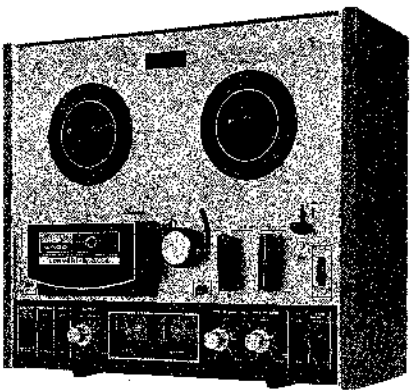


STEREO TAPE RECORDER

MODEL 4400

ALSO APPLICABLE TO MODEL
4400D STEREO TAPE DECK

SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

I. SPECIFICATIONS

An asterisk next to a figure indicates the minimum guaranteed performance.

TRACK SYSTEM		4-track 2-channel stereo system
REEL CAPACITY		Up to 7" reel
TAPE SPEED		7-1/2 and 3-3/4 ips ±2% (*3%)
WOW AND FLUTTER		Less than 0.15% (*0.22%) RMS at 7-1/2 ips
		Less than 0.20% (*0.30%) RMS at 3-3/4 ips
FREQUENCY RESPONSE	AKAI SRT Tape	30 to 23,000 Hz (*40 to 22,000 Hz) ±3 dB at 7-1/2 ips
		30 to 15,000 Hz (*40 to 13,000 Hz) ±3 dB at 3-3/4 ips
	Regular Tape	30 to 20,000 Hz (*40 to 20,000 Hz) ±3 dB at 7-1/2 ips
		30 to 13,000 Hz (*40 to 11,000 Hz) +3 dB at 3-3/4 ips
SIGNAL TO NOISE RATIO		Better than 50 dB at 7-1/2 ips
		Better than 48 dB at 3-3/4 ips
HUM AND NOISE (4400 only)		Less than 5 mV at minimum volume
DISTORTION		Less than 1.5% (*2.0%) at 7-1/2 ips
CROSS TALK		Less than 2.5% at 3-3/4 ips
		Better than 70 dB (*60 dB) monaural
		Better than 50 dB (*45 dB) stereo
ERASE RATIO		Better than 70 dB
INPUTS	Mic input	0.8 mV Impedance: 5 kΩ
	Line input	70 mV Impedance: 150 kΩ
	Din input	7 mV
OUTPUTS	Line output	1.228V (4 ±1 dB), using a 250 Hz "O" VU recorded tape
	Din output	0.4V
	Speaker output (4400 only)	16W total music power at 8Ω
		12W (*8W) continuous power at 8Ω
BIAS FREQUENCY		105 kHz ±5%
BIAS LEAK		Less than −30 VU
HIGH FREQUENCY DEVIATION		Within 2 dB, using an 8,000 Hz 3-3/4 ips recorded tape at 7-1/2 ips
RECORDING CAPACITY		60 min. stereo recording, using a 1,200 ft. tape at 7-1/2 ips
FAST FORWARD AND REWIND TIME		152/190 sec., using a 1,200 ft. tape at 60/50 Hz
MOTOR		4-pole induction 1-speed motor
		Type: SSM-1
		Revolutions: 1,800/1,500 rpm. at 60/50 Hz
HEADS	Recording Head	In-line 4-track 2-channel recording head
		Type: P4-154
		Gap: 1 micron
		Impedance: 95Ω ±15% at 1,000 Hz
	Playback Head	In-line 4-track 2-channel playback head
		Type: P4-150
		Gap: 1 micron
		Impedance: 1.250Ω ±15% at 1,000 Hz
	Erase Head	In-line 4-track 2-channel erase head
		Type: E4-200
		Gap: 0.6 mm
		Impedance: 200Ω ±5% at 100 kHz
TRANSISTORS		2SC458LG(C) (D) . . . 6 2SC971(2)+3) (red) . . . 2
		2SC871(E) (F) . . . 2 2SC1098(L) (M) . . . 1
IC		LD3141 . . . 4 STK-011 . . . 2 (4400 only)
DIODES		1N34A . . . 2 10DC-1 . . . 1
		WZ-240 . . . 1
POWER SUPPLY		100 to 240V A.C., 50/60 Hz
		120V A.C., 60 Hz for CSA/UL Models
		220V A.C., 50 Hz for CEE Models
POWER CONSUMPTION		60W DECK: 35W
INSULATION RESISTANCE		More than 50 MΩ
INSULATION DURABILITY		1,000V A.C. for more than 1 min. duration
DIMENSIONS		406(W) x 314(H) x 194(D) mm (15.9" x 12.4" x 7.6")
WEIGHT		13.7 kg (30.1 lbs.)

NOTE: Specifications subject to change without notice.

II. MEASURING METHOD

1. TAPE SPEED DEVIATION

Fig. 1

As shown in Fig. 1, connect a Frequency Counter to the Line Output of Model 4400. Take a frequency counter reading at the beginning, middle, and end of tape winding during playback. The maximum value of these respective readings will represent tape speed deviation.

2. WOW AND FLUTTER

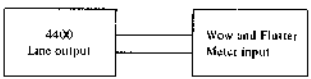


Fig. 2

Method A
As shown in Fig. 2, connect the Line Output of Model 4400 to the Input of a Wow and Flutter Meter. Use a 3,000 Hz pre-recorded test tape and take a wow and flutter meter reading at the beginning, middle, and end of tape winding. The maximum value of these respective readings will represent the wow and flutter.

Method B
Supply a 3,000 Hz sine wave signal from an Audio Frequency Oscillator and make a recording on a blank tape at the beginning, middle, and end of tape winding. Rewind and Playback tape. Measure wow and flutter with a Wow and Flutter Meter. (The wow and flutter value of Method B will be close to twice that of Method A.)

3. FREQUENCY RESPONSE

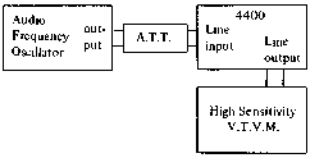


Fig. 3

For measuring frequency response connect instruments as shown in Fig. 3 and proceed as follows:

1) Supply a 1,000 Hz sine wave to the Line Input of Model 4400 from an Audio Frequency Oscillator through an Attenuator. Set recorder to recording mode and turn recording level volume control to maximum. Adjust Attenuator to obtain a +4 dB V.T.V.M. reading.
2) Under conditions described in 1) above, readjust Attenuator so that the Line Output is −16 dB, and record 40 to 20,000 Hz spot frequencies.
3) Rewind tape and playback from the beginning. Take V.T.V.M. spot frequency readings and plot values on a graph.

NOTE: When measuring frequency response, new tape should be used.

4. SIGNAL TO NOISE RATIO

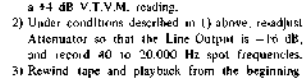


Fig. 4

As shown in Fig. 4, connect a High Sensitivity V.T.V.M. to the Line output of Model 4400. Playback a 250 Hz "0" VU pre-recorded test tape and measure the output. Then remove the tape and measure the noise level under the same condition. Convert each of the measured values into decibels.

5. TOTAL HARMONIC DISTORTION FACTOR

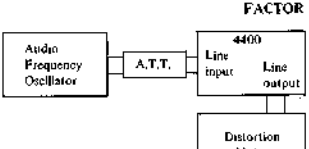


Fig. 5

Connect the measuring instruments as shown in Fig. 5 and record a 1,000 Hz sine wave signal at "0" VU. Playback the resultant signal and measure the overall distortion factor. Measure the noise level of the tape recorder without the tape. Connect the Audio Frequency Oscillator directly to the distortion meter for measurement of the distortion factor of the oscillator. The required distortion factor can be obtained from the results of the above measurement by the following formula:

$$d_0 = d - d_1 - d_2$$

where, d_0 = Required distortion factor
d = Overall distortion factor
d_1 = Noise level
d_2 = Distortion factor of the oscillator

NOTE: When measuring the distortion factor, new tape should be used.

6. CROSS TALK
(Cross talk between the tracks)

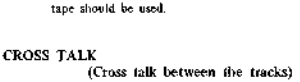


Fig. 6

As shown in Fig. 6, first record a 1,000 Hz sine wave signal on Track No. 3 at +3 VU level. Next, record under a non-input condition. Then, playback the tape on Tracks No. 3 and 4 through the B.P.F. (band pass filter sensitivity . . . 1:1) and obtain a ratio between the two from the following formula:

$$C = 20 \log \frac{E_0}{E_2 - E_1} \text{ (dB)}$$

where, C = Desired cross talk ratio (dB)
E_0 = 1,000 Hz signal output level
E_2 = 1,000 Hz cross talk level
E_1 = Non-input signal recorded level

7. ERASE RATIO

As shown in Fig. 4, connect a High Sensitivity V.T.V.M. to the Line Output of Model 4400. Playback a virgin tape and take a V.T.V.M. reading of the output level. Next, record a 1,000 Hz sine wave signal at +3 dB, then playback this recorded signal and take a V.T.V.M. reading of the output level. Next, using this pre-recorded tape, record under a non-input condition and take a reading of the noise level output of the erased signal and obtain a ratio between the two from the following formula:

$$Er = 20 \log \frac{E_0}{E_2 - E_1} \text{ (dB)}$$

where, Er = Desired erase ratio (dB)
E_0 = 1,000 Hz signal output level
E_2 = Non-input signal recorded level
E_1 = Virgin tape noise output level

8. POWER OUTPUT (4400 only)

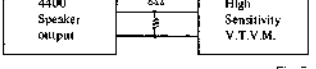


Fig. 7

As shown in Fig. 7, connect an 8Ω dummy load resistor to the speaker output of the recorder and connect this terminal to a High Sensitivity V.T.V.M. Playback a 250 Hz "0" VU pre-recorded test tape and take a V.T.V.M. reading of the output level. The resultant output can be obtained from the results of the above measurement by using the following formula:

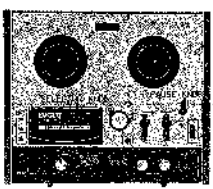
$$P = \frac{E^2}{R} \text{ (W)}$$

where, P = Desired power output (watts)
E = Measured voltage (R.M.S.)
R = 8Ω

III. DISMANTLING OF UNIT

In case of trouble, etc. necessituting disassembly, please disassemble in the order shown in photographs. Reassemble in reverse order.

1



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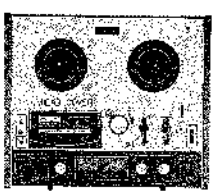

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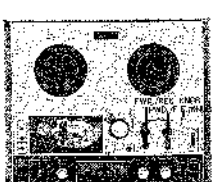

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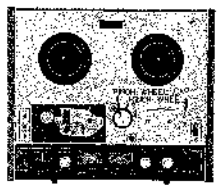

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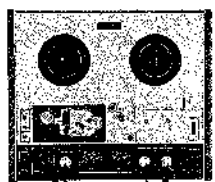

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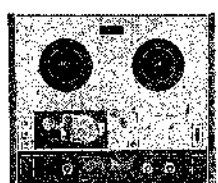

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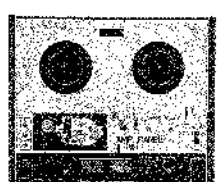

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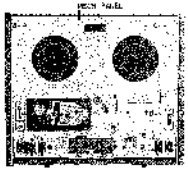

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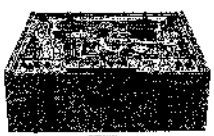

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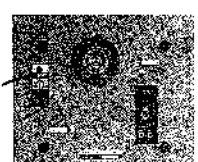

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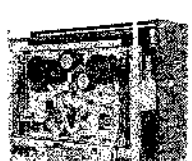

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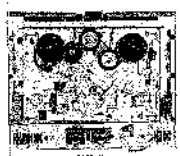

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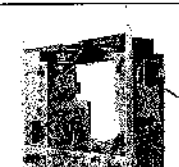
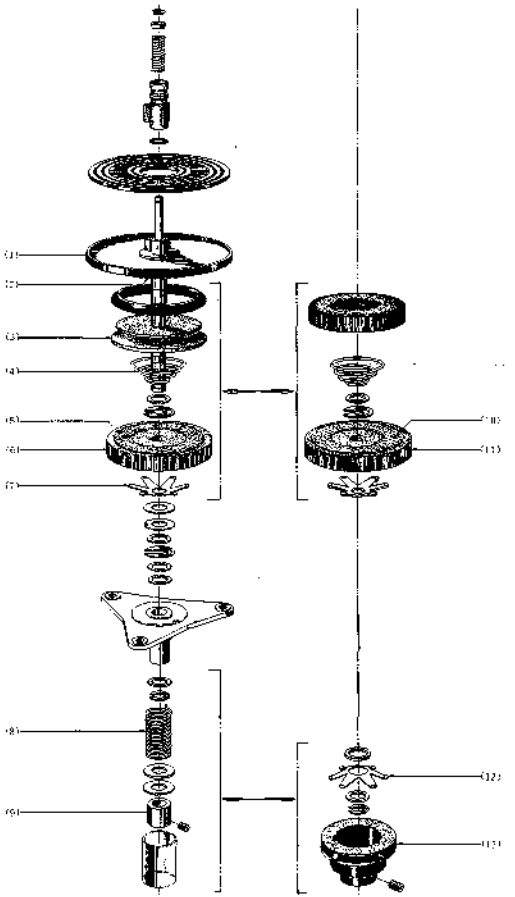




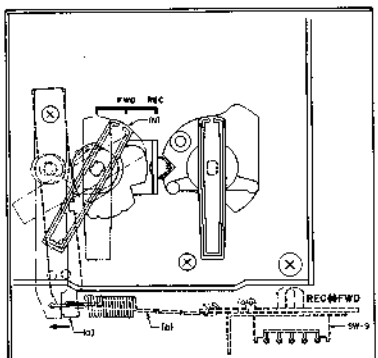


Fig. 9

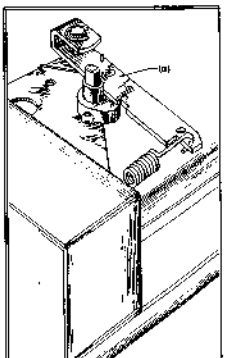


Fig. 10

1. PINCH WHEEL ADJUSTMENT

It is important that the pinch wheel shaft be kept in perfect alignment with the capstan shaft. Proper pinch wheel pressure is between 1,000 and 1,150 grams when the unit is operated at the tape speed of 7-1/2 ips. Any deviation from this specification will result in wow and flutter. Check pinch wheel pressure with a spring scale, and if necessary, adjust the pinch wheel load spring.

2. SUPPLY REEL SHAFT ASSEMBLY ADJUSTMENT (See Fig. 8 at left)

Felt clutch material (2) is used between the lower side of the reel table base plate (1) and the rewind pulley (3) to protect recording tape from excessive tension during rewind operation. To check the amount of friction of this part, install a 5-inch reel with a 60 mm diameter tape and gently pull the end of the tape upward with a spring scale. Adjust the conical spring (4) so that the amount of tension is kept between 400 and 500 grams. Other felt clutch material (5) is attached to the supply roller (6) to provide proper slippage during FWD and REC operation. The procedure for checking friction of this part is the same as the foregoing, and between 80 and 100 grams of tension gives best results. Adjust the spring (7) just under the supply roller (6). When the unit is set to fast forward operation, the amount of friction will decrease to from 15 to 20 grams. Check to see whether this is satisfactory. If not, adjust the spring plate (8) and the pressure of the pulley (9).

3. TAKE-UP REEL SHAFT ASSEMBLY ADJUSTMENT (See Fig. 8 at right)

Felt clutch material (2) is attached to the bottom side of the reel table base plate (1) so that the recording tape will not stretch during fast forward operation due to excessive tension. To check the amount of friction of this part, install a 5-inch reel with a 60 mm diameter tape, and gently pull the end of tape upward with a spring scale. Adjust the conical spring (4) so that the amount of tension at this part is kept between 400 and 500 grams. Other felt clutch material (10) is attached to the take-up roller (11). This is to provide proper slippage during FWD or REC operation. The procedure for checking friction of this part is the same as the foregoing, and between 150 and 180 grams of friction provides the best results. Adjust the spring plate (7) just under the take-up roller (11). When the unit is set to rewind operation, the amount of friction of this part will decrease to from 15 to 20 grams. Check to see whether this is satisfactory. If not, adjust the spring (12) and the pressure of the set sleeve (13).

4. RECORDING/PLAYBACK CHANGING MECHANISM (See Figs. 9, 10)

Turning the FWD/REC knob (N) to recording position causes Lever (a) to pull Recording Lever (b) (as illustrated by dotted line), and the FWD/REC Changing Switch (SW-9) is turned to recording position. If Lever (a) does not pull Lever (b) properly, Changing Switch SW-9 will not operate properly. This may cause abnormal oscillation and inability to record. In this case, loosen Screw (c) and adjust lever.

V. HEAD ADJUSTMENTS

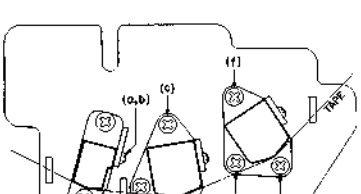


Fig. 11

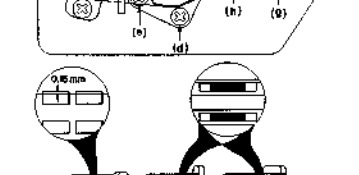


Fig. 12

Since adjustment of the Heads critically affects tape recorder performance, it is essential that Heads be carefully adjusted with precision measuring equipment and suitable recorded tape.

1. HEAD HEIGHT ADJUSTMENT (See Figs. 11, 12)

1) Erase Head
Adjust height control screws (a), (b) by turning to left and right so that the upper edge of the tape is 0.15 mm lower than the upper edge of the erase head core.

2) Recording Head
Adjust the screws (c), (d) by turning to left and right until the width between the upper edge of channel 1 head core and upper edge of the tape is equal.

3) Playback Head
Adjust the screws (f), (g) by turning to left and right until the width between the upper edge of channel 1 head core and upper edge of the tape is equal.

2. HEAD SLANT ADJUSTMENT (See Figs. 11, 12)

Adjust the screws (Head Height control screws) by turning to left and right so that each head (Erase, Recording and Playback Head) contacts the tape surface at a right angle.

3. HEAD AZIMUTH ALIGNMENT ADJUSTMENT (See Figs. 11, 12)

1) Playback Head
Playback an Ampex Alignment test tape (8,000 Hz 3-3/4 ips.) at 7-1/2 ips. Adjust screw (h) by turning to left and right until the various line outputs are maximum.

2) Recording Head
At recording mode, supply a 15,000 Hz sine wave at a −10 dB recording level from an Audio Frequency Oscillator to the line input of the 4400, and set the Monitor switch to "TAPE" position. Then adjust screw (e) by turning to left and right until the various line outputs are maximum.

4. Repeat adjustments outlined in Items 1–2) to 3, above 2 or 3 times to obtain optimum adjusted condition.

VI. AMPLIFIER ADJUSTMENTS

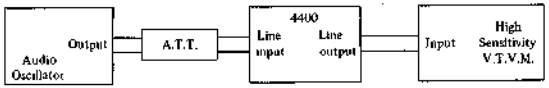


Fig. 13

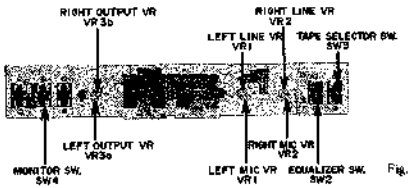


Fig. 14

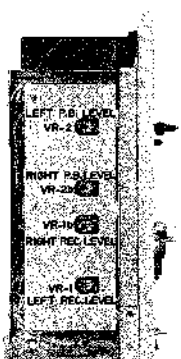


Fig. 15

1. PLAYBACK LEVEL ADJUSTMENT (See Figs. 13 to 16)

1) Set the Monitor switch to "TAPE" position and Equalizer switch to 7-1/2 ips.
2) In case of 4400D, set output VR (VR3a, b 10 kB) to maximum.
3) Connect a High Sensitivity V.T.V.M. to the line output.
4) Playback a 250 Hz pre-recorded test tape at 7-1/2 ips., and adjust semi-fixed resistor VR2 and VR2b (20 kB) to obtain a 4 dB P.B. level. (VU meter indicates "0" VU.)
Recording Amplifier Adjustment should be made only after Head Adjustments and Playback Amplifier Adjustments have been made.

2. RECORDING LEVEL ADJUSTMENT (See Figs. 13 to 16)

1) Set the Monitor switch to "TAPE" position and Equalizer switch to 7-1/2 ips.
2) Connect an Audio Frequency Oscillator to the line input and High Sensitivity V.T.V.M. to the line output.
3) Load a Scotch-111 blank tape and set recorder to "REC" mode.
4) In case of 4400D, set output VR (VR3a,b 10 kB) to maximum.
5) Supply a 1,000 Hz sine wave from an Audio Frequency Oscillator and adjust the line recording level control volumes (VR1 and VR2 50 kB) until the line output level reaches 4 dB. (VU meter indicates "0" VU.)
6) Set the Monitor switch to "SOURCE" position.
7) Adjust semi-fixed resistor VR1 and VR1b (2 kB) to obtain 4 dB recording level. (VU meter indicates "0" VU.)
8) Repeat 2 times in the same way as indicated in items 5) to 8) above.

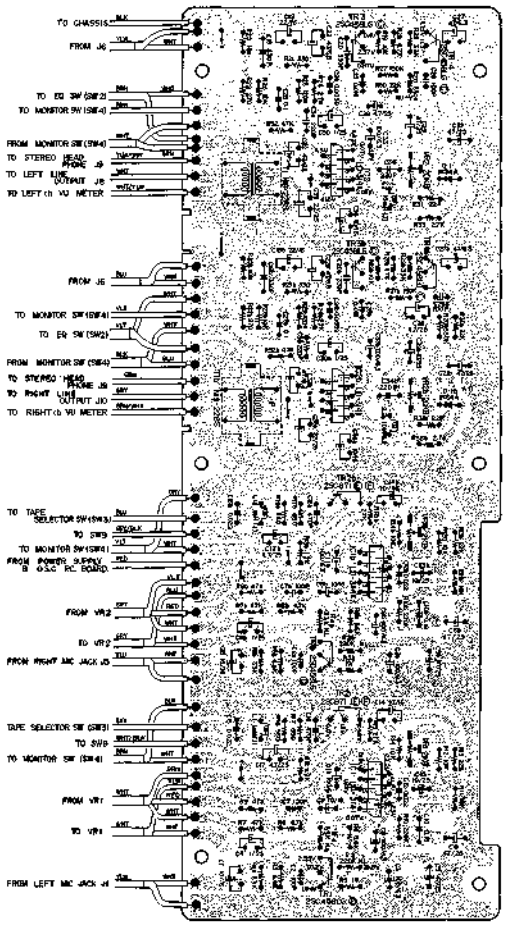


Fig. 16 PRE-AMP. P.C. BOARD (LE-5022)

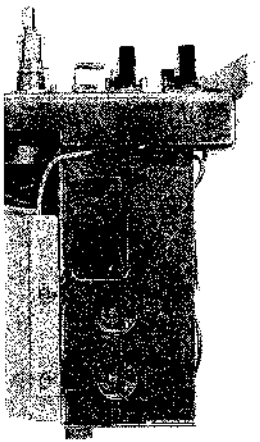


Fig. 17

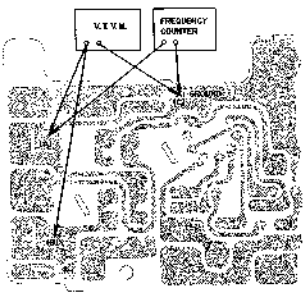


Fig. 18

3. RECORDING BIAS FREQUENCY ADJUSTMENT (See Fig. 18)

1) Set the recorder to recording mode.
2) Connect a Frequency counter to points (A) and (C) in Fig. 18 of the Oscillator P.C. Board (LE-502J) and read the frequency indication.
3) If the bias frequency is 105 kHz ±5%, the bias frequency is correct.
4) If the bias frequency is incorrect, it can be adjusted by changing the value of condenser C8 (5600 PF) of the oscillator P.C. Board (LB-5021).

4. RECORDING BIAS VOLTAGE ADJUSTMENT (FREQUENCY RESPONSE ADJUSTMENT) (See Figs. 17, 18)

1) Set the Monitor switch to "TAPE" position and Equalizer switch to 7-1/2 ips.
2) Connect an Audio Frequency Oscillator to the line input through an Attenuator and a High Sensitivity V.T.V.M. to the line output.
3) Load a blank test tape "AKAI 1(0L" (Fuji S-100) and set the recorder to "REC" mode.
4) Turn recording level control volume VR1 and VR2 (50 kA) to obtain 4 dB V.T.V.M. reading.
5) Under conditions described in Item 4) above, readjust attenuator so that the line output level is −16 dB.
6) Record from 40 to 20,000 Hz spot frequencies.
7) Adjust Bias Adjustment semi-fixed condenser C6 (70 PF max.) so that the output of 1,000 Hz and 15,000 Hz frequencies are equal.
8) The bias voltage at this time is around 1 V A.C.

5. ERASE VOLTAGE

1) Set the recorder to "REC" mode.
2) Connect a V.T.V.M. to points (B) and (C) in Fig. 18 of the oscillator P.C. Board (LE-5021) and read the V.T.V.M. indication.
3) The Erase Voltage is around 52V A.C.

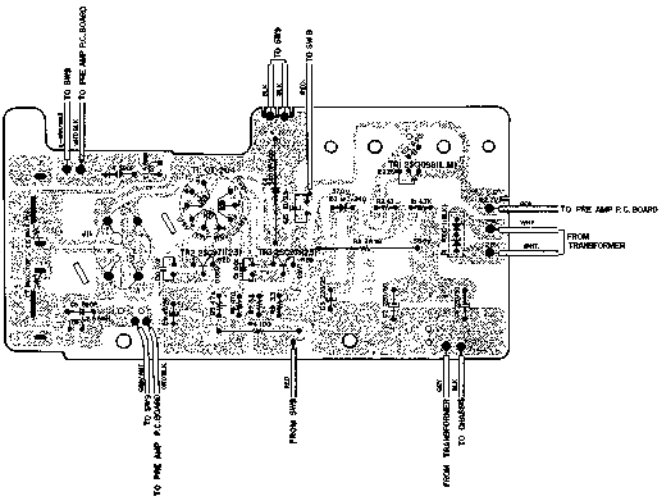


Fig. 19 OSC. POWER P.C. BOARD (LE-5021)

VII. DC RESISTANCE

1. HEAD DC RESISTANCE

P.B. Head . . . . . 91.5Ω ±10Ω
REC. Head . . . . . 15.3Ω ±10Ω
ERASE Head . . . . . 3.5Ω ±1Ω

2. MOTOR DC RESISTANCE

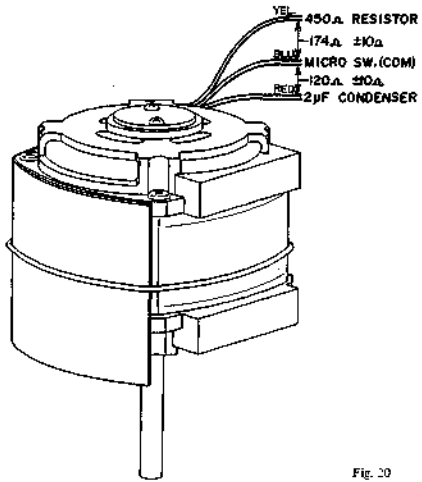
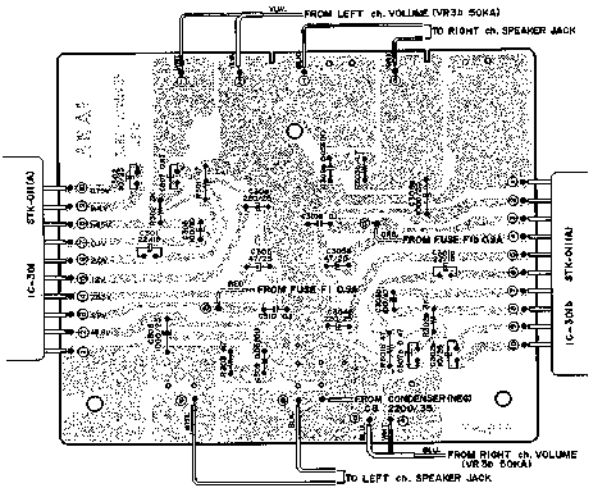


Fig. 20

VIII. COMPOSITE VIEWS OF COMPONENTS

MAIN AMP. P.C. BOARD (LE-5213)



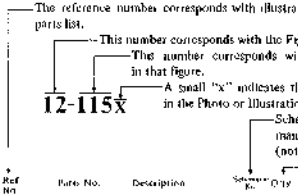
SECTION 7

PARTS LIST

TABLE OF CONTENTS

HOW TO USE THIS PARTS LIST

1. This parts list is compiled by various individual blocks based on assembly process.
2. When ordering parts, please describe parts number, serial number, and model number in detail.
3. How to read List

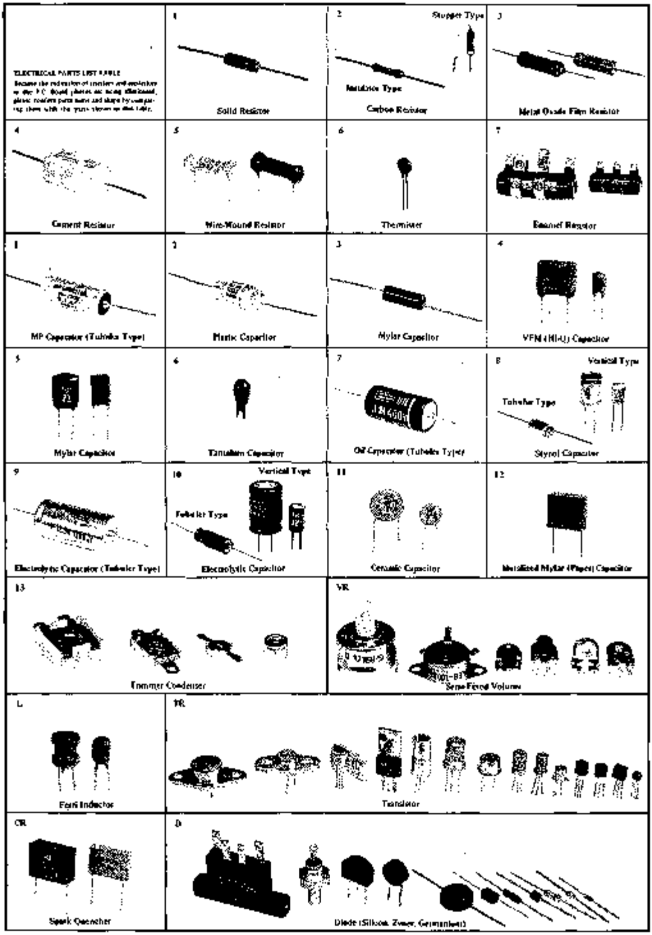


Ref No.	Parts No.	Description	Schematic No.	Qty
		FLYWHEEL BLOCK #13		
12-115X	200425	Flywheel Block Assy. Comp.	BD-213	1
12-116	240506	Flywheel Only	BD-256	1
12-117X	244754	Felt, Flywheel	BD-255	1
12-118	251351	Main Metal Case	BD-254	1
12-119	253030	Main Metal	BD-253	1

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of Components or the Schematic Diagram or Service Manual.
5. The indications of Resistors and Capacitors in the photos of P.C. Board are being eliminated.
6. The shape of the parts and parts name, etc. can be confirmed by comparing them with the parts shown on the Electrical Parts Table of P.C. Board
7. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List
   It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index. (meaning of ref. no. outlined in Item 3 above).
8. Utilize separate "Price List for Parts" to determine unit price. The most simple method of finding parts Price is to utilize the reference number.

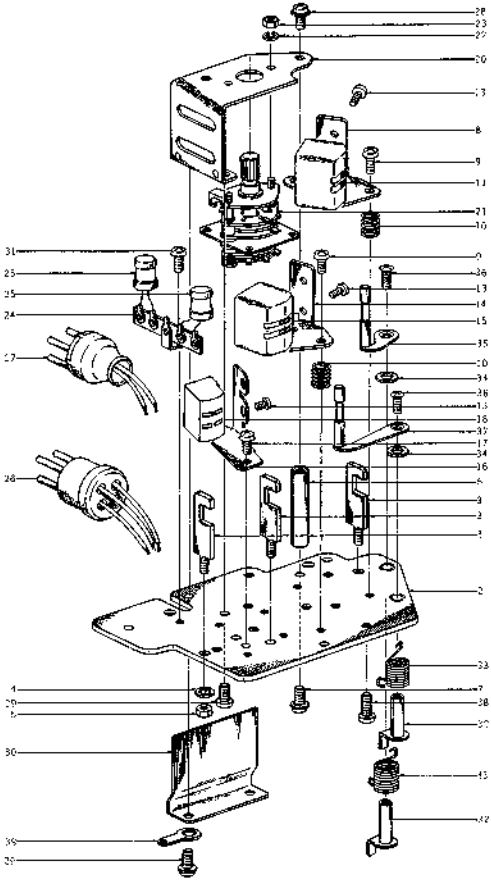
ELECTRICAL PARTS TABLE

ELECTRICAL PARTS LIST TABLE
Because the reduction of numbers and notation on the P.C. Board plates are being eliminated, please confirm parts name and shape by comparing them with the parts shown in this table.



1
Solid Resistor
2
Stopper Type
Insulation Type
Carbon Resistor
3
Metal Oxide Film Resistor
4
Cement Resistor
5
Wire-Wound Resistor
6
Thermistor
7
Enamel Resistor
1
MP Capacitor (Tubular Type)
2
Plastic Capacitor
3
Mylar Capacitor
4
VEM (HI-U) Capacitor
5
Mylar Capacitor
6
Tantalum Capacitor
7
Oil Capacitor (Tubular Type)
8
Vertical Type
Tubular Type
Styrol Capacitor
9
Electrolytic Capacitor (Tubular Type)
10
Vertical Type
Tubular Type
Electrolytic Capacitor
11
Ceramic Capacitor
12
Metallized Mylar (Paper) Capacitor
13
Trimmer Condenser
VR
Semi-Fixed Volume
L
Ferri Inductor
TR
Transistor
CR
Spark Quencher
D
Diode (Silicon, Zener, Germanium)

FIG. 1 ILLUSTRATION OF HEAD BLOCK



HEAD BLOCK

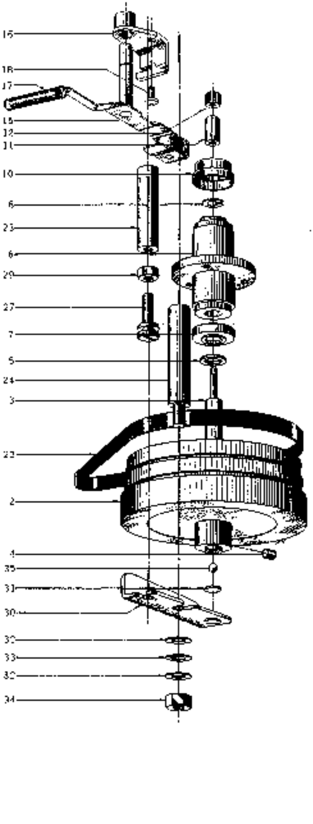
Ref. No.	Parts No.	Description	Schematic No	Q'ty
1-1x	BH490195	Head Block Comp.	LE-2	1
1-2	HZ490296	LD Head Base B (New), w/metal	LD-11	1
1-3	HZ274182	Tape Guide #1	ATR-5	3
1-4	ZW273302	Toothed Lock Washer M3		3
1-5	ZW273756	Nut M3		3
1-6	MH315827	LD Switch Prop. New	LD-13	1
1-7	ZW417021	Screw, binding head 3x8, w/washer		1
1-8	HZ480420	P.B. Angle Base	LE-0001	1
1-9	ZW464714	Screw, round head 3x12		6
1-10	ZQ206144	Angle Adjust Spring	RD-16	6
1-11	HF375131	REC./P.B. HEAD P4-150		1
1-12x	HZ393974	1-HX Head Terminal Plate	HC-19	2
1-13	ZW477806	Screw, pan head 2x3		6
1-14	HZ480831	Rec. Angle Table	LE-0002	1
1-15	HR475446	REC. HEAD P4-154		1
1-16	HZ480442	Erase Head Base	LE-0003	1
1-17	ZW323778	Screw, binding head 3x5		2
1-18	HE384403	ERASE HEAD B4-200		1
1-19x	HZ480453	LD Switch Table Comp., New LE	LE-0005	1
1-20	HZ311805	LD Switch Table, New	LD-12	1
1-21	ES257008	Rotary Switch ESR-K263L14AS	SS-5-3	1
1-22	ZW273723	Spring Washer M2		2
1-23	ZW273734	Nut M2		2
1-24	EJ255115	Lug Plate VB2L2	SS-5-3	1
1-25	EQ390622	Ferri Inductor FL9H 220μH(K)	ZS-1-4	2
1-26	EJ297843	4P Plug, w/cap	42-1-3	1
1-27	EJ276963	T type 4P Plug	42-1-34	1
1-28	ZW417025	Screw, binding head 3x8, w/washer		8
1-29	ZW413223	Screw, binding head 3x5, w/washer		3
1-30	HZ480475	Head Shield	LE-0004	1
1-31	ZW323738	Screw, binding head 3x5		1
1-32	HL223503	Shift Lever B, w/shaft A	MR-3	2
1-33	ZG312928	Shifter Spring	LD-15	2
1-34	ZW336846	Washer (SPG) D4.1x7x1.2t		2
1-35	HL312941	Shift Lever, w/pin	LD-15	1
1-36	ZW480622	Screw, oval countersunk head 2.3x6		2
1-37	HL223536	Shift Lever C, w/pin	MR-5	1
1-38	ZW413155	Screw, binding head 3x6		1
1-39	ZW273776	Earth Lug M3		1

SUPPLY/TAKE-UP REEL TABLE BLOCK

Ref. No	Parts No.	Description	Schematic No.	Q'ty
2-1x	BR490184	Supply Reel Table Block Comp.	LE-2	1
2-2x	BR490206	Take-up Reel Table Block Comp.	LE-2	1
2-3	MT368684	Reel Table Disk A, w/shaft A	XR-101	2
2-4x	MT252132	Friction Cloth B	900-253	2
2-5	MT317963	MR Reel Table Rubber	MR-150	2
2-6	MR255690	Reel Shaft B	XR-105	2
2-7	MT297963	3R 'O' Ring 2.9x1.65M	3R-129	2
2-8	MT255420	Reel Retainer	3R-105	2
2-9	ZG255633	Reel Spring	3R-109	1
2-10	MT258565	Reel Shaft Ring	XR-107	2
2-11	ZW250688	'E' Ring 1.9M	6-15	2
2-12	MR251460	Rewind Pulley	900-222	1
2-13	MT252066	Rubber Ring	900-254	1
2-14	ZG227553	Spring G2 (Left)	900-229	1
2-15	ZW260021	Washer (SUP) D6.1x10x0.13t		3
2-16	ZW260054	Washer (SUP) D6.1x10x0.25t		3
2-17	ZW260065	Washer (SUP) D6.1x10x0.35t		3
2-18	MT255870	Reel Table Thrust Retainer Pin	900-257	2
2-19x	MT252101	Friction Cloth A	900-251	1
2-20	MR252066	Take-up Roller C	900-220	1
2-21	MT255931	Reel Table Spring Plate A	900-227	1
2-22	MT438647	Reel Torque Adjust Thrust 2 D6.2x13x0.5t	103018	2
2-23	ZW231693	Claw Thrust Washer	900-225	2
2-24x	MT438592	Reel Torque Adjust Thrust 2 D6.1x10x0.3t	103017	2
2-25x	MT438603	Reel Torque Adjust Thrust 3 D6.1x10x0.5t	103018	2
2-26	MT292386	XR Reel Metal Mt. Part, w/metal B	XR-101	2
2-27	MT438614	Reel Torque Adjust Thrust 4 D6.1x10x0.8t	103019	2
2-28	ZW312693	'E' Ring 4M	6-14	2
2-29	ZG434092	Spring F4-B	LP-2004	1
2-30	MT440313	Nylon Tube D12		2
2-31	MT438636	Reel Torque Adjust Thrust 6 D6.2x13x1t	103021	3
2-32	MT228598	Set Sleeve B	1"-06	2
2-33	ZW434160	Set Screw, hexagon socket 3x3 (cup)		1
2-34	MR252044	Take-up Roller A	900-218	1
2-35	ZG227552	Spring G2 (Right)	900-230	1
2-36	ZW260021	Washer (SUP) D6.1x10x0.13t		3
2-37x	ZW260054	Washer (SUP) D6.1x10x0.25t		2
2-38x	ZW260065	Washer (SUP) D6.1x10x0.35t		3
2-39	MT255870	Reel Table Thrust Retainer Pin	900-257	2
2-40x	MT252101	Friction Cloth A	900-251	1
2-41	MR252066	Take-up Roller C	900-220	1
2-42	MT255962	Reel Table Spring Plate B	900-228	1
2-43	MT437604	Thrust A D7.9x13x1t (Fly wheel)	103024	1
2-44	MT255993	Reel Table Spring Plate C	900-267	1
2-45	ZW260065	Washer (SUP) D6.1x10x0.35t		1
2-46	ZW270000	Retaining Pin D4	900-257	1
2-47	MR256094	Reel Table Pulley	900-229	1
2-48	ZW434171	Set Screw, hexagon socket 4x7 (cup)		1
2-49x	MT438581	Reel Torque Adjust Thrust 1 D5.8x10.3x1t	103016	1

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

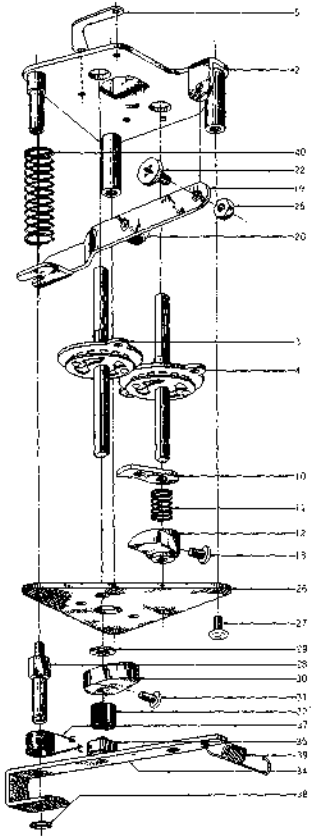
FIG. 4 ILLUSTRATION OF FLYWHEEL/ BELT CHANGE LEVER BLOCK



FLYWHEEL/BELT CHANGE LEVER BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
	FLYWHEEL BLOCK			
4-1x	BF205075	Flywheel Block #5 Comp.		1
4-2	BF244473	Flywheel	707-5-10	1
4-3	MS244708	Flywheel Shaft	SRA-21	1
4-4	ZW373577	Set Screw, hexagon socket 5x6 (flat)		2
4-5	ZW447208	Flywheel Thrust B D7.9x13x0.5t	10985	1
4-6	MZ296267	Main Case B 24 Comp.	1630-206	1
4-7	MZ446635	Thrust Cap, Main Metal B2	LF-2046	1
4-8	ZW244710	Flywheel Fixing Pin	9H-250	1
4-9x	MZ244113	Felt D12.5x16x2t		1
4-10	MZ253113	Main Metal Cap B	MH-207	1
4-11	MY270055	Capstan D8	SRA-7	1
4-12	ZW293027	1100 Capstan Screw	SRA-88	1
4-13x	ZW252977	Main Shaft Collar	SRA-32	1
	BELT CHANGE LEVER BLOCK			
4-14x	BL203523	Belt Change Lever Block Comp.	A	1
4-15	ML217451	Belt Change Lever (Small), w/roller B	MH-251	1
4-16	MZ248354	Belt Guide Stop, w/metal	4TH-221	1
4-17	ZG217337	Belt Return Spring	4TH-224	1
4-18	ZW417150	Screw, pan head 4x6		1
4-19x	ZG217394	Belt Change Spring B	MH-125	1
4-20x	ZW260054	Washer (SUP) D6.1x10x0.25t		1
4-21x	ZW290283	"U" Ring 2.85M	6-3-1	1
	ASSEMBLY BLOCK			
4-22	MB256601	Double Face Flat Belt D=110	10932	1
4-23	MZ244631	Flywheel Prop B	4TR-335	1
4-24	MZ244620	Flywheel Prop A	4TR-334	1
4-25x	ZW424056	Screw, pan head 4x10		1
4-26x	ZW213914	Spring Washer M4		1
4-27	ZW244574	Flywheel Support Adj. Screw	4TR-114	1
4-28x	ZW231794	Tape Guide Washer (Small)	3A-355	1
4-29	ZW413278	Nut M5		1
4-30	MZ244530	Flywheel Support Plate B	MS-109	1
4-31	ZW235585	Nylon Plate D=8		1
4-32	ZW413998	Washer (SUP) D6.8x12.7x1t		1
4-33	ZW390232	Spring Washer 1/4"		1
4-34	ZW413280	Inch Nut 1/4" (Mountain 20)		1
4-35	MV269965	Steel Ball 4mm		1

FIG. 5 ILLUSTRATION OF SWITCH BLOCK

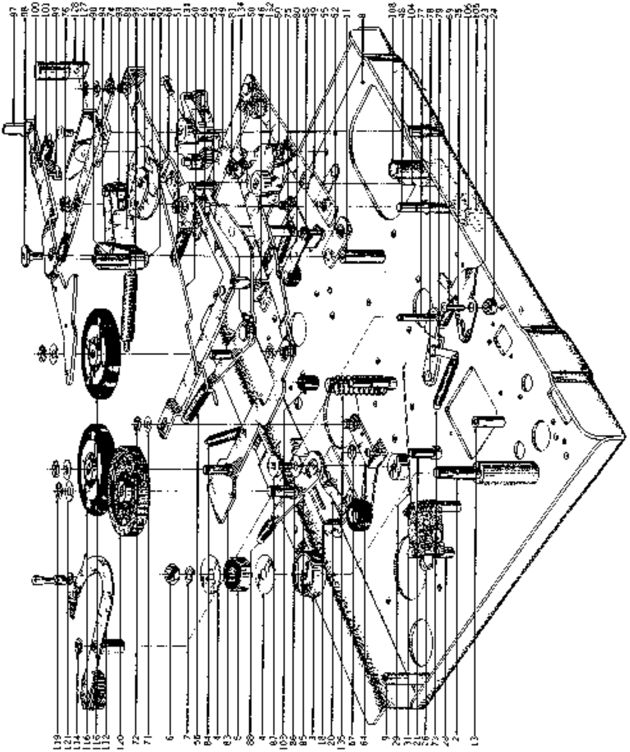


SWITCH BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
5-1x	BS480353	Switch Block Comp.	LE	1
5-2	MZ316901	Switch Table A-2 (SX), w/prop	SH-201	1
5-3	ES316934	Y type Rwd. Shaft	SA-A-5	1
5-4	ES269865	RCC Y type Rwd. Shaft	RCC-202	1
5-5	MZ316935	Nut Plate	MR-246	2
5-6x	ZW202138	Screw, binding head 3x6, w/washer		4
5-7x	MZ316956	Cam A-3	MR-342	1
5-8x	ZW413201	Screw, pan head 4x8		1
5-9x	ZW260133	Washer (Fiber) D6.1x10x1t		2
5-10	MZ327341	Cam Trap Plate B	SX-201	1
5-11	ZG227566	Spring K	390-214	1
5-12	MZ327352	Cam C-2	SX-202	1
5-13	ZW201778	Screw, pan head 4x8		1
5-14x	ZW434215	Washer (Nylon) D6.5x10.3x 0.3t		1
5-15x	ZW434193	Washer (Nylon) D6.1x10.3x 0.5t		1
5-16x	MV270066	Steel Ball D8		1
5-17x	MZ317293	Cam B-2, without Tap	MSH-201	1
5-18x	ZW416687	Screw, binding head 4x8		1
5-19	ML287128	Lever J, w/shaft	390-209	1
5-20	MZ317203	Cam Roller A (Nylon)	390-203	1
5-21x	ZW290283	"U" Ring 2.85M	E-3-1	1
5-22	ZW217877	Paste Lever Resisting Screw	300-126	1
5-23x	ZW260166	Washer (Nylon) D6.2x13x 0.125t		1
5-24x	ZW273842	Toothed Lock Washer M4		1
5-25	ZW273960	Nut M4		1
5-26	MZ225720	Switch Table B-2	MS-346	1
5-27	ZW413201	Screw, pan head 4x8		2
5-28	MZ258551	Rec. Lever Prop	MS-303	1
5-29	ZW260133	Washer (Fiber) D6.1x10x1t		1
5-30	MZ317068	Amp. Switch Cam B	MR-203	1
5-31	ZW413201	Screw, pan head 4x8		1
5-32	MZ217686	Paste Lever Cushion	LC-102	1
5-33x	BL480150	Switch Lever Block Comp.	LE	1
5-34	ML488744	Rec. Lever C, w/shaft B	LE-3845	1
5-35	MR269728	Cam Roller D12.5	RC-326	1
5-36x	ZW290283	"U" Ring 2.85M	E-3-1	1
5-37	ZG227564	Spring H	390-220	1
5-38	ZW290283	"U" Ring 2.85M	E-3-1	1
5-39	SL493943	Rec. Wire B	LE-4028	1
5-40	ZG227485	Spring E	600-119	1

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

FIG. 6 ILLUSTRATION OF MECHANISM ASSEMBLY BLOCK



MECHANISM ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
	TAPE GUIDE BLOCK			
6-1A	BZ400948	Tape Guide Block 64 Comp.	[illegible]	1
6-2	MZ204311	Tape Guide Prop #1700	[illegible]	1
6-3	SZ465377	Tape Guide Table A	[illegible]	1
6-4	ZW231805	Tape Guide Washer (Large)	[illegible]	2

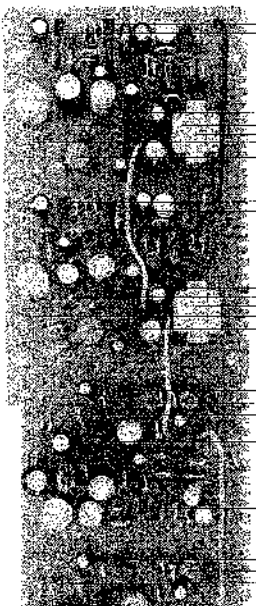
When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
6-5	MV248117	Bearing 635AHZZ-CIE-B32		1
6-6	ZW274048	Nut M5		1
6-7	ZW274026	Spring Washer M5		1
	ASSEMBLY BLOCK			
6-8	MZ271116	Mech. Frame LD, w/bush	LD-101	1
6-9	MZ273295	M-9 Mech. Panel Prop	M9-305	4
6-10x	ZW414033	Screw, countersunk head 3x8		4
6-11	MS257051	Lever FA Shaft	900-127	1
6-12x	ZW413267	Flange Nut M4		4
6-13	HZ247511	Head Prop C	900-142	2
6-14x	ZW413201	Screw, pan head 4x8		1
6-15x	ZW414044	Screw, countersunk head 4x8		1
6-16x	MH258816	Hexagon Head Prop	LD-102	1
6-17x	MZ410938	Belt Guide Pin	LF-1009	1
6-18	MZ257073	Lever FB Guide Base	M9-103	1
6-19x	ZW417150	Screw, pan head 4x6		2
6-20	ZG257095	Lever FB Vibration Proof Spring	M9-104	1
6-21	MS245463	Brake Lever Shaft	900-129	2
6-22x	MZ245485	Brake Lever Pin (AAL, CSA)	900-186	1
6-23	MZ312524	Shifter Cam	LD-106	1
6-24	MZ312535	Shifter Cam Collar	LD-107	1
6-25	ZW393726	Screw, truss head 3x10		1
6-26	BS250007	Micro Switch M-8-3 U/L	25-1-6	1
6-27x	ER450786	Spark Quencher U/L 0.1μ+120 400WV (AAL,CEE)	40-1-33	1
6-28	MZ373961	Micro Switch Prop	[illegible]	1
6-29	MZ205817	Actuator JW-560	21-1-5	1
6-30x	ZW414055	Screw, binding head 3x30		1
6-31	ZW414066	Screw, binding head 3x25		1
6-32x	ZW273746	Nut M3		1
6-33x	ZW273802	Toothed Lock Washer M3		1
6-34x	ML308564	Belt Vibration Stopper (AAL, CSA)	[illegible]	1
6-35x	ZW413165	Nut M4		2
6-36x	MZ452496	Cycle Angle (CEE)	LS-1007	1
6-37x	ZW413201	Screw, pan head 4x8		1
6-38x	ZW330412	Adjust Washer (U) D4x13x0.13t		1
6-39x	ZW330423	Adjust Washer (U) D4x13x0.25t		1
6-40x	ZW330434	Adjust Washer (U) D4x13x0.5t		1
6-41x	ZW330445	Adjust Washer (U) D4x13x0.8t		1
6-42x	ZW273881	Earth Lug M4		1
6-43x	ZW413267	Flange Nut M4		3
6-44x	ZW462835	Washer (PBP) D4.3x11x0.2t		1
6-45x	ZW462846	Washer (PBP) D4.3x11x0.3t		1
6-46	ML475920	New Spring Hook	900-185	1
6-47x	ZW323728	Screw, binding head 3x5		1
6-48	MS260315	A Lever Shaft	900-186	1
6-49	ML309093	Lever B, w/lever D	900-108	1
6-50	MZ217203	Cam Roller A (Nylon)	900-153	2
6-51	ZG460427	Spring B-3	LS-2004	1
6-52	MZ253653	Metal M1. Part, w/metal	900-115	1
6-53	ML270685	G Lever, w/lever HB	900-109	1
6-54x	ZW260054	Washer (SUP) D5.1x10x0.25t		1
6-55	MZ217708	Pause Lever Retaining Metal B	900-170	1
6-56	ZG227575	Spring I	900-121	1
6-57x	MZ256814	Rwd. Shaft Spacer	M9-124	2
6-58x	ZW202105	Screw, binding head 3x5, w/Lug Plate		1
6-59	ZG208091	Impedance Arm Spring	LD-205	1
6-60	ZG312745	Shifter Spoke	LD-108	1
6-61	MZ293567	Head Lifter Cam A #1630	1630-104	1
6-62	MZ293578	Head Lifter Cam B #1630	1630-105	1
6-63x	ZW413223	Screw, binding head 3x5, w/washer		1
6-64	ML217934	Supply Brake Comp.	900-113	1
6-65	ML251932	Take-up Brake Comp.	900-114	1
6-66x	ZW259942	Washer (Fiber) D5.3x10.3x0.5t		4
6-67	ZW290283	"U" Ring 2.85M	6-1-1	4
6-68	ML300761	707 Lever A, w/metal	LC-103	1

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
6-69	ML257196	Lever LC, w/lever E2	LC-808	1
6-70x	ZW201767	Screw, pan head 4x6, w/washer		2
6-71	ZW210918	Washer (Press Pan) D5.1x10.3x0.25t		4
6-72	ZW290283	"U" Ring 2.85M	6-1-1	3
6-73	ZG290384	UN Spring D	1630-108	1
6-74	ML256983	Lever C2	900-104	1
6-75	ZG227452	Spring D	900-116	1
6-76	ZG227441	Spring C	900-117	1
6-77	MZ260662	AS Lever Prop Base, w/prop	4TR-236	1
6-78	ZW323728	Screw, binding head 3x5		2
6-79	ZW273767	Earth Lug D3x20L		1
6-80	ML257040	Lever FA, w/pin	900-106	1
6-81	MZ217203	Cam Roller A (Nylon)	900-153	1
6-82x	ZW290283	"U" Ring 2.85M	6-1-1	2
6-83	ML295727	2 Speed Motor Lever F, w/shaft	M9-307	1
6-84	ZG120358	F.B. Pull Spring	M9-111	1
6-85	ML257163	Lever K, w/shaft	900-111	1
6-86	ZW260166	Washer (Nylon) D6.2x13x0.125t		2
6-87	ZW223233	Fulcrum Screw A	900-135	1
6-88	ZG227575	Spring I	900-121	1
6-89	ML243540	Pinch Roller Lever	900-161	1
6-90	MS243404	Pinch Roller Shaft C	4TR-102	1
6-91x	ZW259975	Washer (SUP) D5.1x10.3x0.8t		1
6-92	ZW413183	Nut M4		1
6-93	MR269763	Cam Roller D13	900-154	1
6-94	MS217192	Cam Roller Shaft A	900-134	1
6-95	ZG222417	Spring A	900-115	1
6-96x	ZW376391	Washer (Polyslider) D6.1x10x0.13t		1
6-97	ML479957	Pause Lever (LE), w/screw	LE-1001	1
6-98	ZW217877	Pause Lever Set Screw	900-156	1
6-99	MZ217855	Pause Stopper	900-169	1
6-100	ZW323128	Screw, binding head 3x5		1
6-101	ZG217806	Pause Lever Spring A	900-123	1
6-102x	ZW259795	Washer (SUP) D4.3x11x0.13t		1
6-103	MZ217686	Pause Lever Cushion	LC-102	1
6-104	MZ217113	Cam Stopper B	[illegible]	1
6-105	ZW217102	Cam Stopper Insulator Base	900-165	1
6-106	ZW413245	Screw, pan head 4x15		2
6-107x	ZW413168	Nut M4		2
6-108	SB258480	Rec. Button (Gray)	900-167	1
6-109x	ZW318532	Cotter Pin 1x6		1
6-110x	MC489870	Counter MP-491-30, w/base	9-1-21	1
6-111x	MB410310	Counter Belt	LF-1097	1
6-112	BL204058	AS Lever Comp. #2		1
6-113x	ZW322325	Washer (PBP) D4.1x7x0.2t		1
6-114	ZW290294	"U" Ring 2.85M	6-1-10	1
6-115x	MP204794	Pinch Roller #3	3R-308	1
6-116	MI204423	Idler Wheel #2		2
6-117x	ZW260076	Washer (Nylon) D6.1x10x0.4t		3
6-118x	ZW376391	Washer (Polyslider) D6.1x10x0.13t		3
6-119	ZW290283	"U" Ring 2.85M	6-1-1	3
6-120	MI231423	Middle Wheel, w/metal	900-155	1
6-121	ZW260144	Washer (Nylon) D6.1x10x0.3t		1
6-122x	EJ317125	5P TV-Consent-Plug	12-1-5	1
6-123x	EJ311073	3P Mate-N-Lock Cap Housing 1-480305-0 (AAL)	32-1-1	1
6-124x	EJ373625	Pin Contact 61116-1 (AAL)	32-1-3	3
6-125x	MZ396393	Lock Wire Tie 11M/M		1
6-126x	EJ205975	Cramp Terminal 1-SD	30-1-7	2
6-127	ML126258	Start Lever A, w/lever B-2	4TR-122	1
6-128	SB425777	Start Button	NS-3032	1
6-129x	ZW314728	Cotter Pin 1.6x8		1
6-130x	ZW425768	Screw, round head 3x4		2
6-131	MZ316056	Cam A-3	MR-242	1
6-132	MZ211293	Cam B-2, without Tap	1630-293	1
6-133x	ZW416687	Screw, binding head 4x8		2
6-134	MV270066	Steel Ball D=6		1
6-135	ZG217394	Belt Change Spring B	LR-125	1

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

FIG. 7 PHOTO OF PRE-AMP. P.C. BOARD (LE-5022)



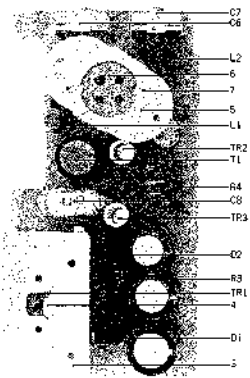
PRE-AMP. P.C. BOARD (LE-5022) BLOCK

Symbol No.	Parts No.	Description	Q'ty
7-1x	BA4840251	Pre-amp. P.C. Board Comp. (LE-5022)	1
7-IC1, 2	EM124113	Line Amp. I.C. LB-3145	4
7-TR1	FT3521136	Transistor 2SC458LG(D)	2
7-TR2	FT3981645	Transistor 2SC871(E) (F)	2
7-TR3, 4	FT234854	Transistor 2SC458LG(C)	4
7-D1	BD219464	Germanium Diode IN34A	2
7-T1	FT2077746	Head Phone Trans. N19-2283	2

Symbol No.	Parts No.	Description	Q'ty
7-L1	EO2439977	Ferri Inductor FL7H 1MH(J)	2
7-L2	EO2440401	Ferri Inductor FL9R 10MH(J)	2
7-VR1	EV337577	Semi-fixed Volume V10KS-2-4 2 kB	2
7-VR2	EV337588	Semi-fixed Volume V10KS-2-4 20 kB	2
		Capacitor, Vertical Type	
7-C1	EC402840	Elect. 10μF 16WV(NL)	2
7-C2	EC2905520	VFM 100PF(J) 50WV	2
7-C3	EC2203694	Elect. 100μF 6.3WV	2
7-C4	EC403323	Elect. 1μF 25WV(NL)	2
7-C5	EC476965	Elect. 47μF 25WV(NL)	2
7-C6	EC2206078	Elect. 47μF 25WV	2
7-C7	EC2905520	VFM 100PF(J) 50WV	2
7-C8	EC3500851	Elect. 10μF 16WV	2
7-C9	EC2203694	Elect. 100μF 6.3WV	2
7-C10	EC446297	Mylar 0.18μF(J) 50WV	2
7-C11	EC220364	Elect. 100μF 6.3WV	2
7-C12	EC363335	Mylar 0.022μF(J) 50WV	2
7-C13	EC220994	Elect. 10μF 25WV	2
7-C14	EC320951	Elect. 10μF 16WV	2
7-C15	EC363335	Mylar 0.022μF(J) 50WV	2
7-C16	EC413561	VFM 470PF(J) 50WV	2
7-C17	EC450527	Elect. 4.7μF 25WV	2
7-C18	EC336216	VFM 330PF(J) 50WV	2
7-C19	EC480071	Elect. 22μF 16WV(NL)	2
7-C20	EC336216	VFM 330PF(J) 50WV	2
7-C21	EC476965	Elect. 47μF 25WV(NL)	2
7-C22	EC329791	Elect. 47μF 6.3WV	2
7-C23	EC379170	Mylar 0.1μF(J) 50WV	2
7-C24	EC379787	Mylar 0.0039μF(J) 50WV	2
7-C25	EC389485	Mylar 0.018μF(J) 50WV	2
7-C26	EC2905520	VFM 100PF(J) 50WV	2
7-C27	EC329791	Elect. 47μF 6.3WV	2
7-C28	EC450527	Elect. 4.7μF 25WV	2
7-C29	EC220638	Elect. 47μF 25WV	2
7-C30	EC450527	Elect. 4.7μF 25WV	2
7-C31	EC2295850	VFM 220PF(J) 50WV	2
7-C32	EC329791	Elect. 47μF 6.3WV	2
7-C33	EC220364	Elect. 100μF 6.3WV	2
7-C34	EC2295850	VFM 220PF(J) 50WV	2
7-C35	EC3506284	Elect. 22μF 25WV	2
7-C36	EC320951	Elect. 10μF 16WV	2
		Resistor, Stopper Type	
7-R1	ER349907	Carbon RD1/4 33k(J)	2
7-R2	ER414303	Carbon RD1/4 220k(J) (NL)	2
7-R3	ER3606360	Carbon RD1/4 6.8k(J)	2
7-R4	ER4180360	Carbon RD1/4 33k(J) (NL)	2
7-R5	ER2114465	Carbon RD1/4 1k(J)	2
7-R6	ER213030	Carbon RD1/4 5.6k(J)	2
7-R7	ER346660	Carbon RD1/4 45k(J)	2
7-R8	ER212883	Carbon RD1/4 4.7k(J)	2
7-R9	ER346691	Carbon RD1/4 47k(J)	2
7-R10	ER336711	Carbon RD1/4 220k(J)	2
7-R11	ER3466998	Carbon RD1/4 15k(J)	2
7-R12	ER3366442	Carbon RD1/4 10k(J)	2
7-R13	ER212264	Carbon RD1/4 22k(J)	2
7-R14	ER3366442	Carbon RD1/4 10k(J)	2
7-R15	ER342953	Carbon RD1/4 27k(J)	2
7-R16	BR363684	Carbon RD1/4 560(J)	2
7-R17	ER2133300	Carbon RD1/4 680(J)	2
7-R18	ER3366843	Carbon RD1/4 12k(J)	2
7-R19	BR336442	Carbon RD1/4 10k(J)	2
7-R20	ER362488	Carbon RD1/4 330(J)	2
7-R21	BR212681	Carbon RD1/4 330(J)	2
7-R22	BR347038	Carbon RD1/4 270(J)	2
7-R23	ER450011	Carbon RD1/4 120k(J)	2
7-R24	ER343078	Carbon RD1/4 2.7k(J)	2
7-R25, 26	FR3366442	Carbon RD1/4 10k(J)	4
7-R27	ER3515570	Carbon RD1/4 150k(J)	2
7-R28	BR212883	Carbon RD1/4 4.7k(J)	2
7-R29	ER212477	Carbon RD1/4 3.3k(J)	2
7-R30, 31	ER212264	Carbon RD1/4 22k(J)	4
7-R32	BR212883	Carbon RD1/4 4.7k(J)	2
7-R33	ER343078	Carbon RD1/4 2.7k(J)	2

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

FIG. 8 PHOTO OF OSC., POWER SUPPLY P.C. BOARD (LE-5021)

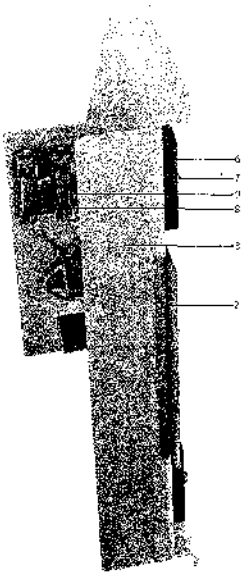


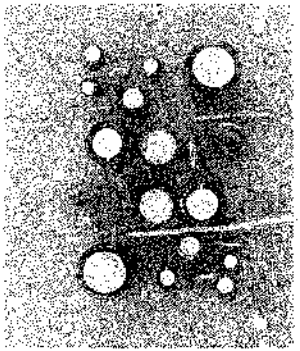
OSC., POWER SUPPLY P.C. BOARD (LE-5021) BLOCK

Symbol No.	Parts No.	Description	Q'ty
8-1x	BA524823	OSC., Power Supply P.C. Board Comp. (LE-5021)	1
8-2x	BA480306	OSC., Power Supply P.C. Board Comp. (LE-5021) (Dyed)	1
8-TR1	ET476886	Transistor 2SC1098(L) (M)	1
8-TR2, 3	ET394253	Transistor 2SC9710(2) (3) (red)	2
8-D1	ED329130	Silicon Diode 10D-1(black)	1
8-D2	ED511918	Zener Diode WZ-240	1
8-T1	EO383365	OSC. Coil OT-204	1
8-L1, 2	EO321254	Ferri Inductor FL7H 5.6MH(J)	2
8-3	E24S0396	Heat-sank Plate	1
8-4	ZW413155	Screw, binding head 3×6	3
8-5	E24S0418	Socket Table	1
8-6	EJ374027	4P Socket	1
8-7	ZW447572	Tapping Screw #2.3×6(BR)	2
		Capacitor, Vertical Type	
8-C1, 2	EC337532	Elect. 220uF 50WV	2
8-C3	EC313121	Elect. 220uF 25WV	1
8-C4, 5	EC350712	VEM 390PF(J) 50WV	2
8-C6, 7	EC425150	Trimmer A-EP33 70PF	2
8-C8	EC520492	Styrol 5600PF(J) 500WV (Tub. type)	1
8-C9	EC220678	Elect. 47uF 25WV	1
8-C10, 11	EC250841	Mylar 0.03uF(J) 50WV	2
8-C12	EC350875	Mylar 0.001uF(J) 50WV	1
8-C13	EC220994	Elect. 10uF 25WV	1
		Resistor, Stopper Type	
8-R1	ER212883	Carbon RD1/4 4.7K(J)	1
8-R2	ER361642	Carbon RD1/4 47(J)	1
8-R3	ER413747	Wire-wound 3WL 10(J) (L type)	1
8-R4	ER398856	Metal Oxide Film 1W 100(K)	1
8-R5	ER212883	Carbon RD1/4 4.7k(J)	1
8-R6	ER304402	Carbon RD1/4 470(J)	1
8-R7, 8	ER315944	Carbon RD1/4 3.3(J)	2

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

FIG. 9 PHOTO OF MAIN AMP. BLOCK



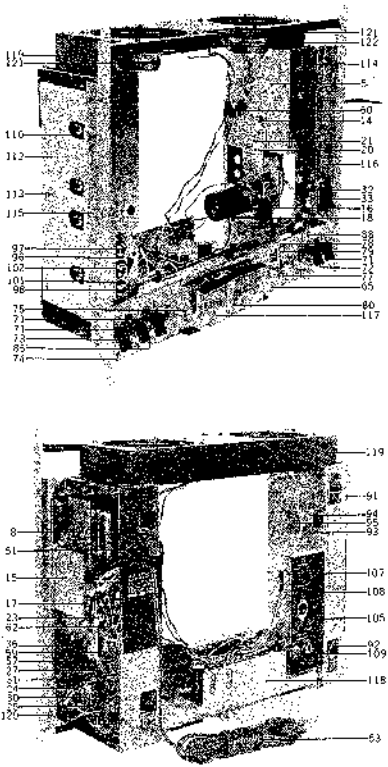


MAIN AMP. BLOCK

Symbol No.	Parts No.	Description	Q'ty
	MAIN AMP. BLOCK		
9-1x	BA490151	Main Amp. Block Comp.	1
9-2	BA490173	Main Amp. P.C. Board Comp. (LE-5213)	1
9-3	E24B9396	Heat-sink Plate	1
9-4x	ZW447840	Tapping Screw #2.3x8(BR)	3
9-5x	ZW273802	Toothed Lock Washer M3	2
9-6	F1372126	I.C. STK-011(A)	2
9-7	ZW447805	Tapping Screw #2.3x12(BK)	8
9-8	EJ538062	2P Fuse Holder B	1
9-9	EF435036	Fuse ST-4 6.0A	2
	MAIN AMP. P.C. BOARD (LE-5213) BLOCK		
9-2	BA490173	Main Amp. P.C. Board Comp. (LE-5213)	1
		Capacitor, Vertical Type	
9-C301	EC331705	Elect. 22μF 16WV	2
9-C302	EC220994	Elect. 10μF 25WV	2
9-C303	EC220105	Elect. 100μF 10WV	2
9-C304	EC313121	Elect. 220μF 25WV	2
9-C305	EC220638	Elect. 47μF 25WV	2
9-C307	EC450281	Elect. 0.47μF 50WV	2
9-C308	EC450270	Elect. 1000μF 25WV	2
9-C309	EC251190	Mylar 0.056μF(K) 50WV	2
9-C310	EC279170	Mylar 0.1μF(J) 50WV	2
		Resistor, Stopper Type	
9-R301	ER361642	Carbon RD1/4 47(J)	2
9-R302	ER346544	Carbon RD1/4 3K(J)	2
9-R303	ER399723	Carbon RD1/4 4.7(J)	2

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

FIG. 10 PHOTO OF AMPLIFIER ASSEMBLY BLOCK



AMPLIFIER ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
	POWER SUPPLY FRAME BLOCK			
10-1x	BZ490162	Power Supply Frame Block Comp.		1
10-2x	BZ480262	Power Supply Frame Block Comp. (Deck)		1
10-3x	BZ480284	Power Supply Frame Block Comp. (CSA)		1
10-4x	BZ480295	Power Supply Frame Block Comp. (CEE)		1
10-5	BZ490353	Power Supply Frame C	LE-5009	1
10-6x	BZ470992	Power Supply Frame A (JS)	LE-5009	1
10-7x	BZ480908	Power Supply Frame B (CSA, CEE)	LE-5009 10-4-156	1
10-8	BT489813	Power Trans. LET-5		1

When ordering parts, please describe Parts Number, Serial Number, and Model Number in detail.

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Parts No.	Ref. No. & Symbol No.	Parts No.	Ref. No. & Symbol No.	Parts No.	Ref. No. & Symbol No.	Parts No.	Ref. No. & Symbol No.	Parts No.	Ref. No. & Symbol No.
SF488317	11-25x	ZW2600454	2-16	ZW413188	8-13x				
SE489565	11-19	ZW260065J	2-37x	ZW413188	6-35x				
SK314100	11-51	ZW260054	4-29x	ZW413188	6-92				
SK425158	11-53	ZW260058	6-54x	ZW413188	6-107x				
SK475097	11-40	ZW260065	2-17	ZW413188	10-14				
SK475121	11-41	ZW260065	2-28x	ZW413188	11-16x				
SK476684	11-48	ZW260065	2-45	ZW413201	5-25				
SK490375	11-46	ZW260076	6-117x	ZW413201	5-27				
SL493042	5-39	ZW260133	5-9x	ZW413201	5-31				
SM489295	11-43	ZW260133	5-29	ZW413201	6-14x				
SM489330	11-44x	ZW260144	5-121	ZW413201	6-37x				
SP489251	11-34	ZW260166	5-23x	ZW413223	1-29				
SP489576	11-2x	ZW260166	5-86	ZW413223	3-29				
SP489587	11-1	ZW260166	11-50x	ZW413223	6-83x				
SP489598	11-4x	ZW260245	3-85	ZW413225	10-35				
SP489609	11-3x	ZW270000	2-46	ZW413245	6-106				
SP490353	11-35x	ZW270088	2-11	ZW413267	6-15x				
SS476025	10-121	ZW272365	3-24	ZW413267	6-43x				
SZ376816	11-5	ZW272722	10-68x	ZW413278	4-29				
SZ330895	11-7	ZW272722	10-100x	ZW413280	4-34				
SZ377190	11-28x	ZW273688	11-11x	ZW413741	10-51x				
SZ382217	11-17x	ZW273723	1-22	ZW413943	11-38				
SZ382241	11-20x	ZW273734	1-23	ZW413998	4-32				
SZ405177	6-3	ZW273756	1-5	ZW414032	6-10x				
SZ476875	11-36x	ZW273756	6-32x	ZW414044	6-15x				
SZ482152	11-14	ZW273756	10-28x	ZW414055	6-30x				
SZ489227	10-119	ZW273767	6-79	ZW414066	6-31				
UC264250	3-3	ZW273778	1-30	ZW414336	11-39				
ZG206144	1-10	ZW273802	1-4	ZW416687	5-18x				
ZG208091	6-59	ZW273802	6-33x	ZW416687	6-133x				
ZG217037	4-17	ZW273802	9-5x	ZW417025	1-7				
ZG217294	6-19x	ZW273881	6-42x	ZW417025	1-28				
ZG217394	6-138	ZW273881	10-29x	ZW417037	10-113				
ZG217866	6-101	ZW273881	10-103x	ZW417150	4-18				
ZG227417	6-85	ZW273892	5-24x	ZW417150	6-19x				
ZG230428	10-25	ZW273914	4-26x	ZW417227	11-98				
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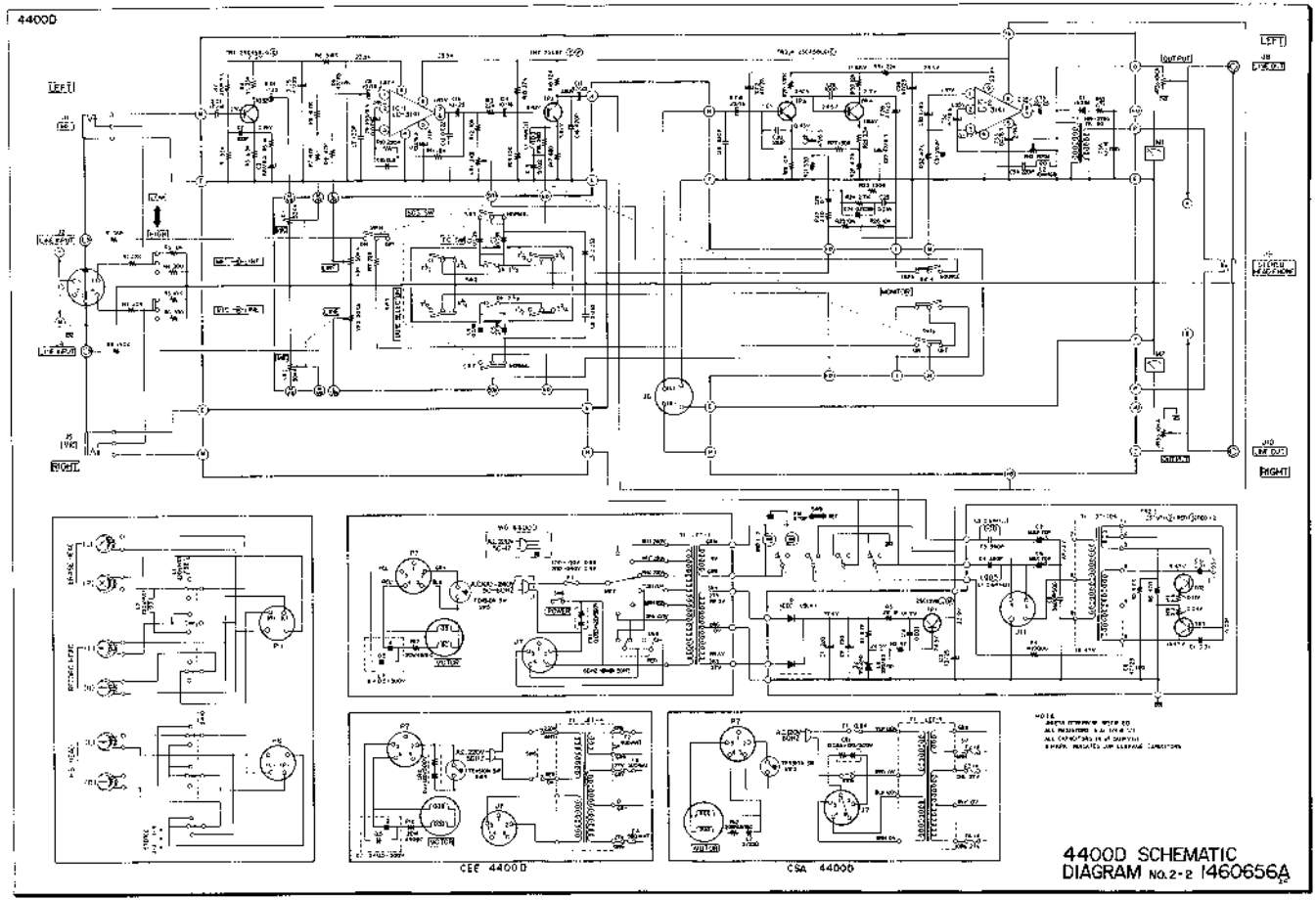
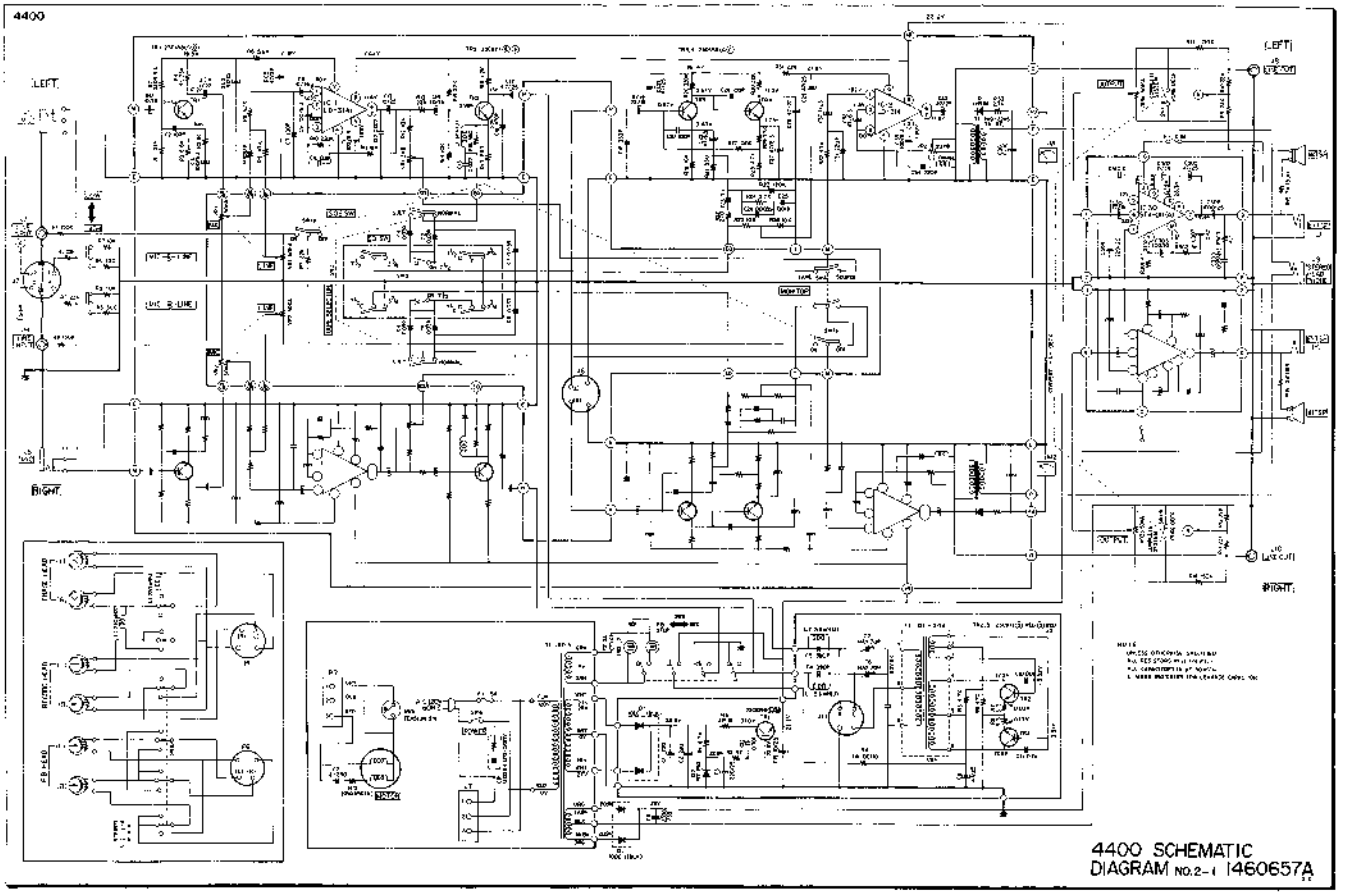
ZG227462	6-75	ZW273960	5-25	ZW4159646	11-29x				
ZG227485	5-40	ZW274026	6-7	ZW4240656	3-16				
ZG227542	2-35	ZW274048	6-6	ZW4240656	3-22				
ZG227563	2-14	ZW290248	10-114	ZW4240656	4-25x				
ZG227564	5-37	ZW290283	4-21x	ZW4241214	11-6x				
ZG227575	6-56	ZW290283	5-21x	ZW4241214	11-26x				
ZG227575	6-88	ZW290283	5-36x	ZW4257585	6-130x				
ZG227586	5-11	ZW290283	5-38	ZW427037	3-11				
ZG255633	2-9	ZW290283	6-67	ZW433001	11-52x				
ZG257095	6-20	ZW290283	6-72	ZW434169	2-33				
ZG259358	6-84	ZW290283	6-82x	ZW434109	11-47x				
ZG290384	6-73	ZW290283	6-119	ZW434171	5-48				
ZG312748	6-60	ZW290294	6-114	ZW434196	5-15x				
ZG312928	1-33	ZW290027	4-12	ZW4342456	5-14x				
ZG434092	2-29	ZW3006655	3-19	ZW434250	10-12x				
ZG469427	6-51	ZW312693	2-28	ZW434283	11-30x				
ZW200474	3-25	ZW314728	6-129x	ZW447208	4-5				
ZW201159	11-45x	ZW318527	6-109y	ZW447772	8-7				
ZW201183	11-33x	ZW322525	6-113x	ZW447772	10-16				
ZW201767	6-70x	ZW323726	1-17	ZW447772	10-34				
ZW201778	5-13	ZW323728	1-31	ZW447772	10-93				
ZW202195	6-58x	ZW323728	6-47x	ZW447772	10-120				
ZW202138	5-6x	ZW323728	6-78	ZW447805	9-7				
ZW203814	10-31	ZW323728	6-100	ZW447840	9-4x				
ZW217102	6-105	ZW323728	10-35x	ZW4548860	10-69x				
ZW217877	5-22	ZW324448	11-18x	ZW455275	10-101				
ZW217877	6-98	ZW330412	6-38x	ZW461935	10-26x				
ZW220133	6-37	ZW330425	6-39x	ZW462835	6-44x				
ZW231095	2-23	ZW330434	6-40x	ZW462846	6-45x				
ZW231194	4-28x	ZW330445	6-41x	ZW466714	3-9				
ZW231505	6-4	ZW336846	1-36	ZW476741	11-21x				
ZW235588	4-31	ZW373577	4-4	ZW477816	5-13				
ZW244574	4-27	ZW376391	6-96x	ZW480622	1-36				
ZW244710	4-5	ZW376391	6-116x	ZW481052	11-54x				
ZW252977	4-13x	ZW384131	3-4x	ZW481454	11-57x				
ZW253405	11-49x	ZW391680	10-70x	ZW489705	11-10				
ZW256421	3-12	ZW391699	10-102	ZW490116	10-89x				
ZW259795	6-102x	ZW393232	4-33	ZW490127	10-90x				
ZW259948	6-71	ZW393726	6-25	ZW490368	11-27x				
ZW259962	6-66x	ZW408415	11-31						
ZW259975	6-91x	ZW411660	11-32						
ZW260021	2-15	ZW413155	1-38						
ZW260021	2-36	ZW413155	3-4						

SECTION 3

SCHEMATIC DIAGRAM

1. 4400 SCHEMATIC DIAGRAM
2. 4400D SCHEMATIC DIAGRAM


4400D
LEFT
RIGHT
CEE 4400D
CSA 4400D
4400D SCHEMATIC
DIAGRAM NO.2-2 1460656A


4400
LEFT
RIGHT
4400 SCHEMATIC
DIAGRAM NO.2-1 1460657A