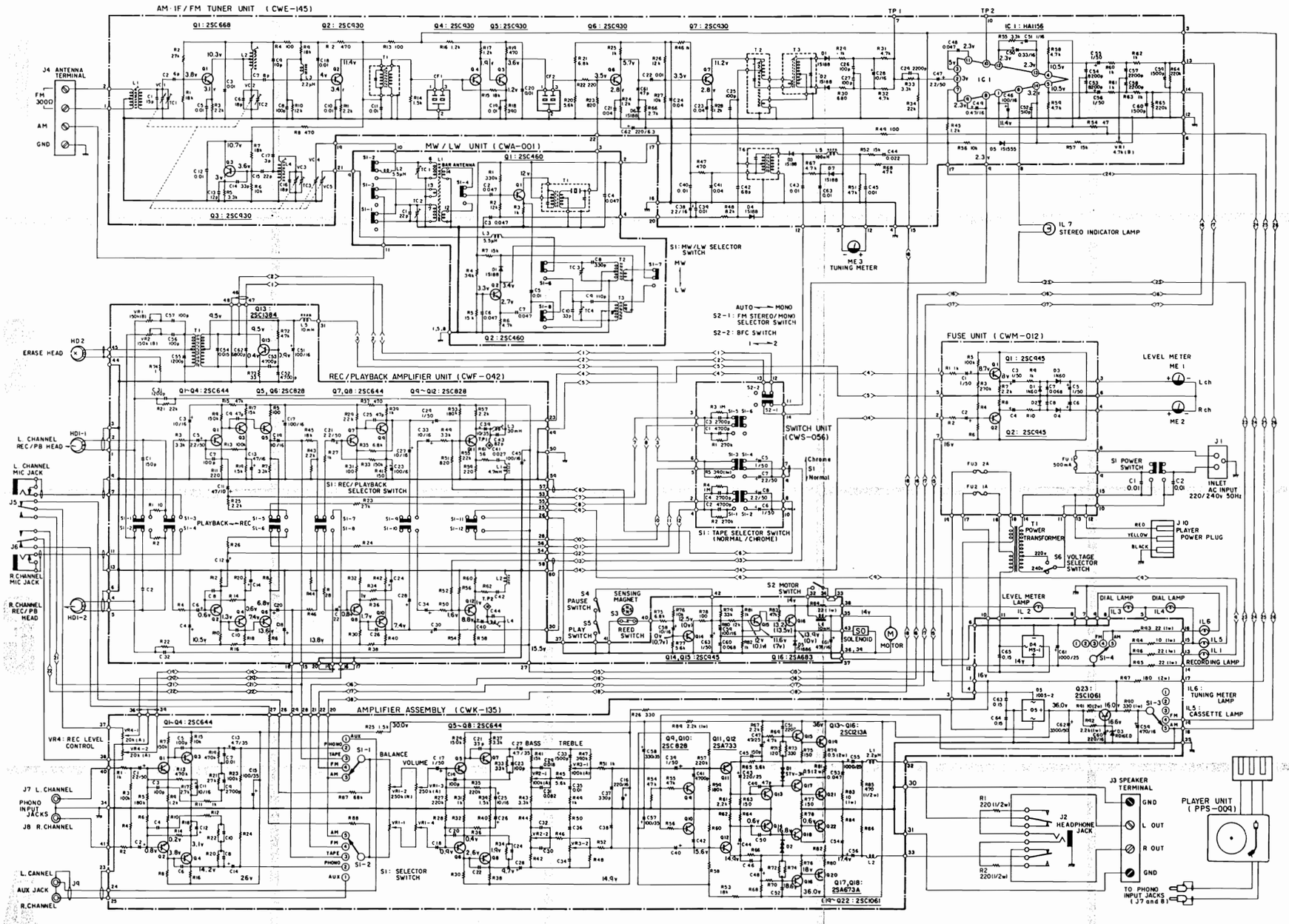
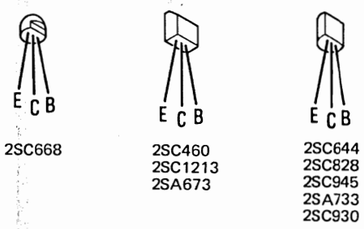
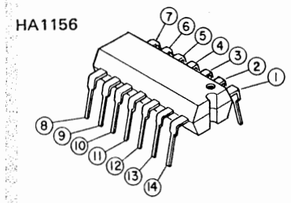


Fig. 21


AM-IF/FM TUNER UNIT (CWE-145)
Q1: 2SC668
Q2: 2SC930
Q4: 2SC930
Q5: 2SC930
Q6: 2SC930
Q7: 2SC930
IC 1: HA1156
J4 ANTENNA TERMINAL
FM 300Ω
AM
GND
MW/LW UNIT (CWA-001)
Q1: 2SC460
Q3: 2SC930
Q2: 2SC460
S1: MW/LW SELECTOR SWITCH
MW
LW
IL 7 STEREO INDICATOR LAMP
ME 3 TUNING METER
AUTO — MONO
S2-1: FM STEREO/MONO SELECTOR SWITCH
S2-2: BFC SWITCH
FUSE UNIT (CWM-012)
Q1: 2SC945
Q2: 2SC945
LEVEL METER ME 1
Lch
Rch
ME 2
SI POWER SWITCH
INLET AC INPUT 220/240v 50Hz
J1
T1 POWER TRANSFORMER
S6 VOLTAGE SELECTOR SWITCH
J10 PLAYER POWER PLUG
RED
YELLOW
BLACK
LEVEL METER LAMP
IL 2
DIAL LAMP
IL 3
IL 4
IL 6
IL 5
IL 1
RECORDING LAMP
IL 6 TUNING METER LAMP
IL 5 CASSETTE LAMP
Q23: 2SC1061
HD 2 ERASE HEAD
REC/PLAYBACK AMPLIFIER UNIT (CWF-042)
Q1~Q4: 2SC644
Q5, Q6: 2SC828
Q7, Q8: 2SC644
Q9~Q12: 2SC828
SWITCH UNIT (CWS-056)
Chrome
Normal
S1: REC/PLAYBACK SELECTOR SWITCH
PLAYBACK — REC
S1: TAPE SELECTOR SWITCH (NORMAL/CHROME)
HDI-1 L CHANNEL REC/PB HEAD
L CHANNEL MIC JACK
J5
J6
R CHANNEL MIC JACK
R CHANNEL REC/PB HEAD
HDI-2
S4 PAUSE SWITCH
S3 REED SWITCH
S5 PLAY SWITCH
SENSING MAGNET
S2 MOTOR SWITCH
SOLENOID
MOTOR
Q14, Q15: 2SC945
Q16: 2SA683
AMPLIFIER ASSEMBLY (CWK-135)
Q1~Q4: 2SC644
Q5~Q8: 2SC644
Q9, Q10: 2SC828
Q11, Q12 2SA733
Q13~Q16: 2SC1213A
Q17, Q18: 2SA673A
Q19~Q22: 2SC1061
VR4: REC LEVEL CONTROL
BALANCE
VOLUME
BASS
TREBLE
S1-1
S1-2
S1: SELECTOR SWITCH
PHONO
TAPE
FM
AM
AUX
J7 L CHANNEL PHONO INPUT JACKS
J8 R CHANNEL
L CANNEL
AUX JACK
J9
R CHANNEL
J3 SPEAKER TERMINAL
GND
L OUT
R OUT
GND
TO PHONO INPUT JACKS (J7 and 8)
J2 HEADPHONE JACK
R1 220Ω(1/2w)
R2 220Ω(1/2w)
PLAYER UNIT (PPS-004)


E C B
2SC668
E C B
2SC460
2SC1213
2SA673
E C B
2SC644
2SC828
2SC945
2SA733
2SC930
E C B
2SA683
2SC1384
B C E
2SC1061


HA1156

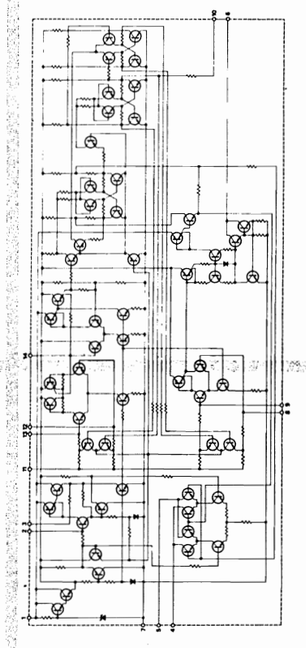
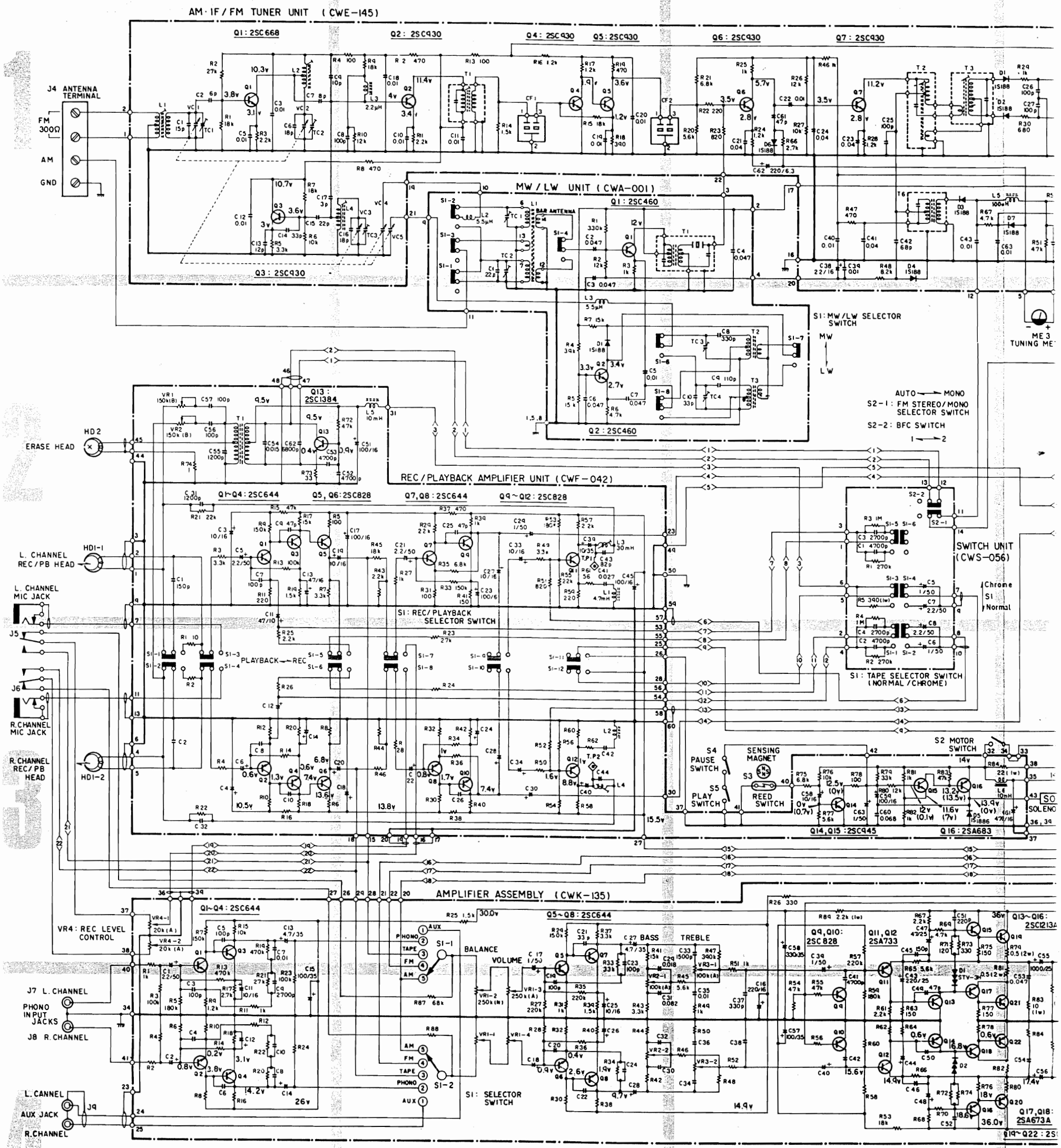
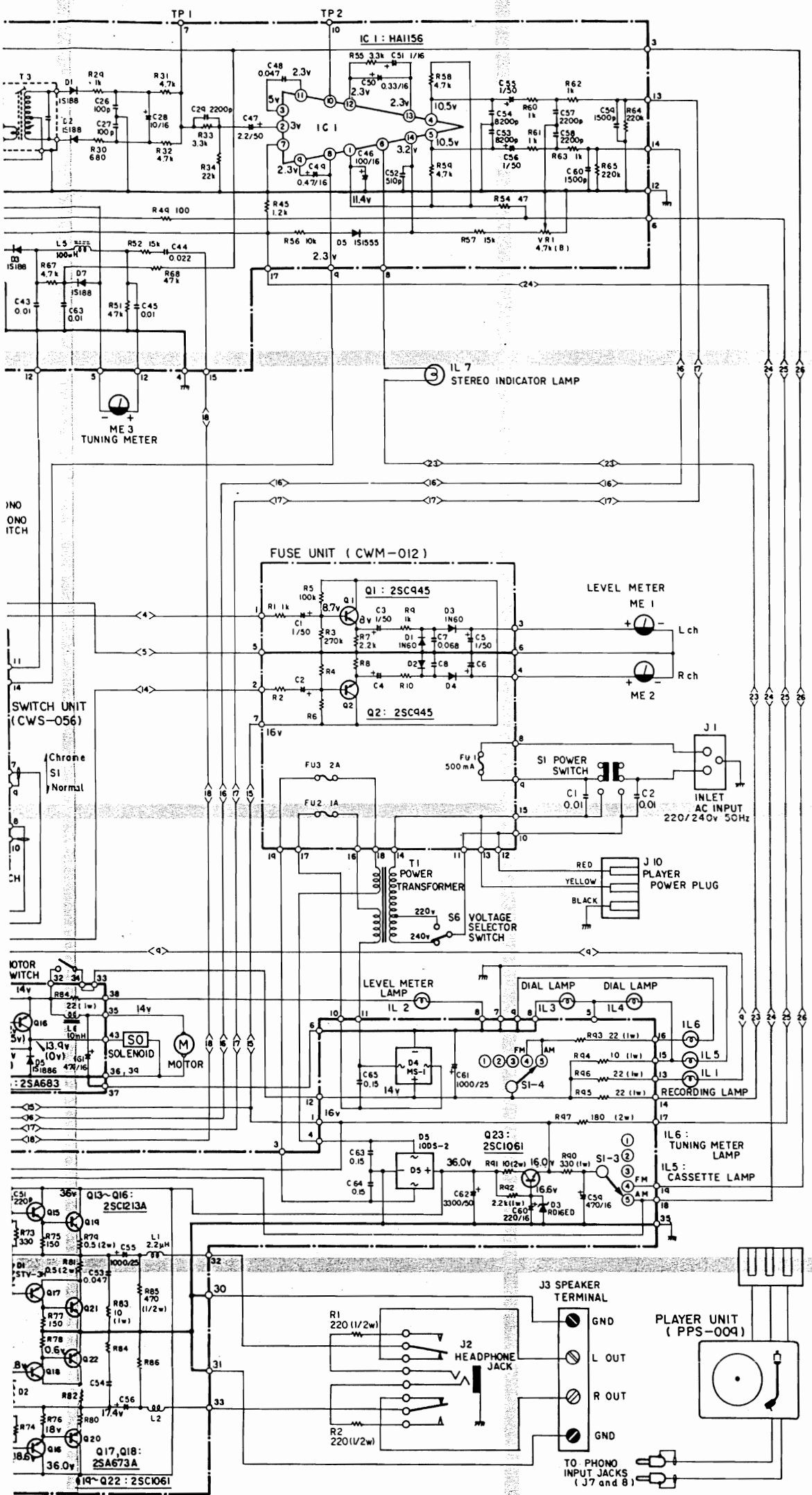
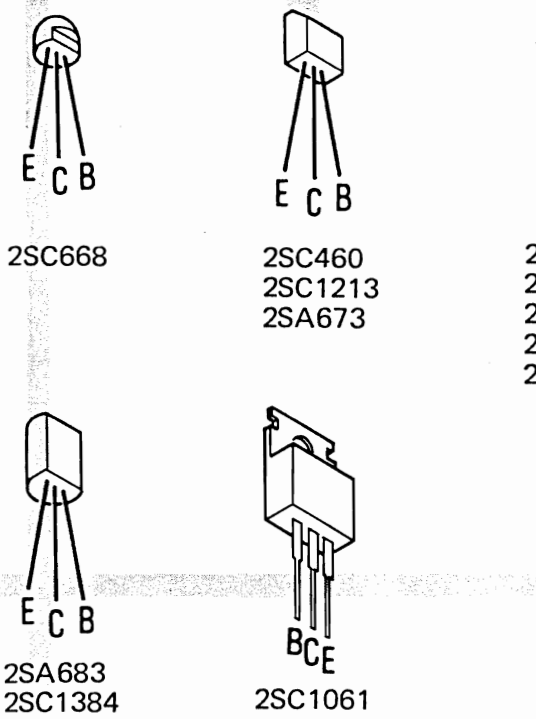

HA1156

Fig. 22

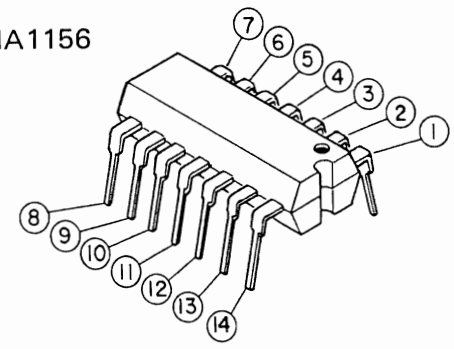
6. SCHEMATIC CIRCUIT DIAGRAM







HA1156



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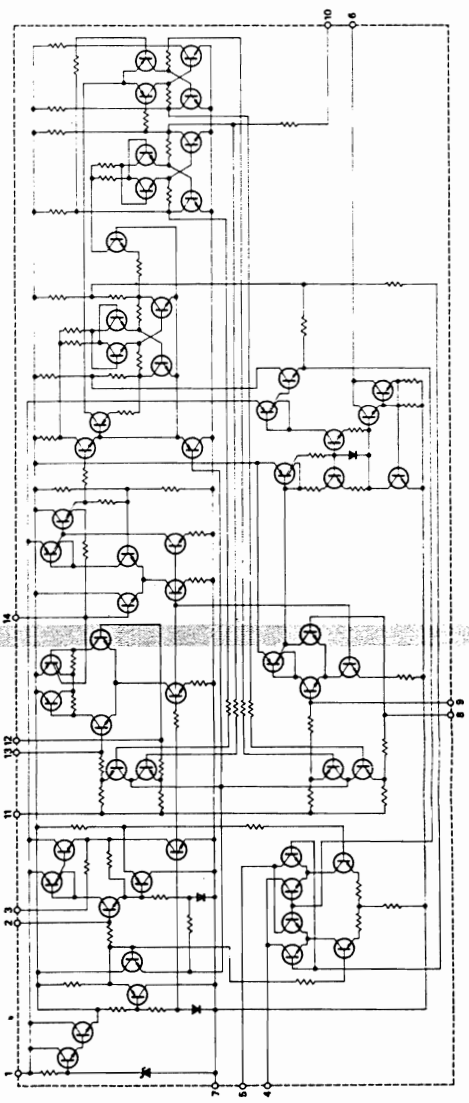
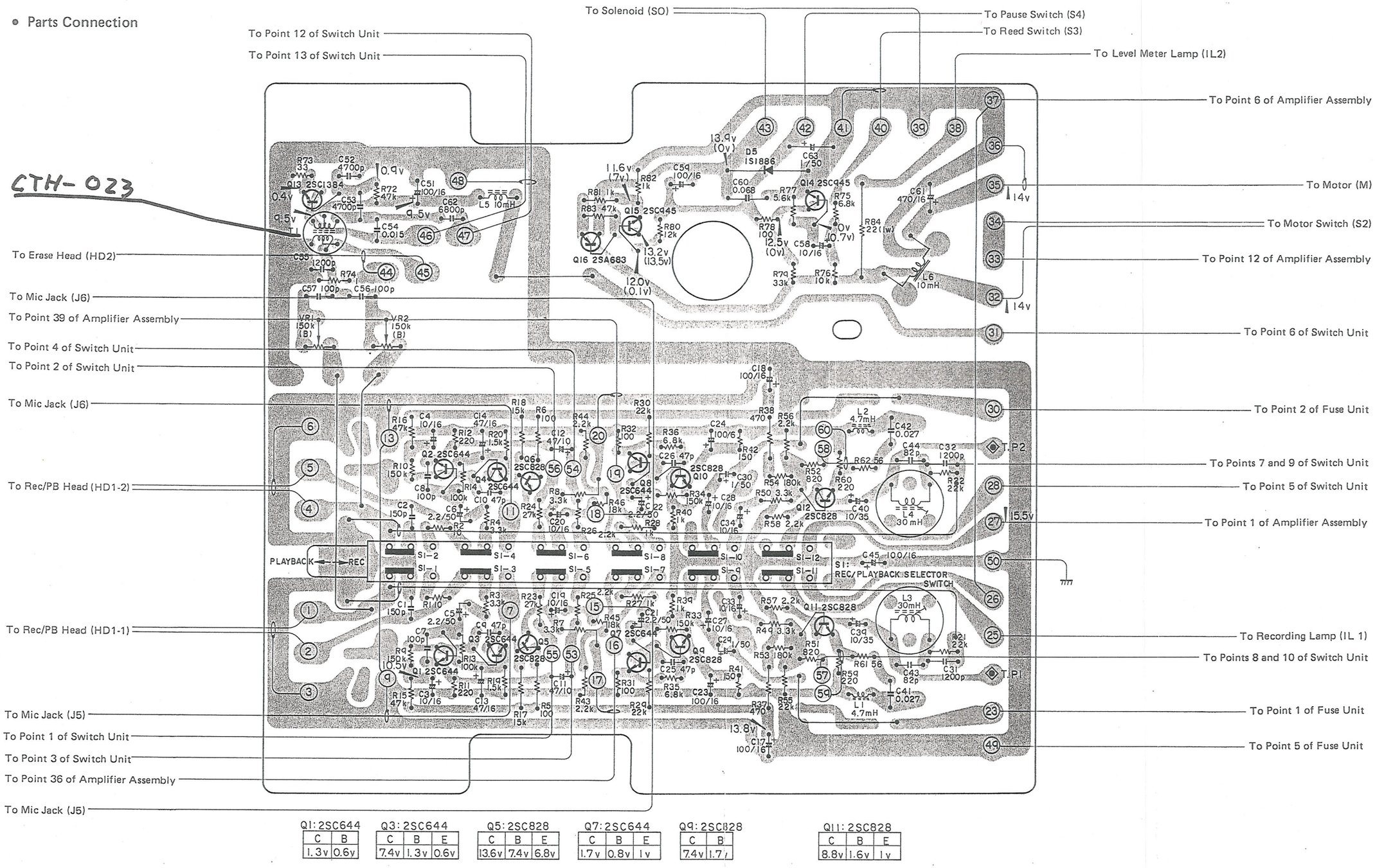


Fig. 22

- Parts Connection



Q1: 2SC644

C	B	E
1.3v	0.6v	

Q3: 2SC644

C	B	E
7.4v	1.3v	0.6v

Q5: 2SC828

C	B	E
13.6v	7.4v	6.8v

Q7: 2SC644

C	B	E
1.7v	0.8v	1v

Q9: 2SC828

C	B
7.4v	1.7v

Q11: 2SC828

C	B	E
8.8v	1.6v	1v

Fig. 23

● Parts List

NOTICE: Of the descriptive symbols of the resistor and capacitor, the encircled alphabetic letter denotes the allowable error.

Example: RD1/4VS100 Ⓙ CEA100 Ⓟ 25

C: ±0.25pF D: ±0.5pF F: ±1pF G: ±2% J: ±5% K: ±10% M: ±20% X: $^{+40}_{-20}$% Z: $^{+80}_{-20}$% P: $^{+100}_{-10}$%

MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-035-D, E	Transistor, 2SC644-R, S	
Q2	G05-035-D, E	Transistor, 2SC644-R, S	
Q3	G05-035-D, E	Transistor, 2SC644-R, S	
Q4	G05-035-D, E	Transistor, 2SC644-R, S	
Q5	G05-061-D, E	Transistor, 2SC828-R, S	
Q6	G05-061-D, E	Transistor, 2SC828-R, S	
Q7	G05-035-D, E	Transistor, 2SC644-R, S	
Q8	G05-035-D, E	Transistor, 2SC644-R, S	
Q9	G05-061-D, E	Transistor, 2SC828-R, S	
Q10	G05-061-D, E	Transistor, 2SC828-R, S	
Q11	G05-061-D, E	Transistor, 2SC828-R, S	
Q12	G05-061-D, E	Transistor, 2SC828-R, S	
Q13	G05-418-C, D	Transistor, 2SC1384-R,S	
Q14	G05-044-B, C	Transistor, 2SC945-Q, R	
Q15	G05-044-B, C	Transistor, 2SC945-Q, R	
Q16	G03-404-C D	Transistor, 2SA683-R, S	
S1	CSH-029	Switch	
L1	CTF-049	Coil, 4.7mH	
L2	CTF-049	Coil, 4.7mH	
L3	CTH014	Coil, 30mH	
L4	CTH-014	Coil, 30mH	
L5	CTF-029	Ferri-inductor, 10mH	
L6	CTH-015	Coil, 10mH	
VR1	CCP-024	Volume	
VR2	CCP-024	Volume	
D5	G00-551-A	Diode, 1S1886	

T1 CTH-023 Trap Coil

RESISTORS

Ref. Key	Parts No.	Description		
R1	RD¼VS100J	Resistor	10Ω	¼W
R2	RD¼VS100J	Resistor	10Ω	¼W
R3	RD¼VS332J	Resistor	3.3kΩ	¼W
R4	RD¼VS332J	Resistor	3.3kΩ	¼W
R5	RD¼VS101J	Resistor	100Ω	¼W
R6	RD¼VS101J	Resistor	100Ω	¼W
R7	RD¼VS332J	Resistor	3.3kΩ	¼W
R8	RD¼VS332J	Resistor	3.3kΩ	¼W
R9	RD¼VS154JNL	Resistor	150kΩ	¼W
R10	RD¼VS154JNL	Resistor	150kΩ	¼W
R11	RD¼VS221J	Resistor	220Ω	¼W
R12	RD¼VS221J	Resistor	220Ω	¼W
R13	RD¼VS104JNL	Resistor	100kΩ	¼W
R14	RD¼VS104JNL	Resistor	100kΩ	¼W
R15	RD¼VS473J	Resistor	47kΩ	¼W
R16	RD¼VS473J	Resistor	47kΩ	¼W
R17	RD¼VS153J	Resistor	15kΩ	¼W
R18	RD¼VS153J	Resistor	15kΩ	¼W
R19	RD¼VS152J	Resistor	1.5kΩ	¼W
R20	RD¼VS152J	Resistor	1.5kΩ	¼W
R21	RD¼VS223J	Resistor	22kΩ	¼W
R22	RD¼VS223J	Resistor	22kΩ	¼W
R23	RD¼VS273J	Resistor	27kΩ	¼W
R24	RD¼VS273J	Resistor	27kΩ	¼W
R25	RD¼VS222J	Resistor	2.2kΩ	¼W
R26	RD¼VS222J	Resistor	2.2kΩ	¼W
R27	RD¼VS102J	Resistor	1kΩ	¼W
R28	RD¼VS102J	Resistor	1kΩ	¼W
R29	RD¼VS223J	Resistor	22kΩ	¼W
R30	RD¼VS223J	Resistor	22kΩ	¼W
R31	RD¼VS101J	Resistor	100Ω	¼W
R32	RD¼VS101J	Resistor	100Ω	¼W
R33	RD¼VS154J	Resistor	150kΩ	¼W
R34	RD¼VS154J	Resistor	150kΩ	¼W
R35	RD¼VS682J	Resistor	6.8kΩ	¼W
R36	RD¼VS682J	Resistor	6.8kΩ	¼W
R37	RD¼VS471J	Resistor	470Ω	¼W
R38	RD¼VS471J	Resistor	470Ω	¼W
R39	RD¼VS102J	Resistor	1kΩ	¼W
R40	RD¼VS102J	Resistor	1kΩ	¼W

Ref. Key	Parts No.	Description		
R41	RD¼VS151J	Resistor	150Ω	¼W
R42	RD¼VS151J	Resistor	150Ω	¼W
R43	RD¼VS222J	Resistor	2.2kΩ	¼W
R44	RD¼VS222J	Resistor	2.2kΩ	¼W
R45	RD¼VS183J	Resistor	18kΩ	¼W
R46	RD¼VS183J	Resistor	18kΩ	¼W
R49	RD¼VS332J	Resistor	3.3kΩ	¼W
R50	RD¼VS332J	Resistor	3.3kΩ	¼W
R51	RD¼VS821J	Resistor	820Ω	¼W
R52	RD¼VS821J	Resistor	820Ω	¼W
R53	RD¼VS184J	Resistor	180kΩ	¼W
R54	RD¼VS184J	Resistor	180kΩ	¼W
R55	RD¼VS223J	Resistor	22kΩ	¼W
R56	RD¼VS223J	Resistor	22kΩ	¼W
R57	RD¼VS222J	Resistor	2.2kΩ	¼W
R58	RD¼VS222J	Resistor	2.2kΩ	¼W
R59	RD¼VS221J	Resistor	220Ω	¼W
R60	RD¼VS221J	Resistor	220Ω	¼W
R61	RD¼VS560J	Resistor	56Ω	¼W
R62	RD¼VS560J	Resistor	56Ω	¼W
R72	RD¼VS473J	Resistor	47kΩ	¼W
R73	RD¼VS330J	Resistor	33Ω	¼W
R74	RD¼VS010J	Resistor	1Ω	¼W
R75	RD¼VS682J	Resistor	6.8kΩ	¼W
R76	RD¼VS103J	Resistor	10kΩ	¼W
R77	RD¼VS562J	Resistor	5.6kΩ	¼W
R78	RD¼VS101J	Resistor	100Ω	¼W
R79	RD¼VS333J	Resistor	33kΩ	¼W
R80	RD¼VS123J	Resistor	12kΩ	¼W
R81	RD¼VS102J	Resistor	1kΩ	¼W
R82	RD¼VS102J	Resistor	1kΩ	¼W
R83	RD¼VS473J	Resistor	47kΩ	¼W
R84	RS1P220K	Resistor	22Ω	1W

CAPACITORS

Ref. Key	Parts No.	Description		
C1	CKDYB151K50	Capacitor	150pF	50V
C2	CKDYB151K50	Capacitor	150pF	50V
C3	CEA100P16	Capacitor	10μF	16V
C4	CEA100P16	Capacitor	10μF	16V
C5	CEA2R2P50	Capacitor	2.2μF	50V
C6	CEA2R2P50	Capacitor	2.2μF	50V
C7	CKDYB101K50	Capacitor	100pF	50V
C8	CKDYB101K50	Capacitor	100pF	50V
C9	CCDSL470K50	Capacitor	47pF	50V
C10	CCDSL470K50	Capacitor	47pF	50V
C11	CEA470P10	Capacitor	47μF	10V
C12	CEA470P10	Capacitor	47μF	10V
C13	CEA470P16	Capacitor	47μF	16V
C14	CEA470P16	Capacitor	47μF	16V
C17	CEA101P16	Capacitor	100μF	16V
C18	CEA101P16	Capacitor	100μF	16V
C19	CEA100P16	Capacitor	10μF	16V
C20	CEA100P16	Capacitor	10μF	16V
C21	CEA2R2P50	Capacitor	2.2μF	50V
C22	CEA2R2P50	Capacitor	2.2μF	50V
C23	CEA101P6	Capacitor	100μF	6V
C24	CEA101P6	Capacitor	100μF	6V
C25	CCDSL470K50	Capacitor	47pF	50V
C26	CCDSL470K50	Capacitor	47pF	50V
C27	CEA100P16	Capacitor	10μF	16V
C28	CEA100P16	Capacitor	10μF	16V
C29	CEA010P50	Capacitor	1μF	50V
C30	CEA010P50	Capacitor	1μF	50V
C31	CQMA122K50	Capacitor	1200pF	50V
C32	CQMA122K50	Capacitor	1200pF	50V
C33	CEA100P16	Capacitor	10μF	16V
C34	CEA100P16	Capacitor	10μF	16V
C39	CEA100P35	Capacitor	10μF	35V
C40	CEA100P35	Capacitor	10μF	35V
C41	CQMA273K50	Capacitor	0.027μF	50V
C42	CQMA273K50	Capacitor	0.027μF	50V
C43	CCDSL820K50	Capacitor	82pF	50V
C44	CCDSL820K50	Capacitor	82pF	50V
C45	CEA101P16	Capacitor	100μF	16V
C51	CEA101P16	Capacitor	100μF	16V
C52	CQMA472K50	Capacitor	4700pF	50V
C53	CQMA472K50	Capacitor	4700pF	50V
C54	CQMA153K50	Capacitor	0.015μF	50V
C55	CQSA122K50	Capacitor	1200pF	50V
C56	CKDYB101K50	Capacitor	100pF	50V
C57	CKDYB101K50	Capacitor	100pF	50V
C58	CEA100P16	Capacitor	10μF	16V
C59	CEA101P16	Capacitor	100μF	16V
C60	CQMA683K50	Capacitor	0.068μF	50V
C61	CEA471P16	Capacitor	470μF	16V
C62	CQMA682K50	Capacitor	6800pF	50V
C63	CEA010P50	Capacitor	1μF	50V

- Parts Connection

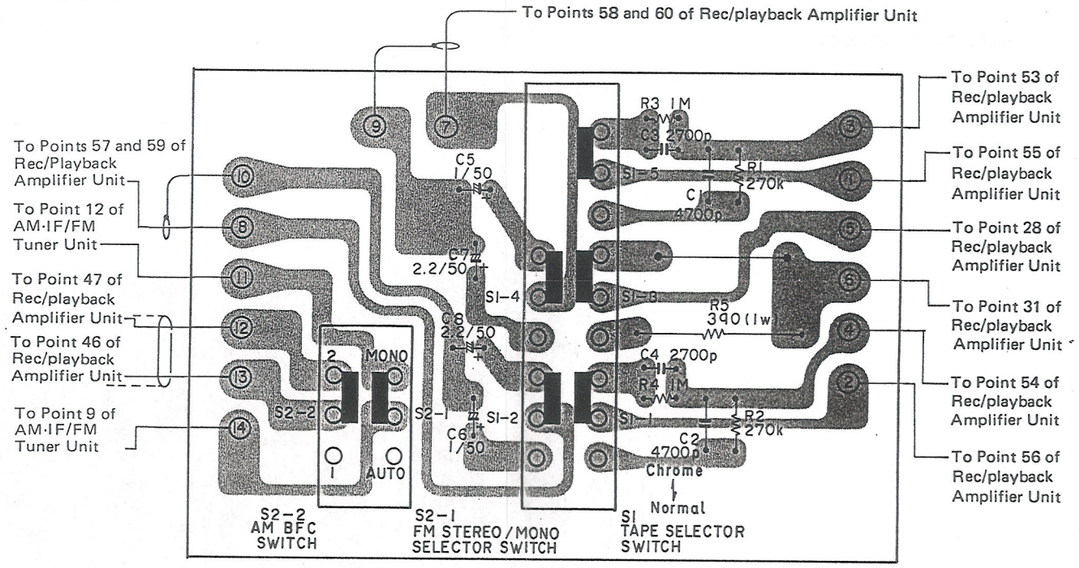


Fig. 24

- Parts List

Ref. Key	Parts No.	Description	Notes
S1	CSG-063	Push Switch	Tape Selector
S2	CSG-063	Push Switch	ST/Mono, AM BFC
R1	RD1/4VS274J	Resistor, 270kΩ ¼W	
R2	RD1/4VS274J	Resistor, 270kΩ ¼W	
R3	RD1/4VS105J	Resistor, 1MΩ ¼W	
R4	RD1/4VS105J	Resistor, 1MΩ ¼W	
R5	RS1P391K	Resistor, 390Ω 1W	
C1	CQMA472K50	Capacitor, 4700pF 50V	
C2	CQMA472K50	Capacitor, 4700pF 50V	
C3	CQMA272K50	Capacitor, 2700pF 50V	
C4	CQMA272K50	Capacitor, 2700pF 50V	
C5	CEA010P50	Capacitor, 1μF 50V	
C6	CEA010P50	Capacitor, 1μF 50V	
C7	CEA2R2P50	Capacitor, 2.2μF 50V	
C8	CEA2R2P50	Capacitor, 2.2μF 50V	

- Parts Connection

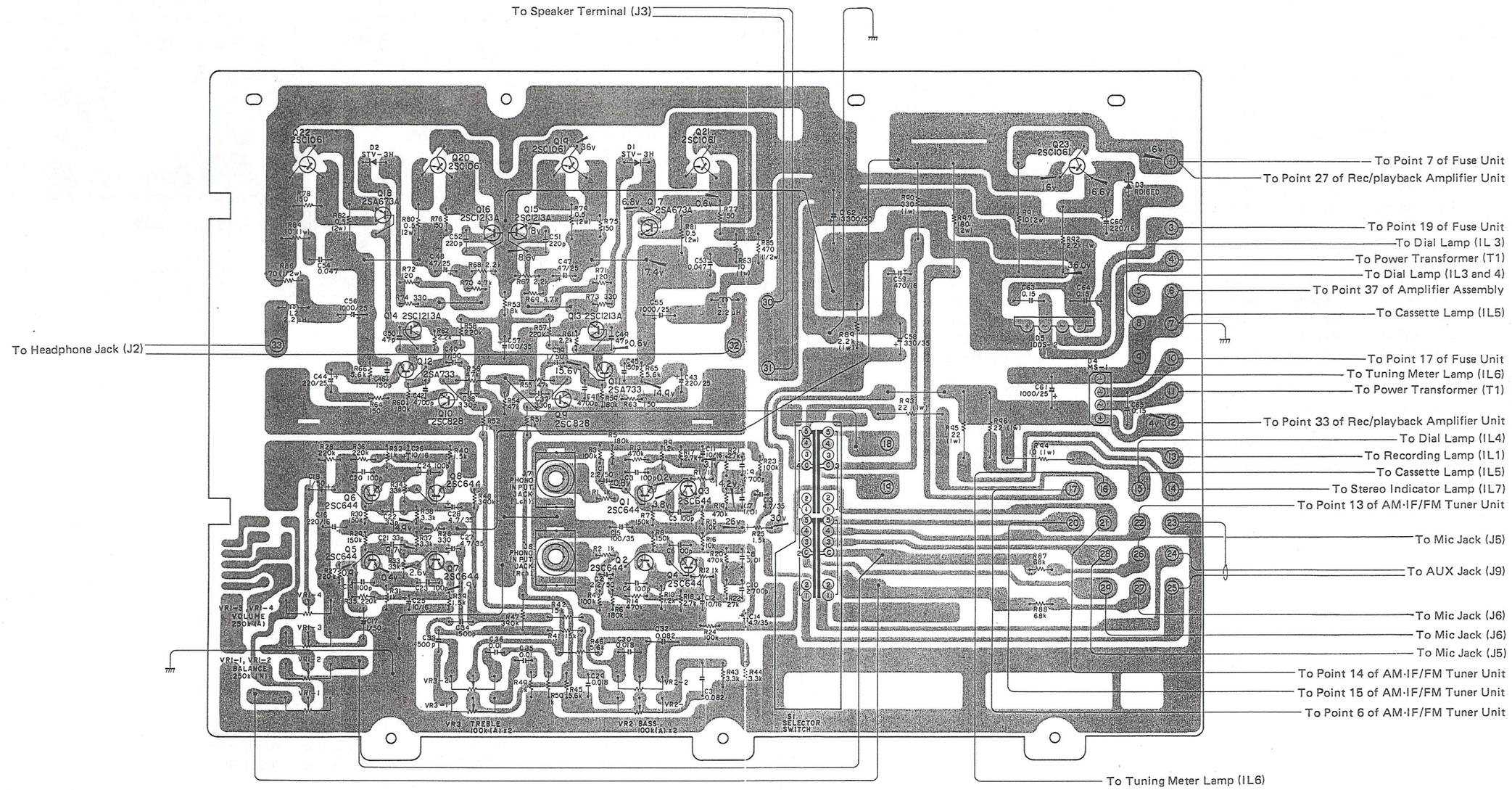


Fig. 25

- Parts List

MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-035-D, E	Transistor, 2SC644-R, S	
Q2	G05-035-D, E	Transistor, 2SC644-R, S	
Q3	G05-035-D, E	Transistor, 2SC644-R, S	
Q4	G05-035-D, E	Transistor, 2SC644-R, S	
Q5	G05-035-D, E	Transistor, 2SC644-R, S	
Q6	G05-035-D, E	Transistor, 2SC644-R, S	
Q7	G05-035-D, E	Transistor, 2SC644-R, S	
Q8	G05-035-D, E	Transistor, 2SC644-R, S	
Q9	G05-061-C, D	Transistor, 2SC828-Q, R	
Q10	G05-061-C, D	Transistor, 2SC828-Q, R	
Q11	G03-017-B, C	Transistor, 2SA733-Q, R	
Q12	G03-017-B, C	Transistor, 2SA733-Q, R	
Q13	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q14	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q15	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q16	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q17	G03-016-B, C	Transistor, 2SA673A-B, C	
Q18	G03-016-B, C	Transistor, 2SA673A-B, C	
Q19	G05-704-B, C	Transistor, 2SC1061-B, C	
Q20	G05-704-B, C	Transistor, 2SC1061-B, C	
Q21	G05-704-B, C	Transistor, 2SC1061-B, C	
Q22	G05-704-B, C	Transistor, 2SC1061-B, C	
Q23	G05-704-B, C	Transistor, 2SC1061-B, C	
D1	G01-216-B, C	Diode, STV-3H-Y, G	
D2	G01-216-B, C	Diode, STV-3H-Y, G	
D3	G01-049-C	Diode, RD16ED	
D4	G01-806-A	Diode, MS-1	
D5	G00-557-B	Diode, 10DS-2	
L1	CTF-050	Choke Coil, 2.2μH	
L2	CTF-050	Choke Coil, 2.2μH	
S1	CSD-006	Switch	Selector
VR1	CCS-120	Volume	Balance, Volume
VR2	CCS-093	Volume	Bass
VR3	CCS-093	Volume	Treble
VR4	CCS-119	Volume	Rec Level

AMPLIFIER ASSEMBLY (CWK-135)

RESISTORS

Ref. Key	Parts No.	Description		
R1	RD¼VS102J	Resistor	1kΩ	¼W
R2	RD¼VS102J	Resistor	1kΩ	¼W
R3	RD¼VS104J	Resistor	100kΩ	¼W
R4	RD¼VS104J	Resistor	100kΩ	¼W
R5	RD¼VS184J	Resistor	180kΩ	¼W
R6	RD¼VS184J	Resistor	180kΩ	¼W
R7	RD¼VS154J	Resistor	150kΩ	¼W
R8	RD¼VS154J	Resistor	150kΩ	¼W
R9	RD¼VS122J	Resistor	1.2kΩ	¼W
R10	RD¼VS122J	Resistor	1.2kΩ	¼W
R11	RD¼VS102J	Resistor	1kΩ	¼W
R12	RD¼VS102J	Resistor	1kΩ	¼W
R13	RD¼VS474J	Resistor	470kΩ	¼W
R14	RD¼VS474J	Resistor	470kΩ	¼W
R15	RD¼VS103J	Resistor	10kΩ	¼W
R16	RD¼VS103J	Resistor	10kΩ	¼W
R17	RD¼VS272J	Resistor	2.7kΩ	¼W
R18	RD¼VS272J	Resistor	2.7kΩ	¼W
R19	RD¼VS474J	Resistor	470kΩ	¼W
R20	RD¼VS474J	Resistor	470kΩ	¼W
R21	RD¼VS273J	Resistor	27kΩ	¼W
R22	RD¼VS273J	Resistor	27kΩ	¼W
R23	RD¼VS104J	Resistor	100kΩ	¼W
R24	RD¼VS104J	Resistor	100kΩ	¼W
R25	RD¼VS152J	Resistor	1.5kΩ	¼W
R26	RD¼VS331J	Resistor	330Ω	¼W
R27	RD¼VS224J	Resistor	220kΩ	¼W
R28	RD¼VS224J	Resistor	220kΩ	¼W
R29	RD¼VS154J	Resistor	150kΩ	¼W
R30	RD¼VS154J	Resistor	150kΩ	¼W
R31	RD¼VS102J	Resistor	1kΩ	¼W
R32	RD¼VS102J	Resistor	1kΩ	¼W
R33	RD¼VS333J	Resistor	33kΩ	¼W
R34	RD¼VS333J	Resistor	33kΩ	¼W
R35	RD¼VS224J	Resistor	220kΩ	¼W
R36	RD¼VS224J	Resistor	220kΩ	¼W
R37	RD¼VS332J	Resistor	3.3kΩ	¼W
R38	RD¼VS332J	Resistor	3.3kΩ	¼W
R39	RD¼VS152J	Resistor	1.5kΩ	¼W
R40	RD¼VS152J	Resistor	1.5kΩ	¼W
R41	RD¼VS153J	Resistor	15kΩ	¼W
R42	RD¼VS153J	Resistor	15kΩ	¼W
R43	RD¼VS332J	Resistor	3.3kΩ	¼W
R44	RD¼VS332J	Resistor	3.3kΩ	¼W
R45	RD¼VS562J	Resistor	5.6kΩ	¼W
R46	RD¼VS562J	Resistor	5.6kΩ	¼W
R47	RD¼VS394J	Resistor	390kΩ	¼W
R48	RD¼VS394J	Resistor	390kΩ	¼W
R49	RD¼VS102J	Resistor	1kΩ	¼W
R50	RD¼VS102J	Resistor	1kΩ	¼W
R51	RD¼VS102J	Resistor	1kΩ	¼W
R52	RD¼VS102J	Resistor	1kΩ	¼W
R53	RD¼VS183J	Resistor	18kΩ	¼W
R54	RD¼VS473J	Resistor	47kΩ	¼W
R55	RD¼VS473J	Resistor	47kΩ	¼W
R56	RD¼VS473J	Resistor	47kΩ	¼W
R57	RD¼VS224J	Resistor	220kΩ	¼W
R58	RD¼VS224J	Resistor	220kΩ	¼W
R59	RD¼VS184J	Resistor	180kΩ	¼W
R60	RD¼VS184J	Resistor	184kΩ	¼W
R61	RD¼VS222J	Resistor	2.2kΩ	¼W
R62	RD¼VS222J	Resistor	2.2kΩ	¼W
R63	RD¼VS151J	Resistor	150Ω	¼W
R64	RD¼VS151J	Resistor	150Ω	¼W
R65	RD¼VS562J	Resistor	5.6kΩ	¼W
R66	RD¼VS562J	Resistor	5.6kΩ	¼W
R67	RD¼VS222J	Resistor	2.2kΩ	¼W
R68	RD¼VS222J	Resistor	2.2kΩ	¼W
R69	RD¼VS472J	Resistor	4.7kΩ	¼W
R70	RD¼VS472J	Resistor	4.7kΩ	¼W
R71	RD¼VS121J	Resistor	120Ω	¼W
R72	RD¼VS121J	Resistor	120Ω	¼W
R73	RD¼VS331J	Resistor	330Ω	¼W
R74	RD¼VS331J	Resistor	330Ω	¼W
R75	RD¼VS151J	Resistor	150Ω	¼W
R76	RD¼VS151J	Resistor	150Ω	¼W
R77	RD¼VS151J	Resistor	150Ω	¼W
R78	RD¼VS151J	Resistor	150Ω	¼W
R79	RN2P0R5K	Resistor	0.5Ω	2W
R80	RN2P0R5K	Resistor	0.5Ω	2W

Ref. Key	Parts No.	Description		
R81	RN2P0R5K	Resistor	0.5Ω	2W
R82	RN2P0R5K	Resistor	0.5Ω	2W
R83	RS1P100K	Resistor	10Ω	1W
R84	RS1P100K	Resistor	10Ω	1W
R85	RD½PS471J	Resistor	470Ω	½W
R86	RD½PS471J	Resistor	470Ω	½W
R87	RD¼VS683J	Resistor	68kΩ	¼W
R88	RD¼VS683J	Resistor	68kΩ	¼W
R89	RS1P222K	Resistor	2.2kΩ	1W
R90	RS1P331K	Resistor	330Ω	1W
R91	RN2P100K	Resistor	10Ω	2W
R92	RS1P222K	Resistor	2.2kΩ	1W
R93	RS1P220K	Resistor	22Ω	1W
R94	RS1P100K	Resistor	10Ω	1W
R95	RS1P220K	Resistor	22Ω	1W
R96	RS1P220K	Resistor	22Ω	1W
R97	RS2P181K	Resistor	180Ω	2W

CAPACITORS

Ref. Key	Parts No.	Description		
C1	CEA2R2P50	Capacitor	2.2μF	50V
C2	CEA2R2P50	Capacitor	2.2μF	50V
C3	CKDYB101K50	Capacitor	100pF	50V
C4	CKDYB101K50	Capacitor	100pF	50V
C5	CKDYB101K50	Capacitor	100pF	50V
C6	CKDYB101K50	Capacitor	100pF	50V
C7	CQMA103K50	Capacitor	0.01μF	50V
C8	CQMA103K50	Capacitor	0.01μF	50V
C9	CQMA272K50	Capacitor	2700pF	50V
C10	CQMA272K50	Capacitor	2700pF	50V
C11	CEA100P16	Capacitor	10μF	16V
C12	CEA100P16	Capacitor	10μF	16V
C13	CEA4R7P35	Capacitor	4.7μF	35V
C14	CEA4R7P35	Capacitor	4.7μF	35V
C15	CEA101P35	Capacitor	100μF	35V
C16	CEA221P16	Capacitor	220μF	16V
C17	CEA010P50	Capacitor	1μF	50V
C18	CEA010P50	Capacitor	1μF	50V
C19	CKDYB101K50	Capacitor	100pF	50V
C20	CKDYB101K50	Capacitor	100pF	50V
C21	CKDYB330K50	Capacitor	33pF	50V
C22	CKDYB330K50	Capacitor	33pF	50V
C23	CKDYB101K50	Capacitor	100pF	50V
C24	CKDYB101K50	Capacitor	100pF	50V
C25	CEA100P16	Capacitor	10μF	16V
C26	CEA100P16	Capacitor	10μF	16V
C27	CEA4R7P35	Capacitor	4.7μF	35V
C28	CEA4R7P35	Capacitor	4.7μF	35V
C29	CQMA183K50	Capacitor	0.018μF	50V
C30	CQMA183K50	Capacitor	0.018μF	50V
C31	CQMA823K50	Capacitor	0.082μF	50V
C32	CQMA823K50	Capacitor	0.082μF	50V
C33	CQMA152K50	Capacitor	1500pF	50V
C34	CQMA152K50	Capacitor	1500pF	50V
C35	CQMA103K50	Capacitor	0.01μF	50V
C36	CQMA103K50	Capacitor	0.01μF	50V
C37	CKDYB331K50	Capacitor	330pF	50V
C38	CKDYB331K50	Capacitor	330pF	50V
C39	CEA010P50	Capacitor	1μF	50V
C40	CEA010P50	Capacitor	1μF	50V
C41	CQMA472K50	Capacitor	4700pF	50V
C42	CQMA472K50	Capacitor	4700pF	50V
C43	CEA221P25	Capacitor	220μF	25V
C44	CEA221P25	Capacitor	220μF	25V
C45	CKDYB151K50	Capacitor	150pF	50V
C46	CKDYB151K50	Capacitor	150pF	50V
C47	CEA470P25	Capacitor	47μF	25V
C48	CEA470P25	Capacitor	47μF	25V
C49	CKDYB470K50	Capacitor	47pF	50V
C50	CKDYB470K50	Capacitor	47pF	50V

AMPLIFIER ASSEMBLY (CWK-135)

Ref. Key	Parts No.	Description		
C51	CKDYB221K50	Capacitor	220pF	50V
C52	CKDYB221K50	Capacitor	220pF	50V
C53	CQMA473K50	Capacitor	0.047μF	50V
C54	CQMA473K50	Capacitor	0.047μF	50V
C55	CEA102P25	Capacitor	1000μF	25V
C56	CEA102P25	Capacitor	1000μF	25V
C57	CEA101P35	Capacitor	100μF	35V
C58	CEA331P35	Capacitor	330μF	35V
C59	CEA471P16	Capacitor	470μF	16V
C60	CEA221P16	Capacitor	220μF	16V
C61	CEA102P25	Capacitor	1000μF	25V
C62	CCH-025	Capacitor	3300μF	50V
C63	CQMA154K50	Capacitor	0.15μF	50V
C64	CQMA154K50	Capacitor	0.15μF	50V
C65	CQMA154K50	Capacitor	0.15μF	50V

10. FUSE UNIT (CWM-012)

- Parts List

Ref. Key	Parts No.	Description	Notes
Q1	G05-044-B, C	Transistor, 2SC945-Q, R	
Q2	G05-044-B, C	Transistor, 2SC945-Q, R	
D1	G00-003-A	Diode, 1N60	
D2	G00-003-A	Diode, 1N60	
D3	G00-003-A	Diode, 1N60	
D4	G00-003-A	Diode, 1N60	
R1	RD¼VS102J	Resistor, 1kΩ ¼W	
R2	RD¼VS102J	Resistor, 1kΩ ¼W	
R3	RD¼VS274J	Resistor, 270kΩ ¼W	
R4	RD¼VS274J	Resistor, 270kΩ ¼W	
R5	RD¼VS104J	Resistor, 100kΩ ¼W	
R6	RD¼VS104J	Resistor, 100kΩ ¼W	
R7	RD¼VS222J	Resistor, 2.2kΩ ¼W	
R8	RD¼VS222J	Resistor, 2.2kΩ ¼W	
R9	RD¼VS102J	Resistor, 1kΩ ¼W	
R10	RD¼VS102J	Resistor, 1kΩ ¼W	
C1	CEA010P50	Capacitor, 1μF 50V	
C2	CEA010P50	Capacitor, 1μF 50V	
C3	CEA010P50	Capacitor, 1μF 50V	
C4	CEA010P50	Capacitor, 1μF 50V	
C5	CEA010P50	Capacitor, 1μF 50V	
C6	CEA010P50	Capacitor, 1μF 50V	
C7	CQMA683K50	Capacitor, 0.068μF 50V	
C8	CQMA683K50	Capacitor, 0.068μF 50V	

Note: FusesFU1~3are not included in FUSE UNIT (CWM-012).
Parts numbers of fuses are identified in the chassis exploded view on Page 40.

- Parts Connection

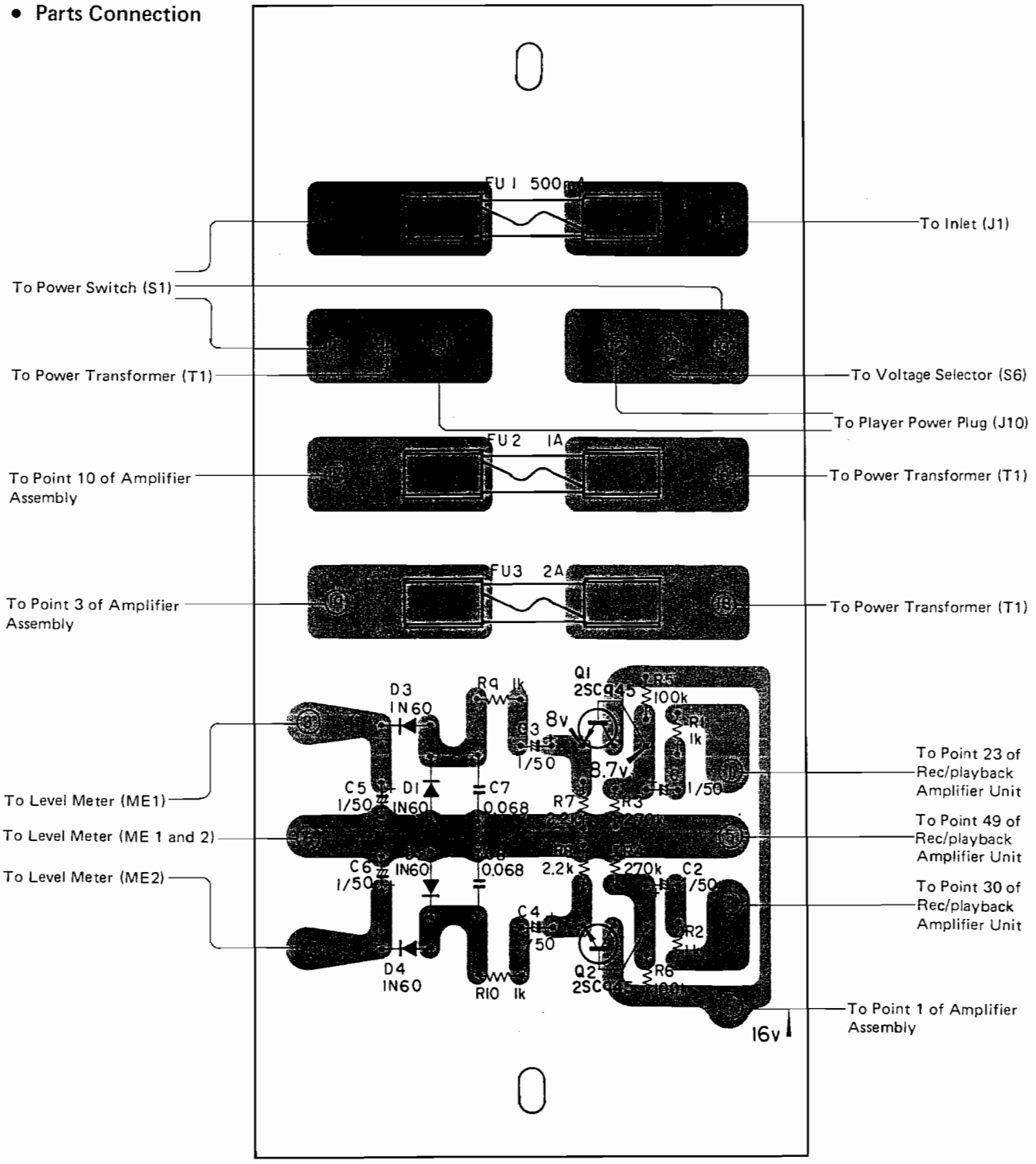


Fig. 26

11. MW/LW UNIT (CWA-001)

- **Parts Connection**

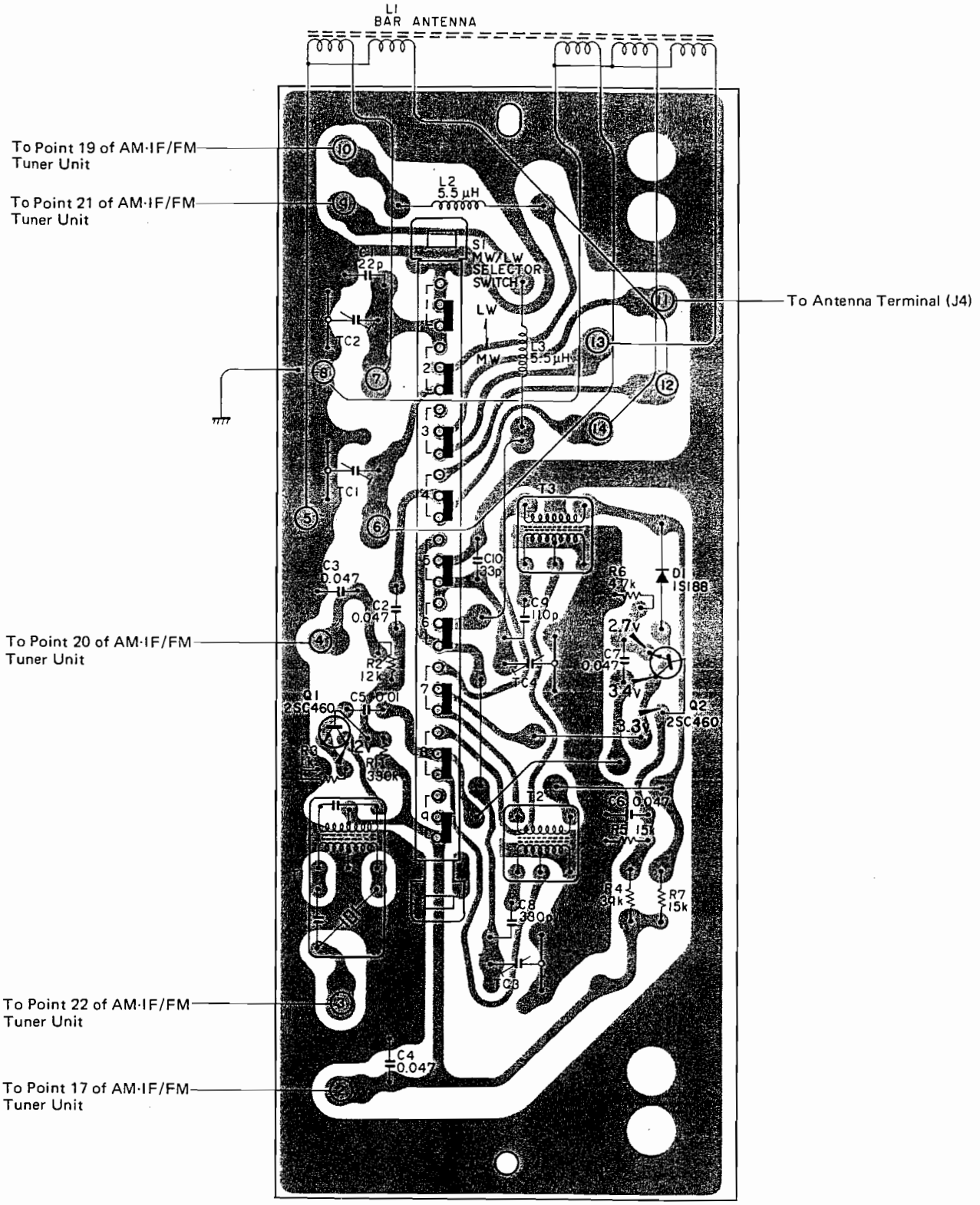


Fig. 27

• Parts List

MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-003-B	Transistor, 2SC460-B	
Q2	G05-003-B	Transistor, 2SC460-B	
D1	G00-004-A	Diode, 1S188	
S1	CSH-035	Slide Switch	MW/LW Select
T1	CTE-009	IF Transformer	
T2	CTB-029	Coil	
T3	CTD-001	Coil	
L1	CTX-040	Bar Antenna	
L2	T63-648	Coil, 5.5μH	
L3	T63-648	Coil, 5.5μH	
TC1	C43-607	Ceramic Trimmer	
TC2	C43-607	Ceramic Trimmer	
TC3	C43-607	Ceramic Trimmer	
TC4	C43-607	Ceramic Trimmer	

RESISTORS

Ref. Key	Parts No.	Description		
R1	RD¼VS334K	Resistor	330kΩ	¼W
R2	RD¼VS123K	Resistor	12kΩ	¼W
R3	RD¼VS102K	Resistor	1kΩ	¼W
R4	RD¼VS393K	Resistor	39kΩ	¼W
R5	RD¼VS153K	Resistor	15kΩ	¼W
R6	RD¼VS472K	Resistor	4.7kΩ	¼W
R7	RD¼VS153K	Resistor	15kΩ	¼W

CAPACITORS

Ref. Key	Parts No.	Description		
C1	CCDSH220K50	Capacitor	22pF	50V
C2	CQMA473K50	Capacitor	0.047μF	50V
C3	CKDYF473Z25	Capacitor	0.047μF	25V
C4	CKDYF473Z25	Capacitor	0.047μF	25V
C5	CQMA103K50	Capacitor	0.01μF	50V
C6	CQMA473K50	Capacitor	0.047μF	50V
C7	CQMA473K50	Capacitor	0.047μF	50V
C8	CCDVK331J50	Capacitor	330pF	50V
C9	CQSA111J50	Capacitor	110pF	50V
C10	CCDSH330K50	Capacitor	33pF	50V

- Parts Connection

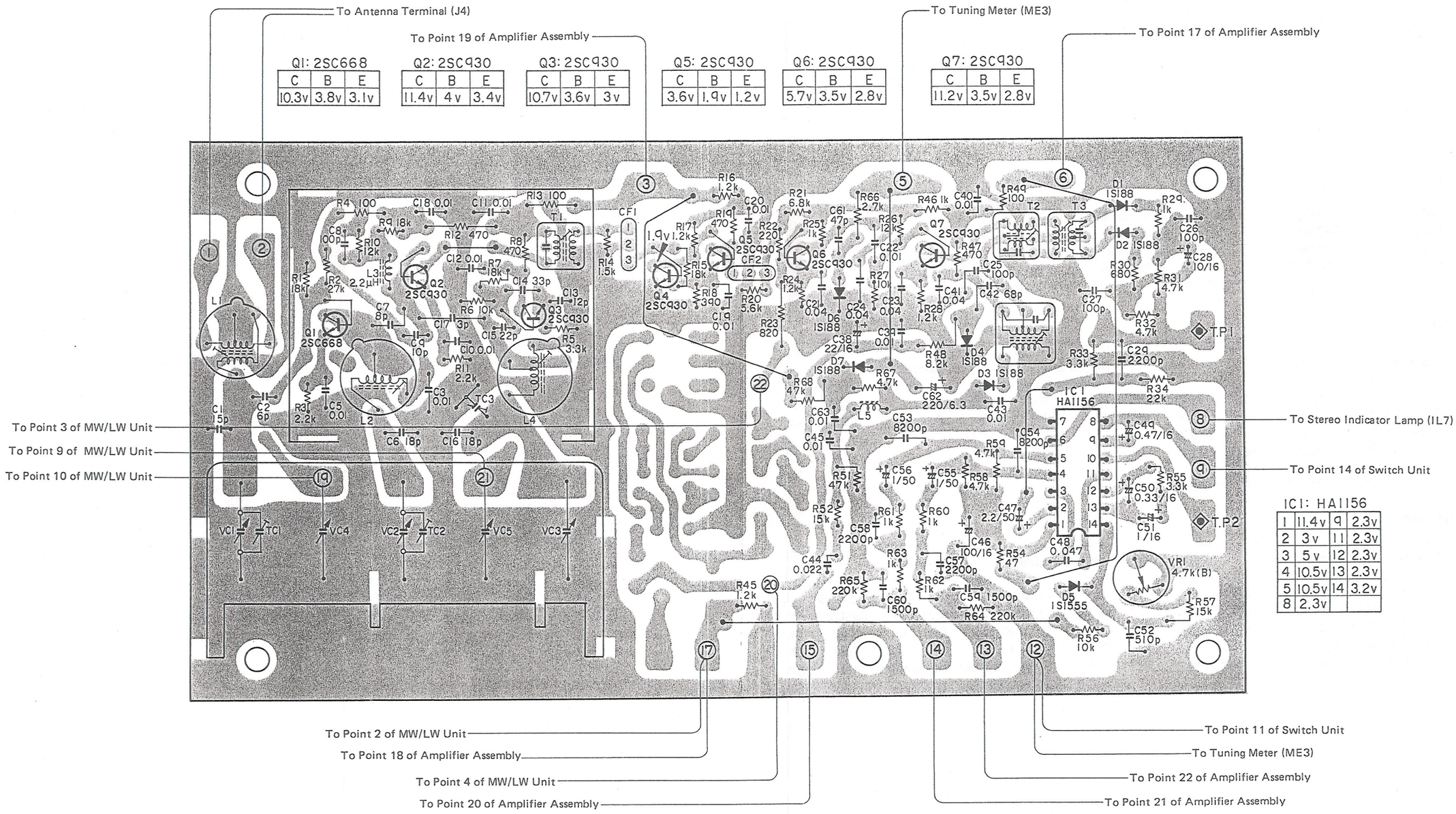


Fig. 28

• Parts List

MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
IC1	G09-032-A	HA1156-WP	
Q1	G05-043-D	Transistor, 2SC668-D	
Q2	G05-047-D	Transistor, 2SC930-D	
Q3	G05-047-C	Transistor, 2SC930-C	
Q4	G05-047-C, D	Transistor, 2SC930-C, D	
Q5	G05-047-C, D	Transistor, 2SC930-C, D	
Q6	G05-047-C, D	Transistor, 2SC930-C, D	
Q7	G05-047-C, D	Transistor, 2SC930-C, D	
D1	G00-004-A	Diode, 1S188 (FM-1)	
D2	G00-004-A	Diode, 1S188 (FM-1)	
D3	G00-004-A	Diode, 1S188 (FM-1)	
D4	G00-004-A	Diode, 1S188 (FM-1)	
D5	G01-803-A	Diode, 1S1555	
D6	G00-004-A	Diode, 1S188 (FM-1)	
D7	G00-004-A	Diode, 1S188 (FM-1)	
T1	CTC-002	IF Transformer	FM Couple
T2	CTC-011	IF Transformer	FM Detector
T3	CTC-012	IF Transformer	FM Detector
T6	CTE-001	IF Transformer	AM Detector
L1	T22-020	Coil	FM ANT
L2	T21-023	Coil	FM RF
L3	CTF-010	Ferri-inductor 2.2μH	
L4	CTC-001	Coil	FM OSC
L5	CTF-008	Ferri-inductor 100mH	
CF1	CTF-038	Ceramic Filter	
CF2	CTF-038	Ceramic Filter	
VR1	C92-618	Volume	
TC1	CCL-046	Variable Capacitor	
TC2	CCL-046	Variable Capacitor	
TC3	CCG-008	Ceramic Trimmer	
VC1	CCL-046	Variable Capacitor	
VC2	CCL-046	Variable Capacitor	
VC3	CCL-046	Variable Capacitor	
VC4	CCL-046	Variable Capacitor	
VC5	CCL-046	Variable Capacitor	

RESISTORS

Ref. Key	Parts No.	Description		
R1	RD¼VS183J	Resistor	18kΩ	¼W
R2	RD¼VS273J	Resistor	27kΩ	¼W
R3	RD¼VS222J	Resistor	2.2kΩ	¼W
R4	RD¼VS101J	Resistor	100Ω	¼W
R5	RD¼VS332J	Resistor	3.3kΩ	¼W
R6	RD¼VS103J	Resistor	10kΩ	¼W
R7	RD¼VS183J	Resistor	18kΩ	¼W
R8	RD¼VS471J	Resistor	470Ω	¼W
R9	RD¼VS183J	Resistor	18kΩ	¼W
R10	RD¼VS123J	Resistor	12kΩ	¼W
R11	RD¼VS222J	Resistor	2.2kΩ	¼W
R12	RD¼VS471J	Resistor	470Ω	¼W
R13	RD¼VS101J	Resistor	100Ω	¼W
R14	RD¼VS152J	Resistor	1.5kΩ	¼W
R15	RD¼VS183J	Resistor	18kΩ	¼W
R16	RD¼VS122J	Resistor	1.2kΩ	¼W
R17	RD¼VS122J	Resistor	1.2kΩ	¼W
R18	RD¼VS391J	Resistor	390Ω	¼W
R19	RD¼VS471J	Resistor	470Ω	¼W
R20	RD¼VS562J	Resistor	5.6kΩ	¼W
R21	RD¼VS682J	Resistor	6.8kΩ	¼W
R22	RD¼VS221J	Resistor	220Ω	¼W
R23	RD¼VS821J	Resistor	820Ω	¼W
R24	RD¼VS122J	Resistor	1.2kΩ	¼W
R25	RD¼VS102J	Resistor	1kΩ	¼W
R26	RD¼VS123J	Resistor	12kΩ	¼W
R27	RD¼VS103J	Resistor	10kΩ	¼W
R28	RD¼VS122J	Resistor	1.2kΩ	¼W
R29	RD¼VS102J	Resistor	1kΩ	¼W
R30	RD¼VS681J	Resistor	680Ω	¼W

Ref. Key	Parts No.	Description		
R31	RD¼VS472J	Resistor	4.7kΩ	¼W
R32	RD¼VS472J	Resistor	4.7kΩ	¼W
R33	RD¼VS332J	Resistor	3.3kΩ	¼W
R34	RD¼VS223J	Resistor	22kΩ	¼W
R45	RD¼VS122J	Resistor	1.2kΩ	¼W
R46	RD¼VS102J	Resistor	1kΩ	¼W
R47	RD¼VS471J	Resistor	470Ω	¼W
R48	RD¼VS822J	Resistor	8.2kΩ	¼W
R49	RD¼VS101J	Resistor	100Ω	¼W
R51	RD¼VS473J	Resistor	47kΩ	¼W
R52	RD¼VS153J	Resistor	15kΩ	¼W
R54	RD¼VS470J	Resistor	47Ω	¼W
R55	RD¼VS332J	Resistor	3.3kΩ	¼W
R56	RD¼VS103J	Resistor	10kΩ	¼W
R57	RD¼VS153J	Resistor	15kΩ	¼W
R58	RD¼VS472J	Resistor	4.7kΩ	¼W
R59	RD¼VS472J	Resistor	4.7kΩ	¼W
R60	RD¼VS102J	Resistor	1kΩ	¼W
R61	RD¼VS102J	Resistor	1kΩ	¼W
R62	RD¼VS102J	Resistor	1kΩ	¼W
R63	RD¼VS102J	Resistor	1kΩ	¼W
R64	RD¼VS224J	Resistor	220kΩ	¼W
R65	RD¼VS224J	Resistor	220kΩ	¼W
R66	RD¼VS272J	Resistor	2.7kΩ	¼W
R67	RD¼VS472J	Resistor	4.7kΩ	¼W
R68	RD¼VS473J	Resistor	47kΩ	¼W

CAPACITORS

Ref. Key	Parts No.	Description		
C1	CCDSL150K50	Capacitor	15pF	50V
C2	CCDSL060D50	Capacitor	6pF	50V
C3	CKDYF103Z25	Capacitor	0.01μF	25V
C5	CKDYF103Z25	Capacitor	0.01μF	25V
C6	CCDSL180K50	Capacitor	18pF	50V
C7	CCDSL080F50	Capacitor	8pF	50V
C8	CKDYB101K50	Capacitor	100pF	50V
C9	CCDSL100F50	Capacitor	10pF	50V
C10	CKDYF103Z25	Capacitor	0.01μF	25V
C11	CKDYF103Z25	Capacitor	0.01μF	25V
C12	CKDYD103M50	Capacitor	0.01μF	50V
C13	CCDSH120K50	Capacitor	12pF	50V
C14	CCDSH330K50	Capacitor	33pF	50V
C15	CCDCH220K50	Capacitor	22pF	50V
C16	CCDSH180K50	Capacitor	18pF	50V
C17	CCDCJ030C50	Capacitor	3pF	50V
C18	CKDYF103Z25	Capacitor	0.01μF	25V
C19	CKDYF103Z25	Capacitor	0.01μF	25V
C20	CKDYF103Z25	Capacitor	0.01μF	25V
C21	CKDYF403Z25	Capacitor	0.04μF	25V
C22	CKDYF103Z25	Capacitor	0.01μF	25V
C23	CKDYF403Z25	Capacitor	0.04μF	25V
C24	CKDYF403Z25	Capacitor	0.04μF	25V
C25	CKDYB101K50	Capacitor	100pF	50V
C26	CKDYB101K50	Capacitor	100pF	50V
C27	CKDYB101K50	Capacitor	100pF	50V
C28	CEA100P16	Capacitor	10μF	16V
C29	CQMA222J50	Capacitor	2200pF	50V
C38	CEA220P16	Capacitor	22μF	16V
C39	CKDYF103Z25	Capacitor	0.01μF	25V

Ref. Key	Parts No.	Description		
C40	CKDYF103Z25	Capacitor	0.01μF	25V
C41	CKDYF403Z25	Capacitor	0.04μF	25V
C42	CCDSL680K50	Capacitor	68pF	50V
C43	CQMA103K50	Capacitor	0.01μF	50V
C44	CQMA223K50	Capacitor	0.022μF	50V
C45	CQMA103K50	Capacitor	0.01μF	50V
C46	CEA101P16	Capacitor	100μF	16V
C47	CEA2R2P50	Capacitor	2.2μF	50V
C48	CQMA473K50	Capacitor	0.047μF	50V
C49	CSYAR47M16	Capacitor	0.47μF	16V
C50	CSYAR33M16	Capacitor	0.33μF	16V
C51	CSYA010M16	Capacitor	1μF	16V
C52	CQSA511J50	Capacitor	510pF	50V
C53	CQMA822K50	Capacitor	8200pF	50V
C54	CQMA822K50	Capacitor	8200pF	50V
C55	CEA010P50	Capacitor	1μF	50V
C56	CEA010P50	Capacitor	1μF	50V
C57	CQMA222J50	Capacitor	2200pF	50V
C58	CQMA222J50	Capacitor	2200pF	50V
C59	CQMA152J50	Capacitor	1500pF	50V
C60	CQMA152J50	Capacitor	1500pF	50V
C61	CCDSL470K50	Capacitor	47pF	50V
C62	CEA221P16	Capacitor	220μF	16V
C63	CQMA103K50	Capacitor	0.01μF	50V

13. MISCELLANEOUS PARTS LIST KH-3500

Ref. Key	Parts No.	Description	Notes
T1	CTT-072	Power Transformer	
HD1	CPB-023	Head	Rec/playback
HD2	CPB-024	Head	Erase
M	CXM-044	Motor	
SO	CXP-019	Solenoid Ass	
IL1	CEL-033	Lamp, 14V 60mA	Recording Ind.
IL2	CEL-033	Lamp, 14V 60mA	Level Meter
IL3	CEL-031	Lamp, 6.3V 150mA	Dial
IL4	CEL-031	Lamp, 6.3V 150mA	Dial
IL5	CEL-033	Lamp, 14V 60mA	Cassette Door
IL6	CEL-020	Lamp, 14V 60mA	Tuning Meter
IL7	CEL-033	Lamp, 14V 60mA	Stereo Ind.
ME1	CAW-014	Level Meter	(L)
ME2	CAW-014	Level Meter	(R)
ME3	CAW-030	Tuning Meter	
J1	CKP-010	Jack, Inlet	AC Input
J2	K72-627	Headphone Jack	Headphone
J3	CKF-033	Speaker Terminal	Speaker
J4	K31-013	Antenna Terminal	Antenna
J5	CKN-014	Mic Jack	Mic (L)
J6	CKN-014	Mic Jack	Mic (R)
J7	CKN-031	Jack	Phono (L)
J8	CKN-031	Jack	Phono (R)
J9	CKB-011	Pin Jack, 2P	AUX
J10	CDE-275	Connector, 3P	Player Power
S1	CSG-064	Push Switch	Power
S2	CSN-039	Leaf Switch	Motor
S3	CSN-021	Reed Switch	Sensing
S4	CSN-038	Leaf Switch	Pause
S5	CSN-037	Leaf Switch	Play
S6	CKA-004	Voltage Selector	
C1	CCG-003	Capacitor, 0.01μF	
C2	CCG-003	Capacitor, 0.01μF	
R1	RD½PS221J	Resistor, 220Ω ½W	
R2	RD½PS221J	Resistor, 220Ω ½W	

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

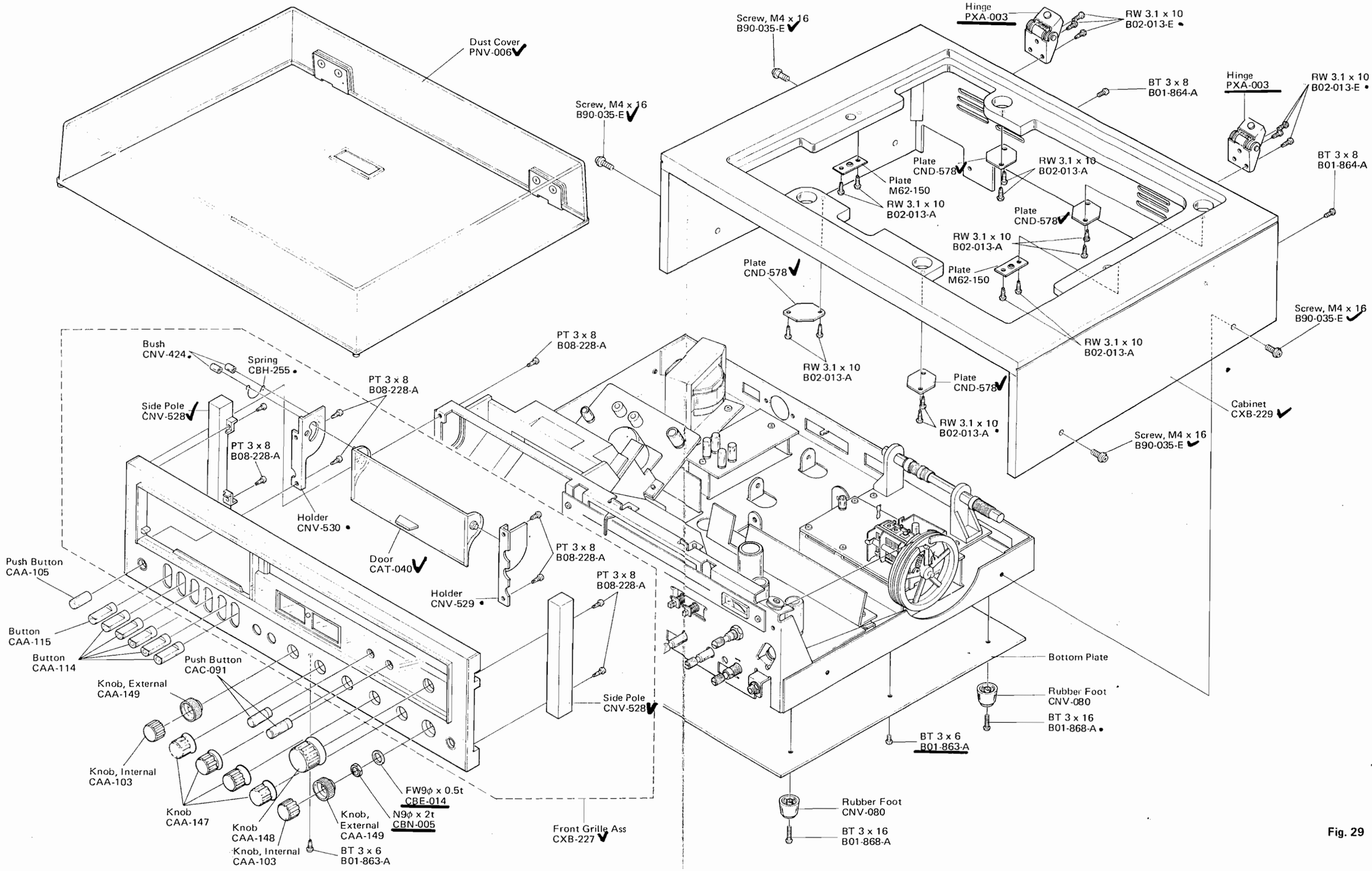


Fig. 29

15. CHASSIS EXPLODED VIEW

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

KH-3500

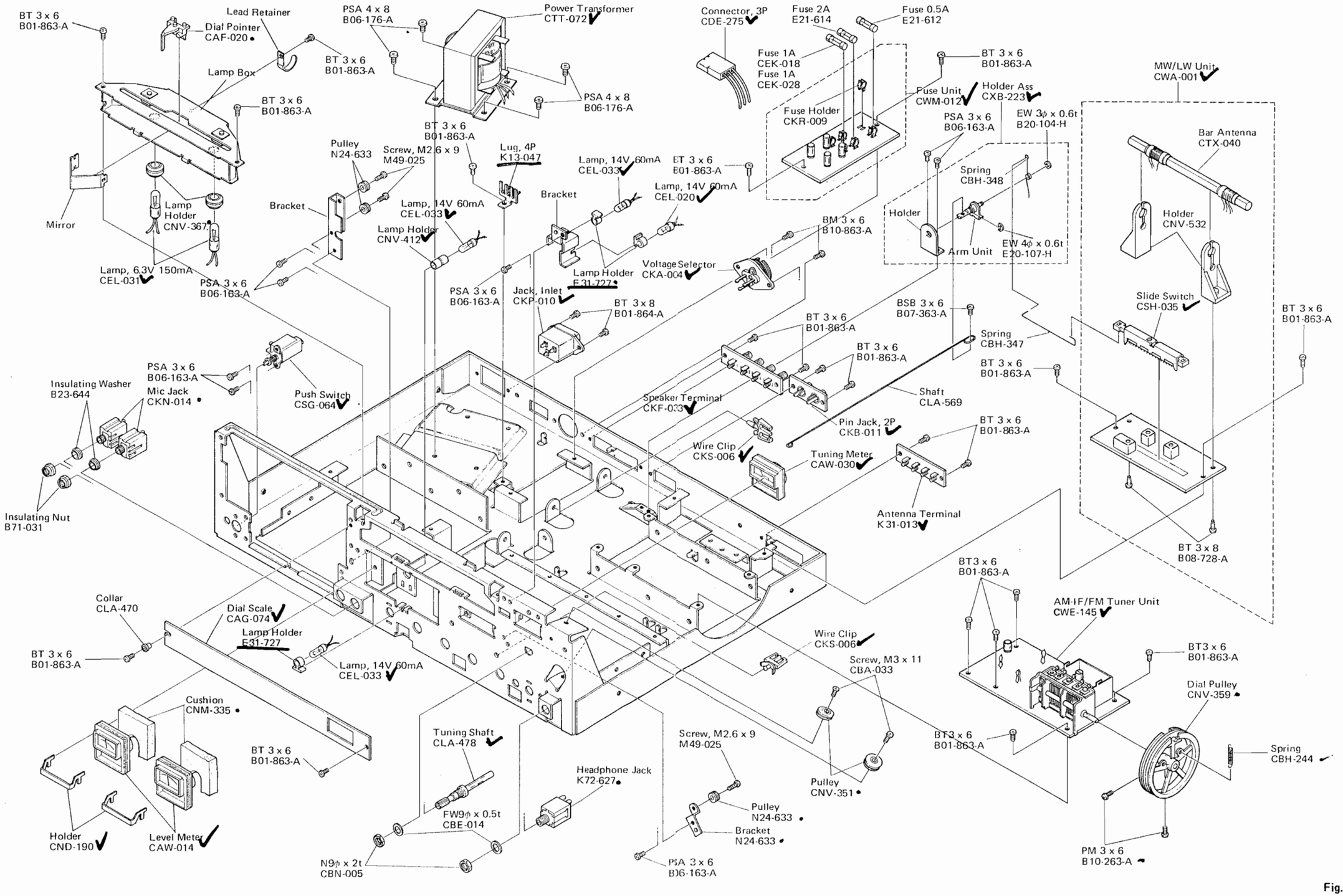


Fig. 30

16. AMPLIFIER ASSEMBLY EXPLODED VIEW KH-3500

NOTICE: Part whose parts number is omitted is subject to being not supplied.

AMPLIFIER ASSEMBLY EXPLODED VIEW

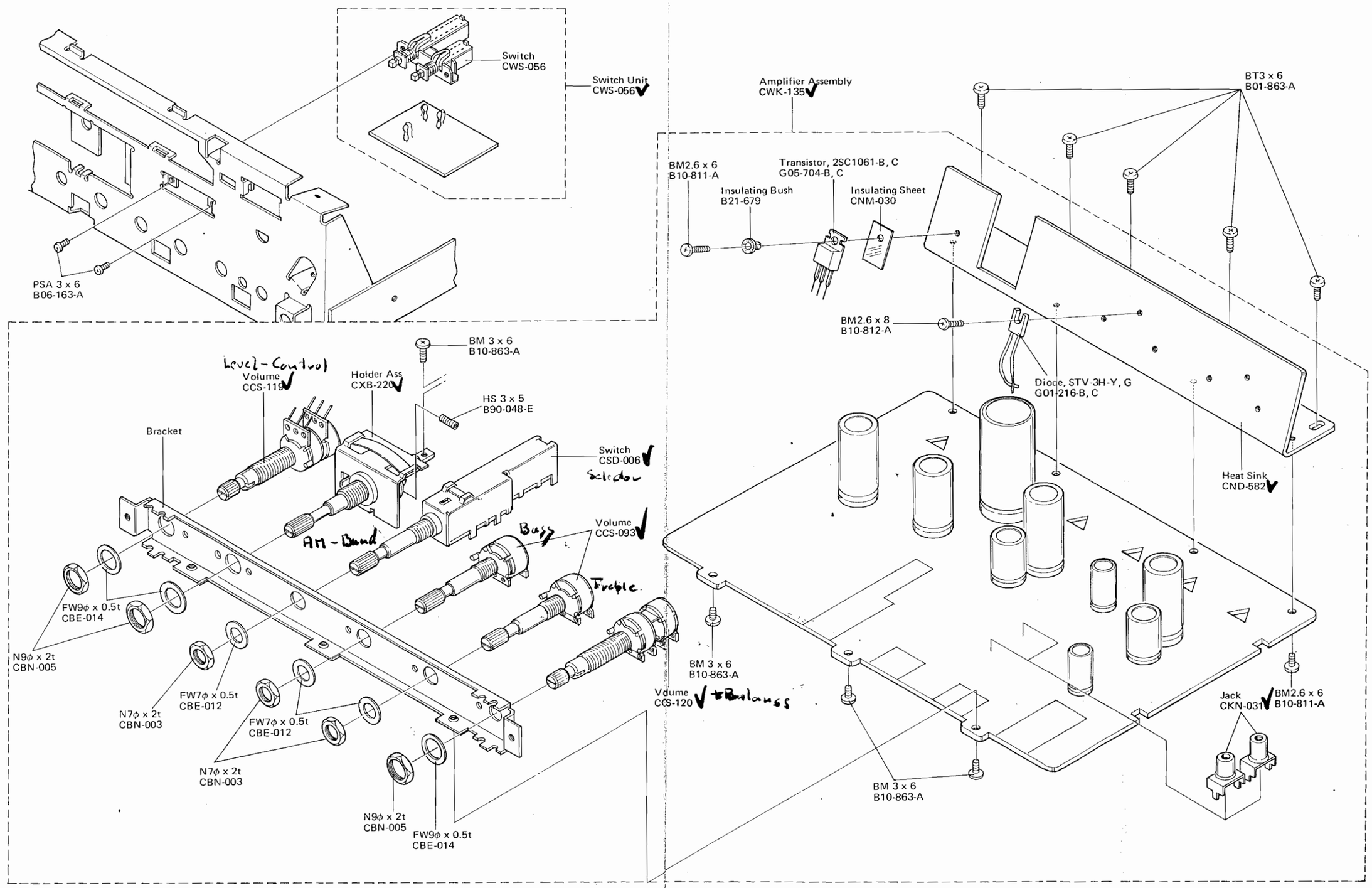


Fig. 31

17. CASSETTE MECHANISM (TOP) EXPLODED VIEW

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

KH-3500

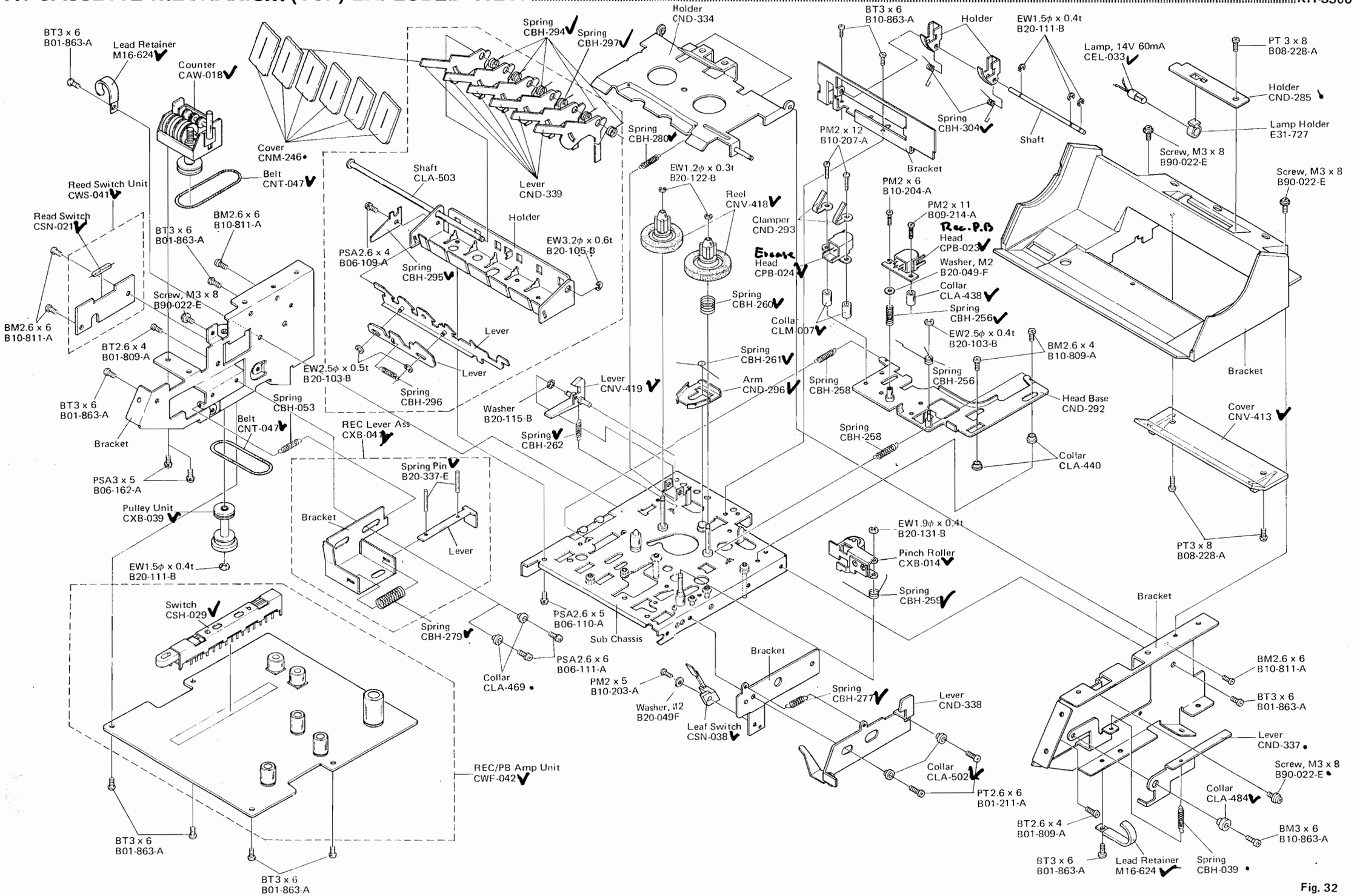


Fig. 32

18. CASSETTE MECHANISM

Those parts numbers are omitted are subject to being not supplied.

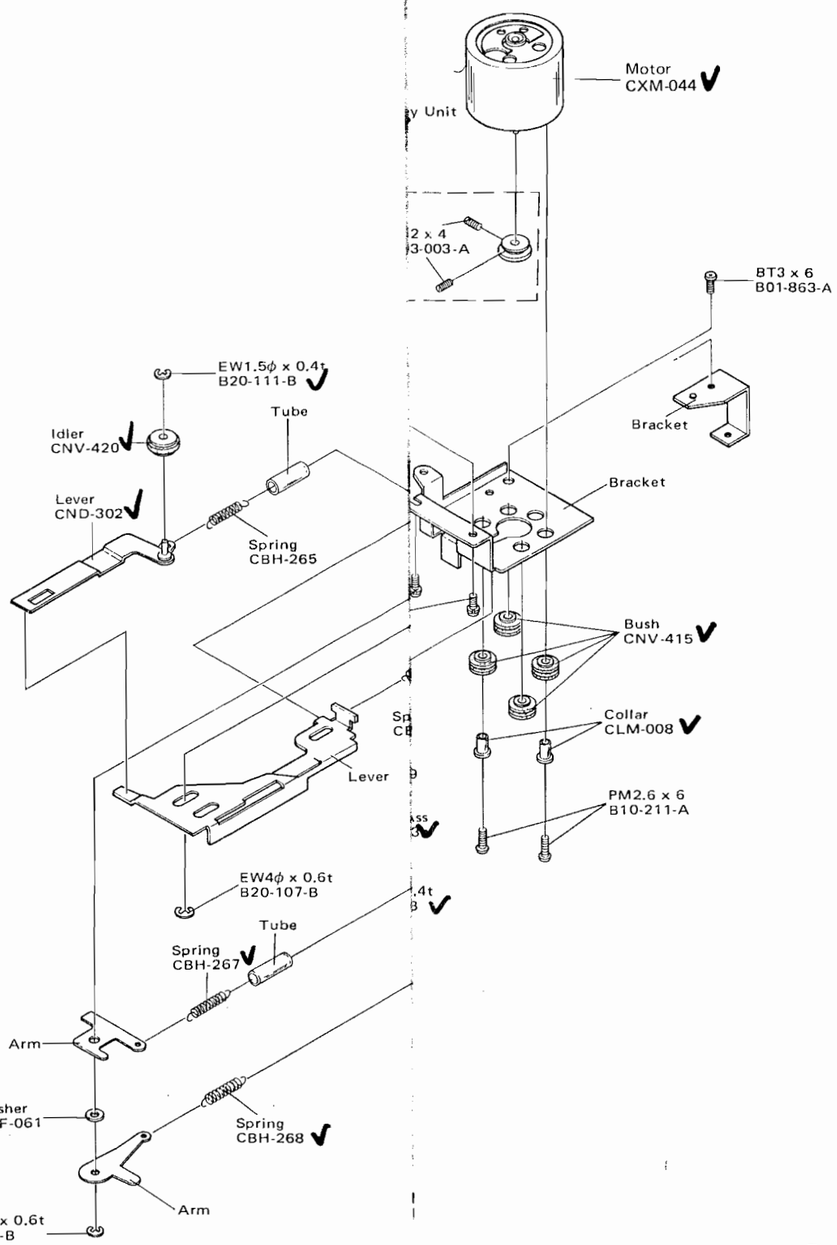


Fig. 33

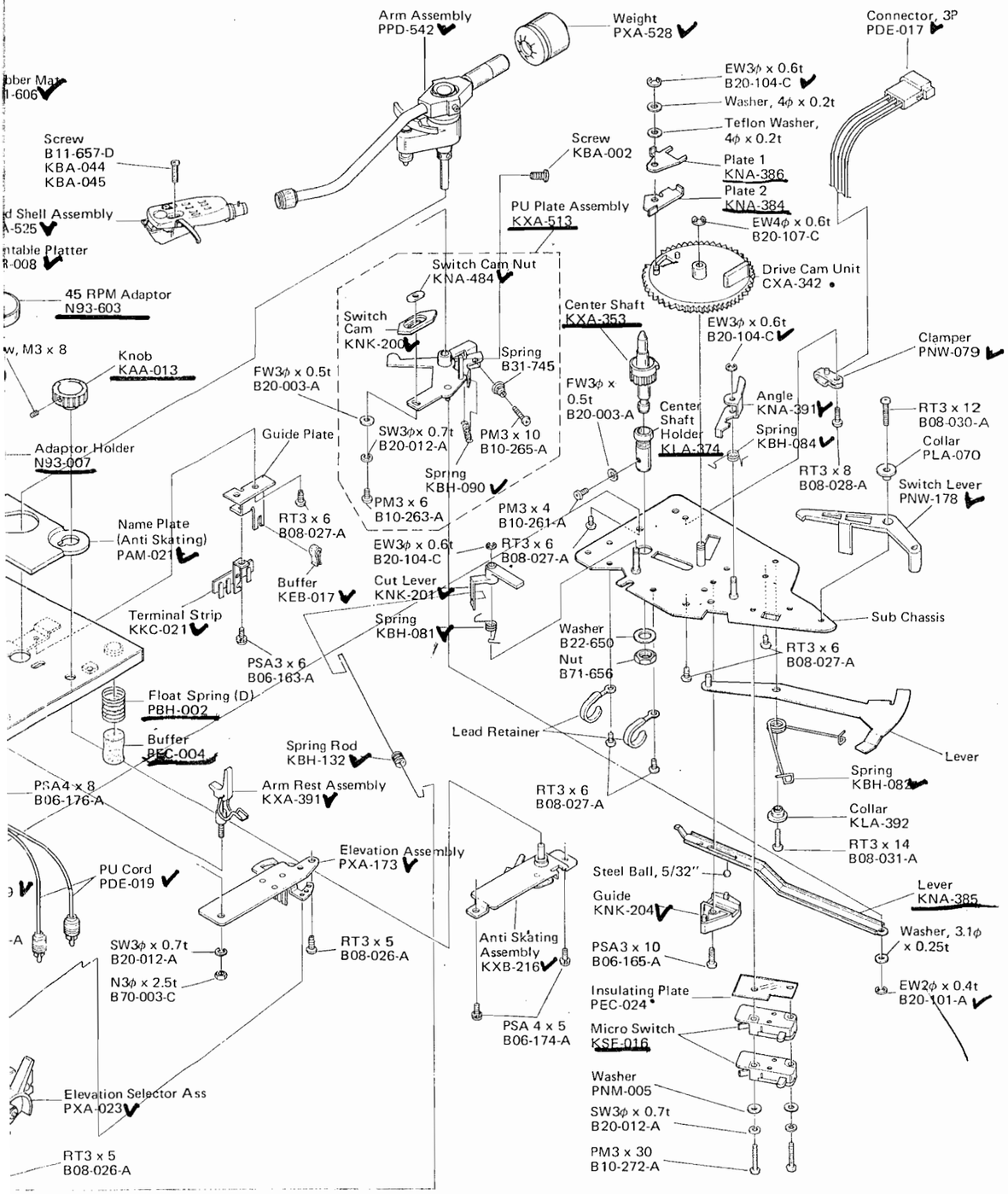

Arm Assembly
PPD-542
Weight
PXA-528
Connector, 3P
PDE-017
EW3φ x 0.6t
B20-104-C
Washer, 4φ x 0.2t
Teflon Washer,
4φ x 0.2t
Plate 1
KNA-386
Plate 2
KNA-384
EW4φ x 0.6t
B20-107-C
Drive Cam Unit
CXA-342
Screw
B11-657-D
KBA-044
KBA-045
Screw
KBA-002
PU Plate Assembly
KXA-513
Switch Cam Nut
KNA-484
Switch
Cam
KNK-200
Spring
B31-745
FW3φ x 0.5t
B20-003-A
SW3φx 0.7t
B20-012-A
PM3 x 10
B10-265-A
Spring
KBH-090
PM3 x 6
B10-263-A
Center Shaft
KXA-353
FW3φ x
0.5t
B20-003-A
Center
Shaft
Holder
KLA-374
EW3φ x 0.6t
B20-104-C
Angle
KNA-391
Spring
KBH-084
Clamper
PNW-079
RT3 x 12
B08-030-A
Collar
PLA-070
RT3 x 8
B08-028-A
Switch Lever
PNW-178
45 RPM Adaptor
N93-603
Knob
KAA-013
Adaptor Holder
N93-007
Guide Plate
RT3 x 6
B08-027-A
Name Plate
(Anti Skating)
PAM-021
Buffer
KEB-017
Terminal Strip
KKC-021
Cut Lever
KNK-201
Spring
KBH-081
PM3 x 4
B10-261-A
EW3φ x 0.6t
B20-104-C
RT3 x 6
B08-027-A
Washer
B22-650
Nut
B71-656
Sub Chassis
RT3 x 6
B08-027-A
PSA3 x 6
B06-163-A
Float Spring (D)
PBH-002
Buffer
PEC-004
Lead Retainer
Spring Rod
KBH-132
Lever
Spring
KBH-082
PSA4 x 8
B06-176-A
Arm Rest Assembly
KXA-391
RT3 x 6
B08-027-A
Collar
KLA-392
RT3 x 14
B08-031-A
Elevation Assembly
PXA-173
PU Cord
PDE-019
Steel Ball, 5/32"
Guide
KNK-204
Lever
KNA-385
Washer, 3.1φ
x 0.25t
SW3φ x 0.7t
B20-012-A
N3φ x 2.5t
B70-003-C
RT3 x 5
B08-026-A
Anti Skating
Assembly
KXB-216
PSA3 x 10
B06-165-A
EW2φ x 0.4t
B20-101-A
Insulating Plate
PEC-024
PSA 4 x 5
B06-174-A
Micro Switch
KSE-016
Elevation Selector Ass
PXA-023
Washer
PNM-005
SW3φ x 0.7t
B20-012-A
PM3 x 30
B10-272-A
RT3 x 5
B08-026-A

Fig. 34

20. PACKING METHOD

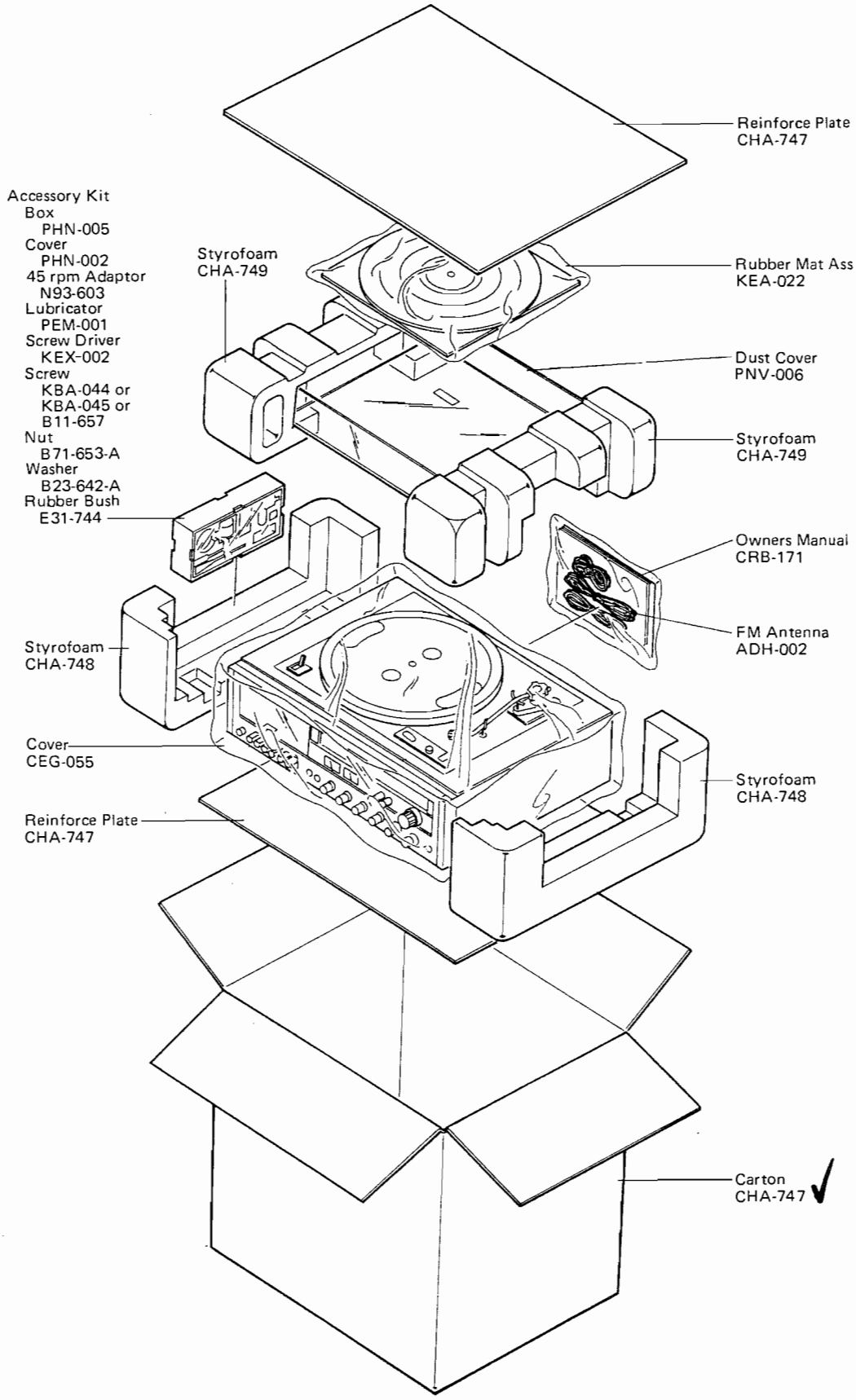
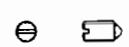
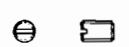


Fig. 35

21. NOMENCLATURE OF SCREWS, WASHERS AND NUTS

The following symbols stand for screws, washers and nuts as shown in exploded view.

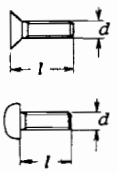
Symbol	Description	Shape
RT	Brazier head tapping screw	
PT	Pan head tapping screw	
BT	Binding head tapping screw	
CT	Countersunk head tapping screw	
TT	Truss head tapping screw	
OCT	Oval countersunk head tapping screw	
PM	Pan head machine screw	
CM	Countersunk head machine screw	
OCM	Oval countersunk head machine screw	
TM	Truss head machine screw	
BM	Binding head machine screw	
PSA	Pan head screw with spring lock washer	
PSB	Pan head screw with spring lock washer and flat washer	
PSF	Pan head screw with flat washer	

Symbol	Description	Shape
EW	E type washer	
FW	Flat washer	
SW	Spring lock washer	
N	Nut	
WN	Washer faced nut	
ITW	Internal toothed lock washer	
OTW	Outernal toothed lock washer	
SC	Slotted set screw (Cone point)	
SF	Slotted set screw (Flat point)	
HS	Hexagon socket headless set screw	
OCW	Oval countersunk head wood screw	
CW	Countersunk head wood screw	
RW	Round head wood screw	

EXAMPLE

PM 3x8

- length in mm (l)
- diameter in mm (d)
- Symbol



FW 9ϕx1^t

- thickness in mm (t)
- diameter in mm (d)
- Symbol