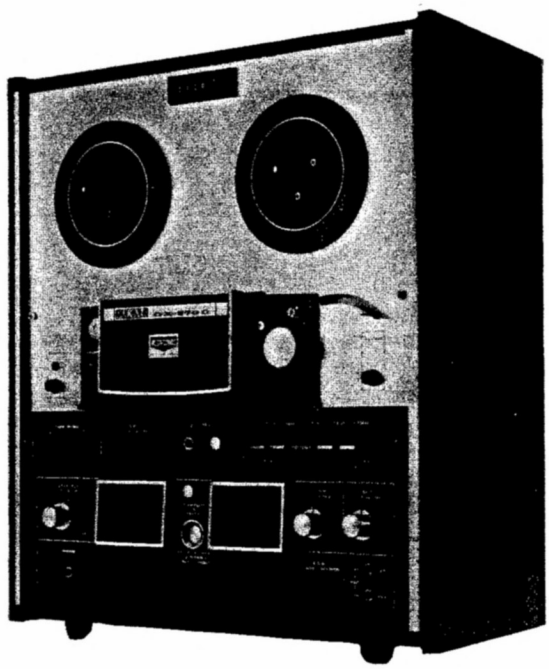


STEREO TAPE DECK

MODEL GX-370D

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SECTION 1

SERVICE MANUAL

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I. SPECIFICATIONS

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

TRACK SYSTEM		4 track 2-channel stereo/monaural system
REEL CAPACITY		Up to 7" reel
TAPE SPEED		7-1/2 and 3-3/4 ips ±0.5%
WOW AND FLUTTER		Less than 0.07% (*0.1%) RMS at 7-1/2 ips Less than 0.1% (*0.15%) RMS at 3-3/4 ips
FREQUENCY RESPONSE		30 to 26,000 Hz (*30 to 24,000 Hz) ±3 dB at 7-1/2 ips (AKAI S.R.T. Tape) 30 to 24,000 Hz (*30 to 22,000 Hz) ±3 dB at 7-1/2 ips (Regular Tape) 30 to 22,000 Hz (*30 to 19,000 Hz) ±3 dB at 3-3/4 ips (AKAI S.R.T. Tape) 30 to 19,000 Hz (*30 to 18,000 Hz) ±3 dB at 3-3/4 ips (Regular Tape)
SIGNAL TO NOISE RATIO		Better than 50 dB (*48 dB)
DISTORTION		Less than 1.5% (*2%) at 7-1/2 ips 1,000 Hz "0" VU recording Less than 3% at 3-3/4 ips 1,000 Hz "0" VU recording
CROSS TALK		Better than 70 dB (Monaural) Better than 45 dB (Stereo)
ERASE RATIO		Better than 70 dB
BIAS FREQUENCY		103 kHz ±5 kHz
BIAS LEAK		Less than -20 VU
HIGH FREQUENCY DEVIATION (between left and right channel)		Within 3 dB, using a 8,000 Hz 3-3/4 ips recorded tape at 7-1/2 ips
INPUTS	Mic input	0.7 mV Impedance: 10 kΩ
	Line input	70 mV Impedance: 150 kΩ
	Din input	7 mV (low) and 70 mV (high)
OUTPUTS	Line output	1.228V (4 ±1.5 dB) Impedance: 100Ω, using a 250 Hz "0" VU recorded tape
	Din output	0.4V
RECORDING CAPACITY		60 min. stereo recording, using a 1,200 ft. tape at 7-1/2 ips
FAST FORWARD & REWIND TIME		68/83 sec., using a 1,200 ft. tape at 60/50 Hz
MOTORS	Capstan Motor	2-speed servo control outer rotor motor Type: SCM2-24 Revolutions: 520 r.p.m. at 7-1/2 ips 260 r.p.m. at 3-3/4 ips
	Reel Motor	Two 6-pole eddy current outer rotor motors Type: 24X0-II Revolutions: 930 r.p.m. at 50 Hz 1120 r.p.m. at 60 Hz
HEADS		
	Combination Recording & Erase Head	Type: RE4-1 Gap: 4μ ±15%, 0.2x2 mm Impedance: 1,800Ω at 100 kHz 210Ω ±15% at 100 kHz
	Playback Head	Type: P4-200 Gap: 1.75μ ±15% Impedance: 3 ±1 kΩ at 1 kHz
TRANSISTORS		2 . . . 2SA564(R) 8 . . . 2SC458LG(B)(C) 4 . . . 2SC871(F) 6 . . . 2SC968(3) 1 . . . 2SC1013 3 . . . TSC9000-1(B)(C) 4 . . . 2SC454(C) 16 . . . 2SC711(D)(E) 17 . . . 2SC945(Q)(R)(S) 2 . . . 2SC971(2)(3)(red) 2 . . . 2SD234(Y)
DIODES		27 . . . 1N34A 3 . . . 10D4 1 . . . 10DC-1(red) 17 . . . 10D1 2 . . . 10DC-1(black)
IC		2 . . . LD-3141
THERMISTORS		1 . . . 1N359A 1 . . . RD9A
VARISTOR		1 . . . TH201
POWER SUPPLY		100 to 240V AC, 50/60 Hz
POWER CONSUMPTION		130 W
INSULATION RESISTANCE		More than 50 MΩ
INSULATION DURABILITY		1,000V AC for more than 1 min. duration
DIMENSIONS		445 (W) x 503 (H) x 252 (D) mm (18.2 x 20.5 x 10.3")
WEIGHT		25.5 kg (56 lbs.)

NOTE: Specifications subject to change without notice.

II. MEASURING METHOD

1. TAPE SPEED DEVIATION

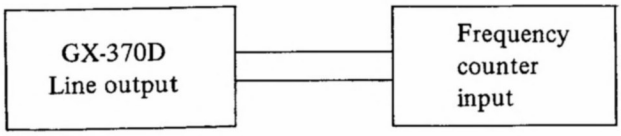


Fig. 1

As shown in Fig. 1, connect a Frequency Counter to the Line Output of Model GX-370D. Playback a 1,000 Hz pre-recorded test tape. 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

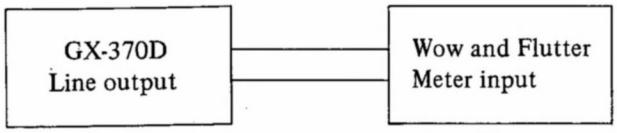


Fig. 2

Method A

As shown in Fig. 2, connect the Line Output of Model GX-370D to the Input of a Wow and Flutter Meter. Playback 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 the resultant signal. 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

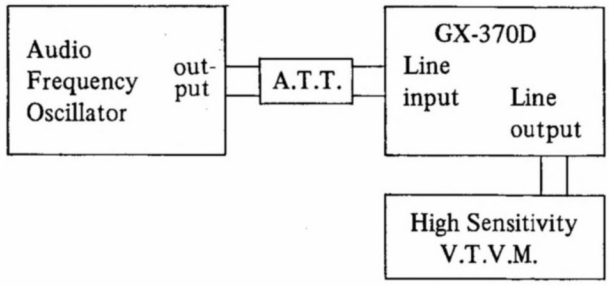


Fig. 3

For measuring Frequency Response, connect instruments as shown in Fig. 3 and proceed as follows:

1) Supply a 1,000 Hz sine wave signal to the Line Input of Model GX-370D from an Audio Frequency Oscillator through an Attenuator.
2) Set recorder to recording mode and turn recording level control volume and line output level control volume to maximum. Adjust attenuator to obtain a +4 dB V.T.V.M. reading.
3) Under conditions described in 2) above, readjust attenuator so that the Line Output is -16 dB, and record 30 to 24,000 Hz spot frequencies.
4) 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

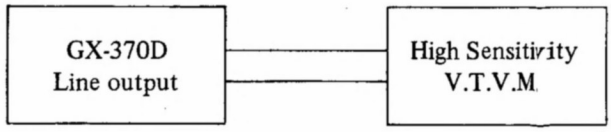


Fig. 4

As shown in Fig. 4, connect a High Sensitivity V.T.V.M. to the Line output of Model GX-370D. 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

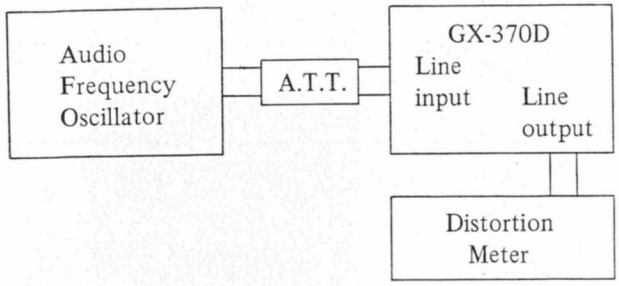


Fig. 5

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)

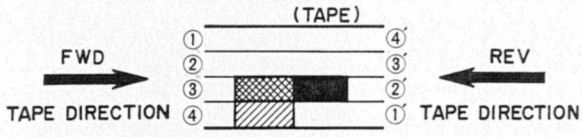


Fig. 6

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 1 (reversed condition of tape) 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

Fig. 7

7. ERASE RATIO

As shown in Fig. 4, connect a High Sensitivity V.T.V.M. to the Line Output of Model GX-370D. 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 output level of the erased signal and obtain a ratio between the two from the following formula:

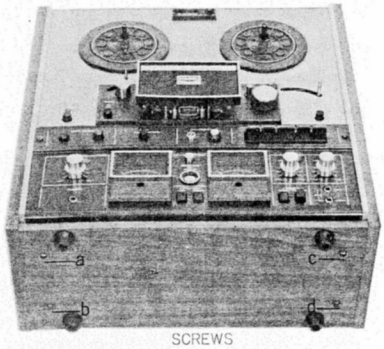
$$E_r = 20 \log \frac{E_0}{E_2 - E_1} \text{ (dB)}$$

where, E_r — 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

III. DISMANTLING OF UNIT

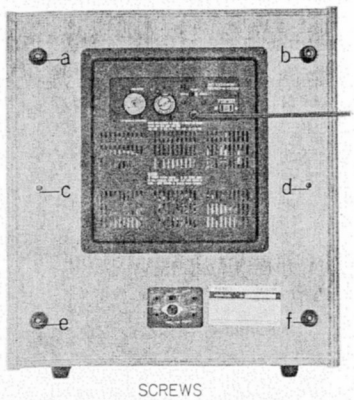
In case of trouble, etc. necessitating disassembly, please disassemble in the order shown in photographs. Reassemble in reverse order.

1



SCREWS

2

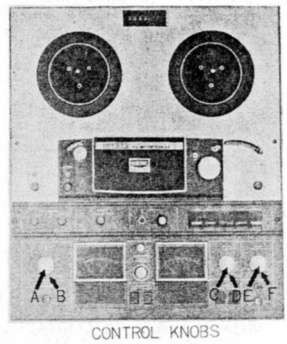


SCREWS

3



4



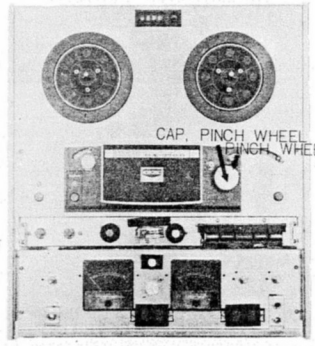
CONTROL KNOBS

5

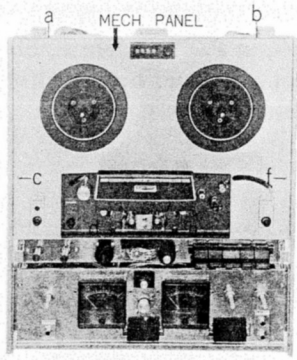


AMP. PANEL

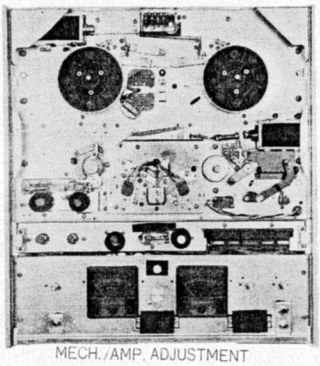
6



7

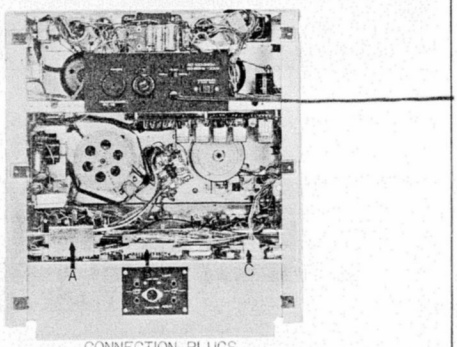


8



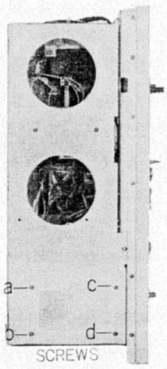
MECH./AMP. ADJUSTMENT

9



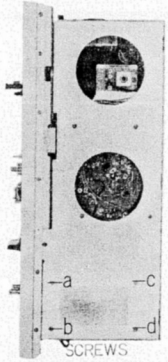
CONNECTION PLUGS

10



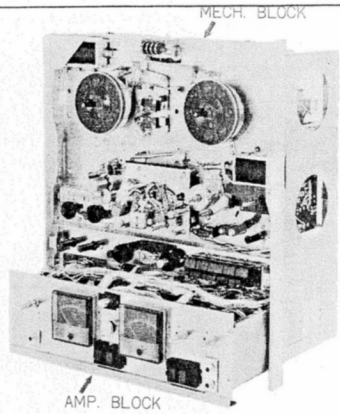
SCREWS

11

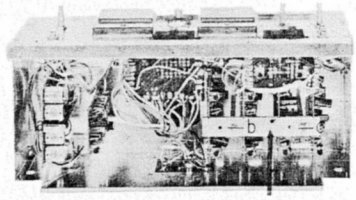


SCREWS

12

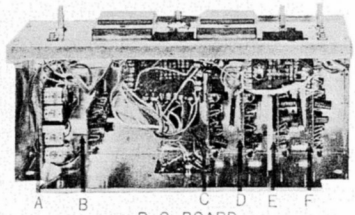


13



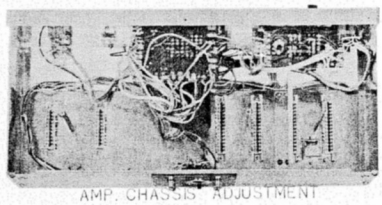
P. C. BOAD HOLDER

14



P. C. BOARD

15



AMP. CHASSIS ADJUSTMENT

IV. MECHANISM ADJUSTMENTS

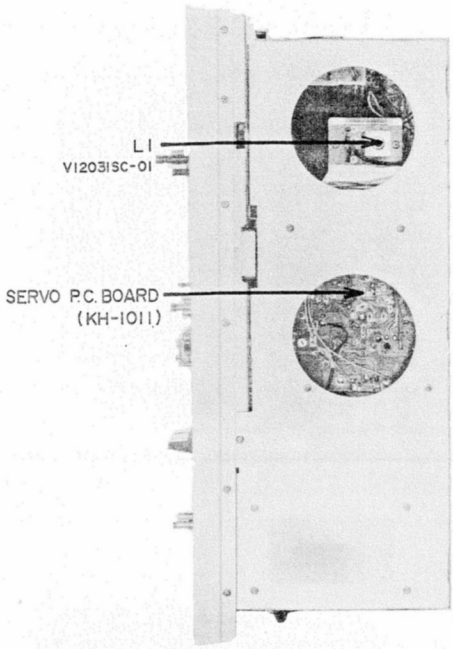


Fig. 8

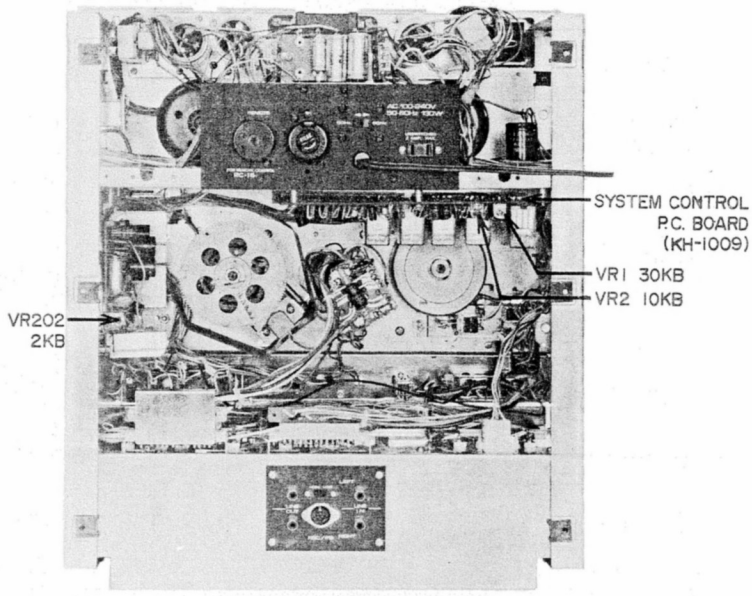


Fig. 9

1. TAPE SPEED ADJUSTMENT (SERVO MOTOR CIRCUIT ADJUSTMENT)

1) Connect a Frequency Counter to the Line Output.
2) Set the Tape Speed Selector to 3-3/4 ips and playback a 1,000 Hz pre-recorded tape.
3) Adjust the core of Coil L1 (V12031SC-01) shown in Fig. 8 to obtain a Frequency Counter indication of 500 Hz ±1%.
4) When the 3-3/4 ips tape speed adjustment is completed, set the Tape Speed Selector to 7-1/2 ips and adjust Servo P.C. Board (KH-1011) semi-fixed resistor VR-202 (2k B) shown in Fig. 9 to obtain a Frequency Counter indication of 1,000 Hz +1/-0.5%.

NOTE: When making tape speed adjustment, it is necessary to make the low speed (3-3/4 ips) adjustment first.

2. DIRECT FUNCTION TIME CONSTANT ADJUSTMENT (See Fig. 9)

1) FWD ↔ REV Time Constant
Adjust System Control P.C. Board (KH-1009) semi-fixed resistor VR-1 (30k B) so that the time constant to and from FWD and REV mode is about 3 seconds.
2) F·FWD or RWD to FWD or REV Time Constant
Adjust System Control P.C. Board (KH-1009) semi-fixed resistor VR-2 (10k B) so that the time constant from F·FWD or RWD to FWD or REV mode is about 1.5 seconds.

NOTE: In making the adjustments outlined in Items (1) and (2) above, when the machine is switched from the various modes to FWD or REV, it is important that proper capstan motor revolutions be attained by the time the pinch wheel contacts the capstan.

3. BRAKE TENSION ADJUSTMENT

Use a 60 mm diameter tape wound on a 5" reel and measure the brake tension with a tension gauge. (See Fig. 10) Ideal tape tension is 350 grams.

Brake tension adjustment can be made as follows:

1) Adjust position of suspended springs (d) (d').
2) Loosen screws (a) (b) as well as (a') (b') and adjust the vertical (upper/lower) position of spring suspension metal (c) (c').
3) Loosen screws (e) (f) as well as (e') (f') and adjust the horizontal (left/right) position of brake band suspension metal (g) (g').

Adjust as described above until proper brake tension is attained. (Refer to Fig. 11)

NOTE: In making brake tension adjustment, when the machine is set to other than stop mode, confirm that the brake band definitely does not touch the cloth tape on the brake drum.

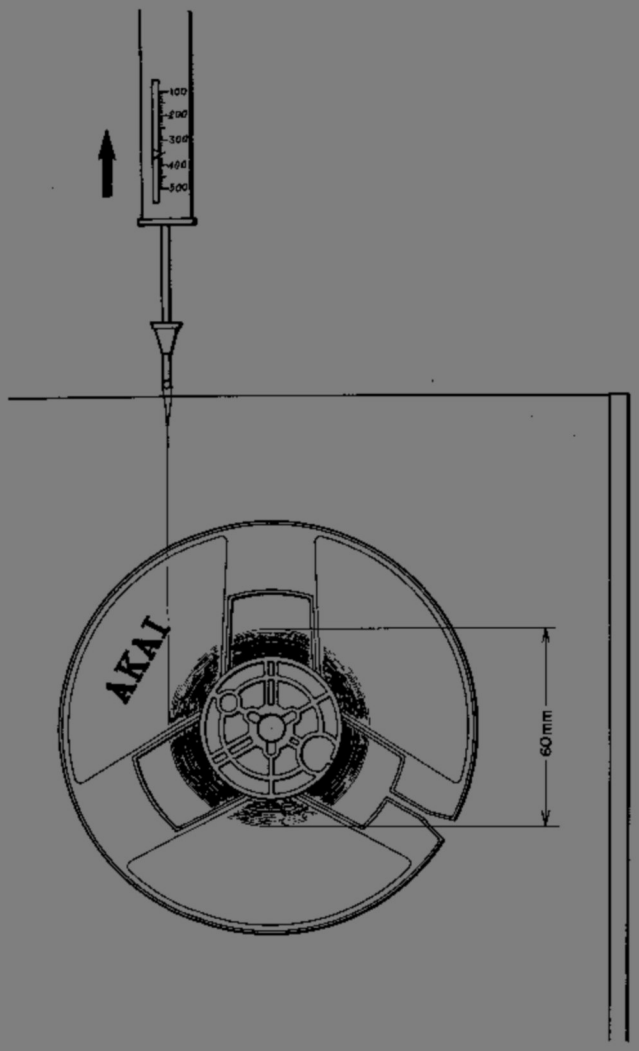


Fig. 10

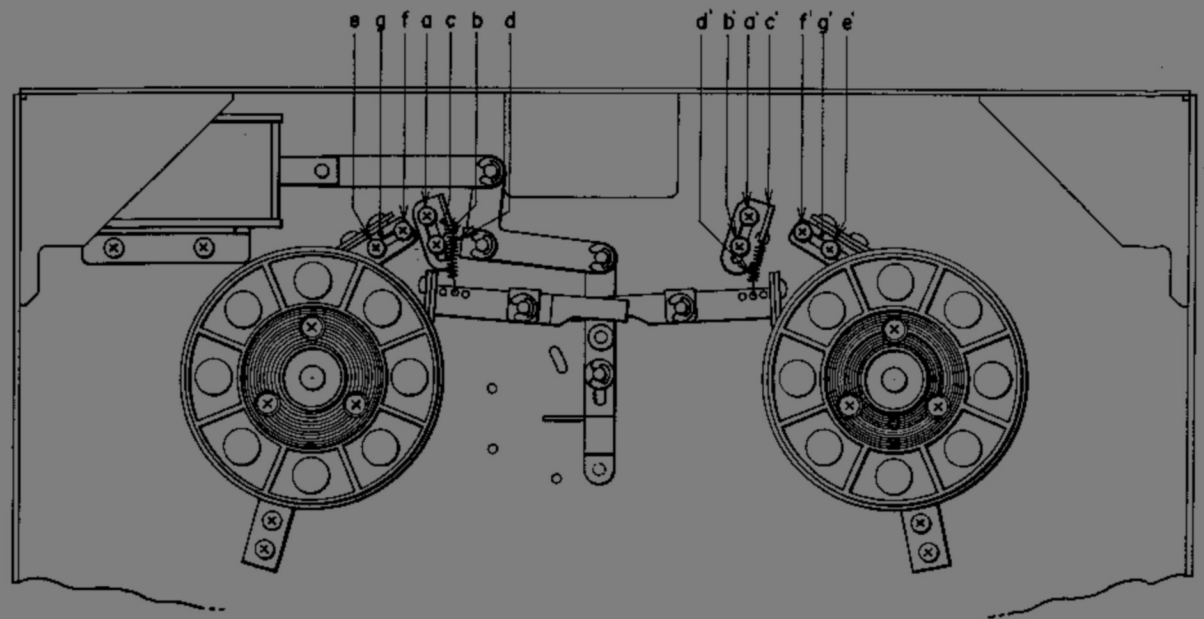


Fig. 11

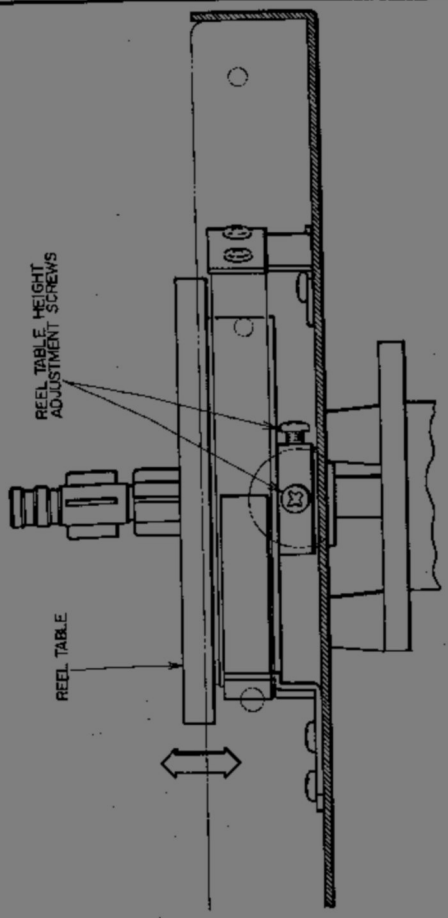


Fig. 12

4. REEL HEIGHT ADJUSTMENT

Loosen the reel table height adjustment screws shown in Fig. 12 and adjust by moving the reel table in the direction of arrow and positioning so that the tape winds in the center of the reel.

5. PINCH WHEEL PRESSURE MEASUREMENT AND ADJUSTMENT

Use a tension gauge and measure the pinch wheel pressure as shown in Fig. 13. Read the value on the tension gauge as soon as the pinch wheel separates from the tape and tape travel stops. Ideal pinch wheel pressure is 1.5 kg. Pinch wheel pressure can be increased or decreased by adjusting screws (a) (b) shown in Fig. 13.

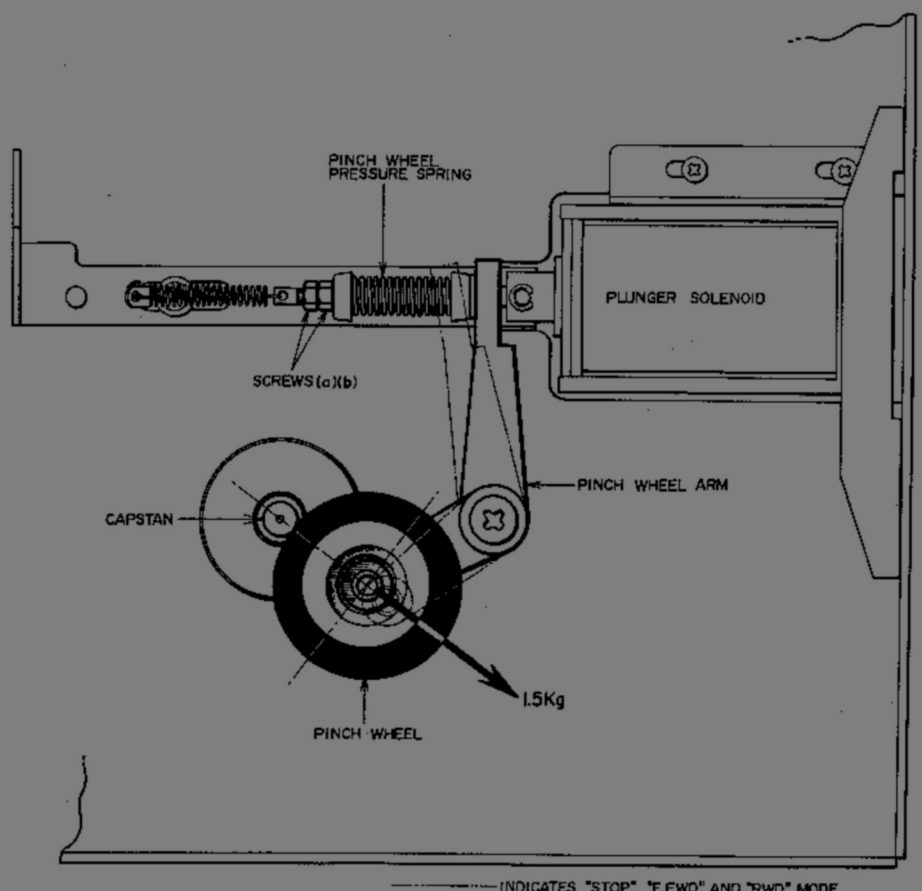


Fig. 13

V. HEAD ADJUSTMENTS

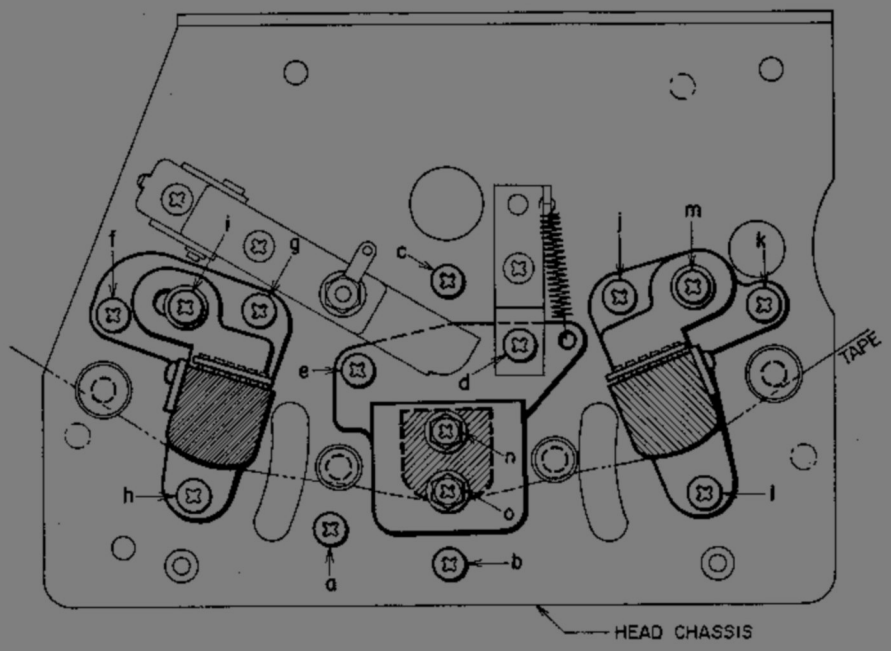


Fig. 14

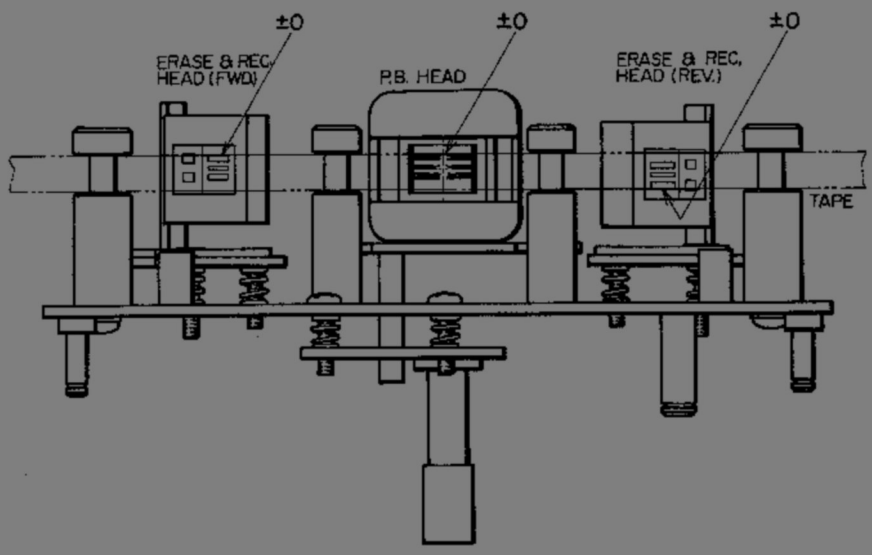


Fig. 15

1. HEAD HEIGHT ADJUSTMENT

(See Figs. 14 & 15)

1) Playback Head
   a) For FWD playback mode head height adjustment, during FWD playback, turn head height control screw (d) to left and right until the upper edge of the tape as it passes the head is aligned with the upper edge of channel 1 head core.
   b) For REV playback mode head height adjustment, during REV playback, turn head height control screw (e) to left and right until the lower edge of the tape as it passes the head is aligned with the lower edge of channel 1 head core.

2) Recording and Erase Heads
   a) For FWD recording and erase head height adjustment, at FWD playback mode, adjust head height control screws (f) (g) and (h) by turning to left and right until the upper edge of the tape as it passes the head is aligned with the upper edge of channel 1 recording head core.
   b) For REV recording and erase head height adjustment, at REV playback mode, adjust head height control screws (j) (k) and (l) by turning to left and right until the lower edge of the tape is aligned with the lower edge of channel 1 recording head core.

3) When making the various head height adjustments, confirm that the tape and head core surface is at a right angle with the head chassis during tape travel.

2. HEAD AZIMUTH ALIGNMENT ADJUSTMENT (See Figs. 14 & 15)

1) Playback Head
   a) Connect a High Sensitivity V.T.V.M. to the line output and playback a test tape (Ampex Alignment Tape, 8,000 Hz at 3-3/4 ips) at 7-1/2 ips.
   b) At FWD playback mode, turn adjustment screws (a) and (b) to left and right until the line output level of both channels is maximum.
   c) When Item (b) adjustment is completed, loosen screws (n) and (o) and move the head gap side of the playback head to the left and right. When the tension increases on the supply reel side and the line output level of both channels do not fluctuate, fix screws (n) and (o) to maintain this condition.
   d) At REV playback mode, make the same adjustment as outlined above to attain maximum line output of both channels.

2) Recording and Erase Heads
   a) Connect an Audio Frequency Oscillator to the line input and connect a High Sensitivity V.T.V.M. to the line output and load a blank tape.
   b) Set the Monitor Switch to TAPE position and record a 16,000 Hz signal at -10 dB recording level.
   c) At FWD recording mode, adjust Azimuth Alignment screw (f) so that the line output level of both channels is maximum and does not fluctuate.
   d) After completing Item (c) adjustment, loosen screw (i) and move the head gap side of the recording head to left and right. When the tension increases on the supply reel side and the line output level of both channels do not fluctuate, fix screw (i) to maintain this condition.
   e) At REV recording mode, make the same adjustment as outlined above by adjusting screws (k) and (m) to attain maximum line output of both channels without fluctuation.

3. To obtain the best results make adjustments outlined in Paragraphs 1 and 2 above two or three times. Also new blank tape should be used.

VI. AMPLIFIER ADJUSTMENTS

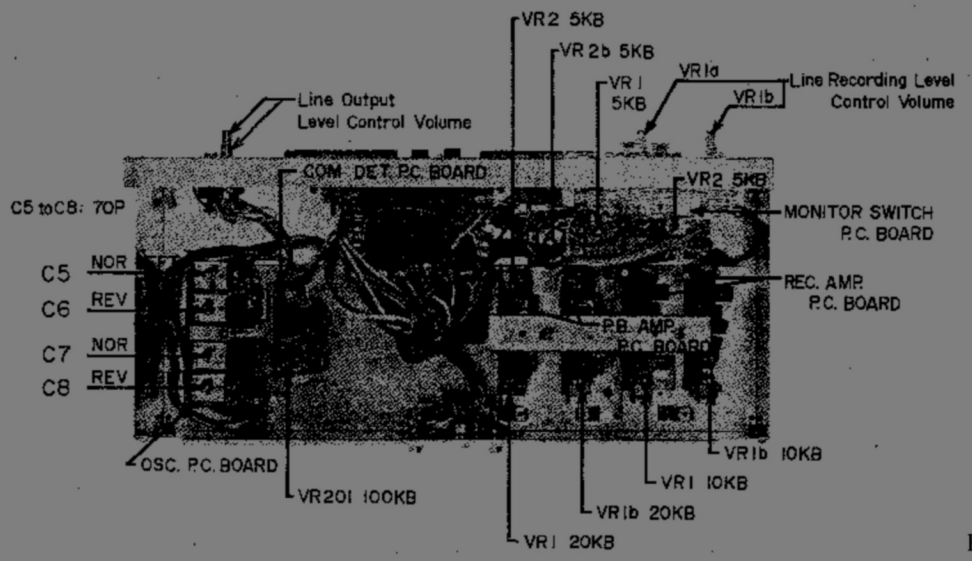


Fig. 16

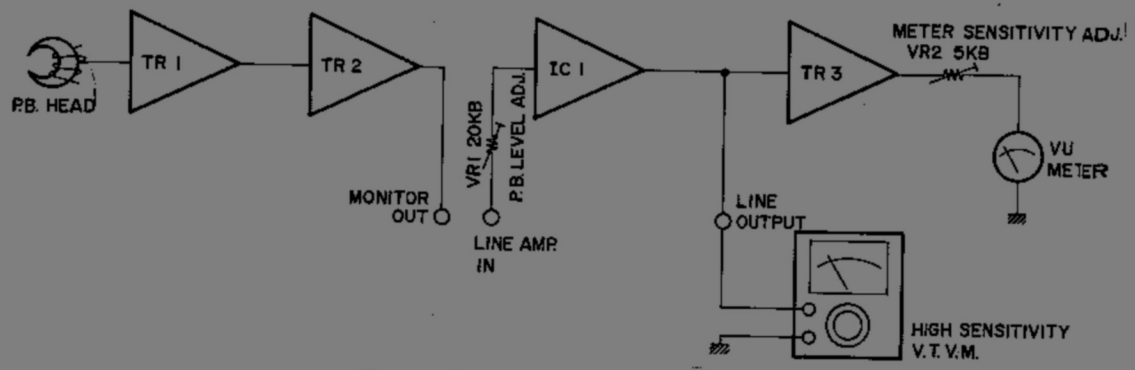


Fig. 17 P.B. AMP. BLOCK DIAGRAM

1. PLAYBACK LEVEL ADJUSTMENT

(See Fig. 16)

1) Connect a High Sensitivity V.T.V.M. to the line output.
2) Set Tape Speed Selector to 7-1/2 ips.
3) Depress both LEFT and RIGHT Track Selector Switches.
4) Set Monitor Switch to TAPE position and Line Output Level Controls to maximum.
5) Playback a 250 Hz, 7-1/2 ips pre-recorded tape.
6) With P.B. Amp. P.C. Board (KH-5014) semi-fixed resistors VR-1 and VR-1b (20k B), set the line output level of both channels to 4 ±1.5 dB.

2. VU METER SENSITIVITY ADJUSTMENT

(See Fig. 16)

Adjust P.B. Amp. P.C. Board (KH-5014) semi-fixed resistors VR-2 and VR-2b (5k B) to obtain a VU meter indication of "0" VU on both channels.

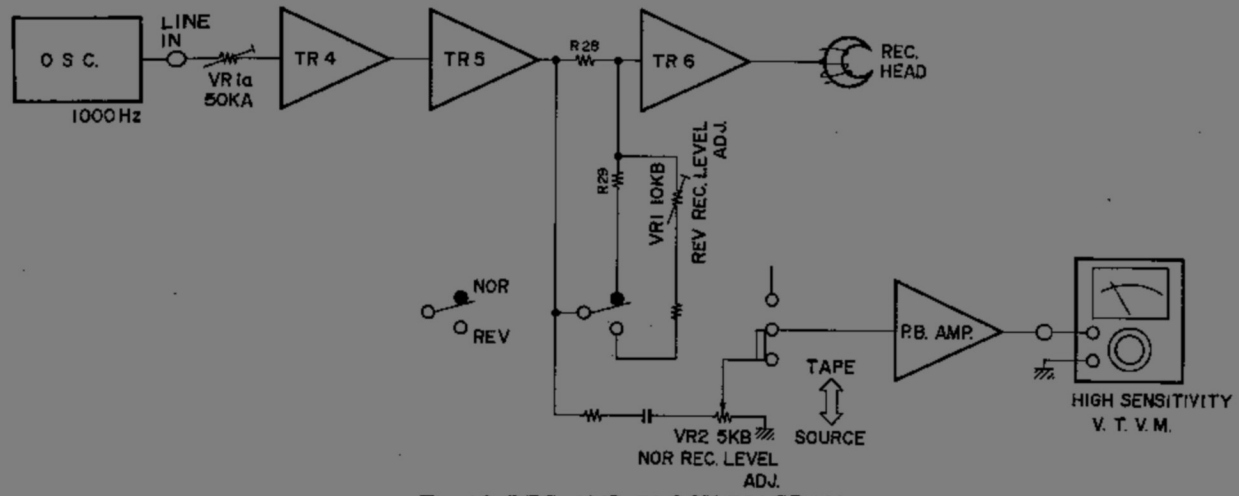


Fig. 18 REC. AMP. BLOCK DIAGRAM

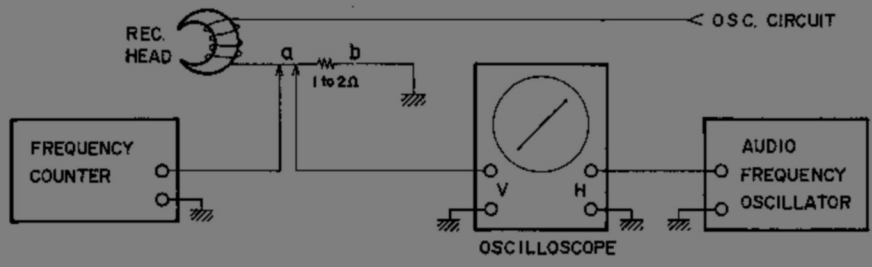


Fig. 19

3. RECORDING LEVEL ADJUSTMENT (See Fig. 16)

1) Connect an Audio Frequency Oscillator to the line input and connect a High Sensitivity V.T.V.M. to the line output.
2) Set Tape Speed Selector to 7-1/2 ips.
3) Depress both LEFT and RIGHT Track Selector Switches.
4) Load an AKAI 100L (Fuji S-100) blank tape. Set the Monitor Switch to TAPE position and the Line Output Level Controls to maximum.
5) Set recorder to FWD recording mode and supply a 1,000 Hz sine wave signal to the line input from the Audio Frequency Oscillator. Adjust line recording level volume controls VR-1a and VR-1b (20k B) to obtain a line output level of 4 dB (0 VU) on both channels.
6) Set Monitor Switch to SOURCE position and adjust Monitor Switch P.C. Board (KH-5012) semi-fixed resistors VR-1 and VR-2 (5k B) to obtain a 4 dB line output level on both channels.
7) When the FWD recording level adjustment is completed, set the recorder to REV recording mode and set the Monitor Switch to TAPE position.
8) Adjust Rec. Amp P.C. Board (KH-5013) semi-fixed resistors VR-1 and VR-1b (10k B) to obtain a line output level of 4 dB on both channels.

4. RECORDING BIAS FREQUENCY MEASURING METHOD AND ADJUSTMENT

Method I

1) Install a 1 to 2 Ω resistor in series with the recording head and connect these terminals (a)(b) to the vertical input of an oscilloscope. (See Fig. 19)
2) Supply a sine wave signal to the horizontal input of the Oscilloscope from an Audio Frequency Oscillator. Set recorder to the REC mode.
3) Vary the frequency of the Audio Frequency Oscillator until the oscilloscope waveform displays a circular or linear pattern.
4) If the audio frequency oscillator indication is 103 ±5 kHz, the recording bias frequency is correct.

Method II

1) Connect a Frequency Counter to points (a) and (b) as shown in Fig. 19. Set recorder to the REC mode, and take a frequency counter reading at this time.
2) If the Frequency Counter indication is 103 ±5 kHz, the recording bias frequency is correct.

Adjustment

The recording bias frequency can be adjusted by changing the value of OSC. circuit condenser C-4 (4500P/500).

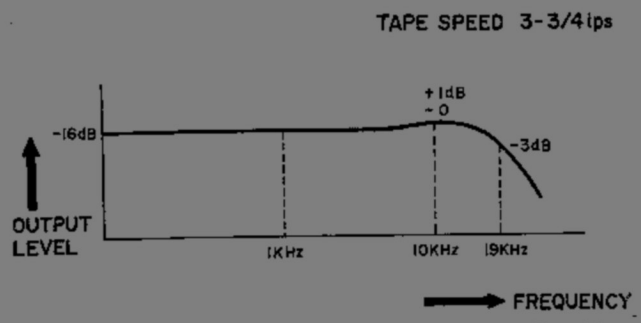


Fig. 20

5. RECORDING BIAS VOLTAGE ADJUSTMENT (Frequency Response Adjustment)

1) Refer to section regarding Frequency Response Measuring Method (Fig. 3 of this manual)
2) Adjust OSC. P.C. Board semi-fixed capacitors C-5 to C-8 (70P) so that a 10 kHz signal output level is within +1/-0 dB in relation to 1,000 Hz. (See Figs. 16 & 17)
3) The bias voltage after the frequency response adjustment has been made is about 5V AC.

NOTE: The frequency response will vary depending upon the tape being used.

6. ERASE VOLTAGE

There is no way to adjust the erase voltage, but correct value is about 23V AC.

7. COMPUTE-O-MATIC RECORDING LEVEL SENSITIVITY ADJUSTMENT

1) Connect an Audio Frequency Oscillator to the left microphone input and connect a High Sensitivity V.T.V.M. to the left line output.
2) Supply a 1,000 Hz sine wave from the audio frequency oscillator.
3) Set the Monitor Switch to SOURCE position and depress both the LEFT and RIGHT Track Selector Switches.
4) Adjust COM-DET (Compute-O-Matic Detector) P.C. Board (RD-A514) semi-fixed resistor VR-201 (100k B) to obtain a 4 dB V.T.V.M. indication when the Compute-O-Matic Button is depressed.

VII. TRANSPORT MECHANISM

1. TRANSISTOR, RELAY, AND PLUNGER SOLENOID OPERATION CHART

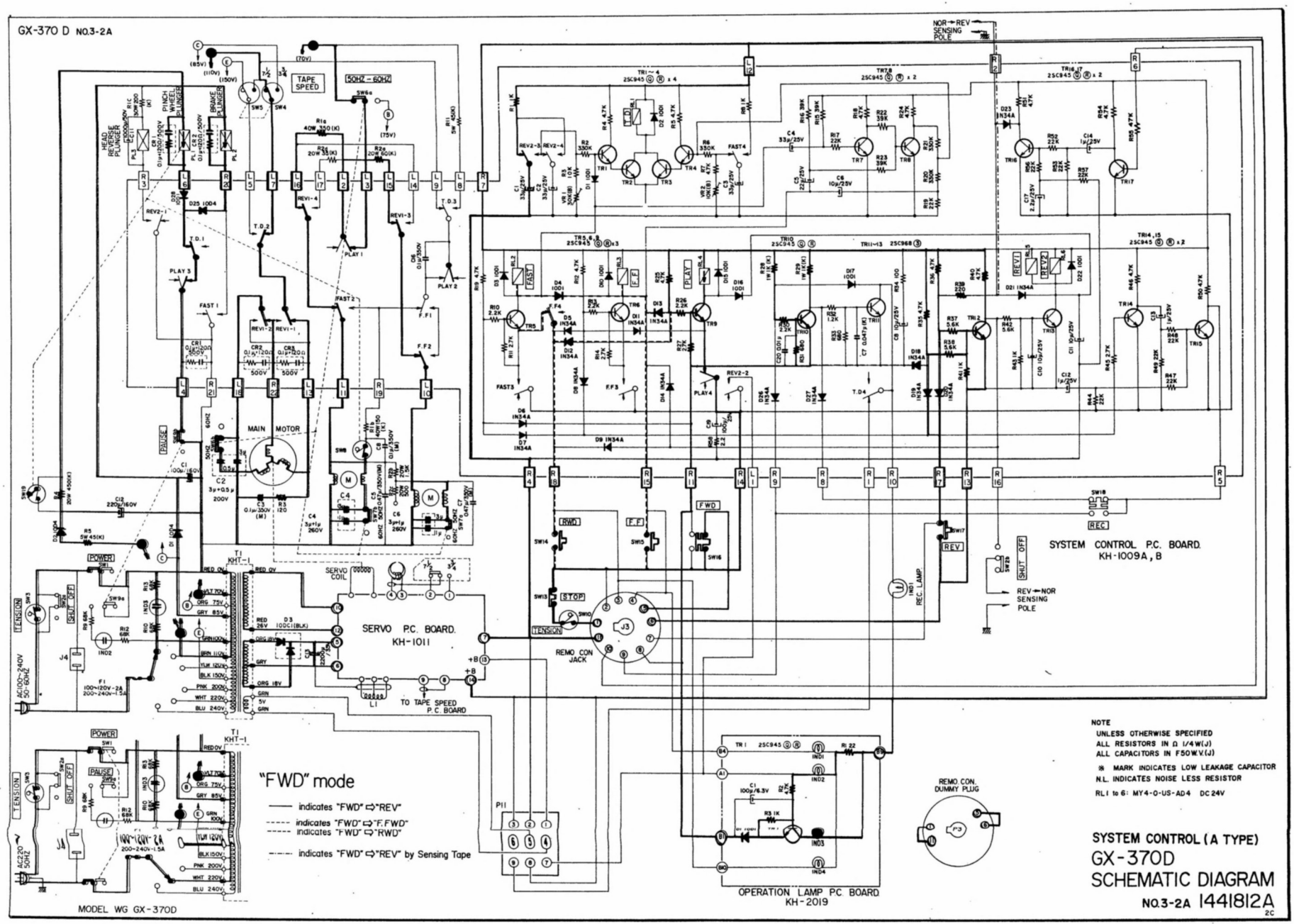
(Refer to Schematic Diagram 1 through 6)

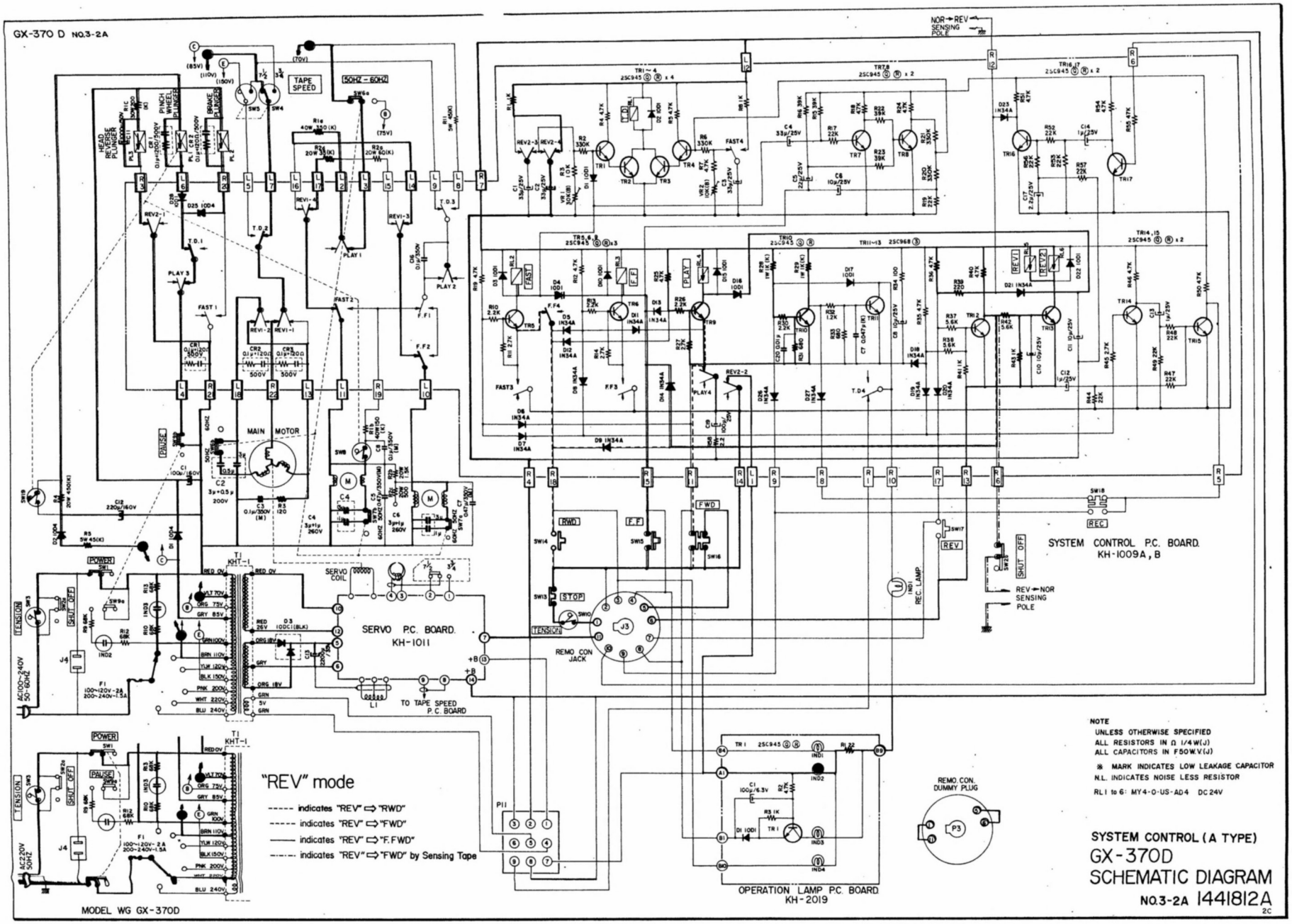
	FUNCTION	RWD	REV	STOP	FWD	F.FWD	FWD REC	REV REC
TRANSISTORS	TR1							
	TR2							
	TR3							
	TR4							
	TR5	○				○		
	TR6					○		
	TR7	○	○	○	○	○	○	○
	TR8	○	○	○	○	○	○	○
	TR9		○		○		○	○
	TR10	○	○	○	○	○		
	TR11						○	○
	TR12	○		○	○	○	○	○
	TR13		○					○
	TR14	○	○	○	○	○	○	○
	TR15						△	△
	TR16							
	TR17							
RELAYS	T.D RL1							
	FAST RL2	○				○		
	F.F RL3					○		
	PLAY RL4		○		○		○	○
	REV 1 RL5		○					○
	REV 2 RL6		○					○
PLUNGER SOLENOIDS	PINCH WHEEL PL1		○		○		○	○
	BRAKE PL2	○	○		○	○	○	○
	HEAD REV PL3		○					○

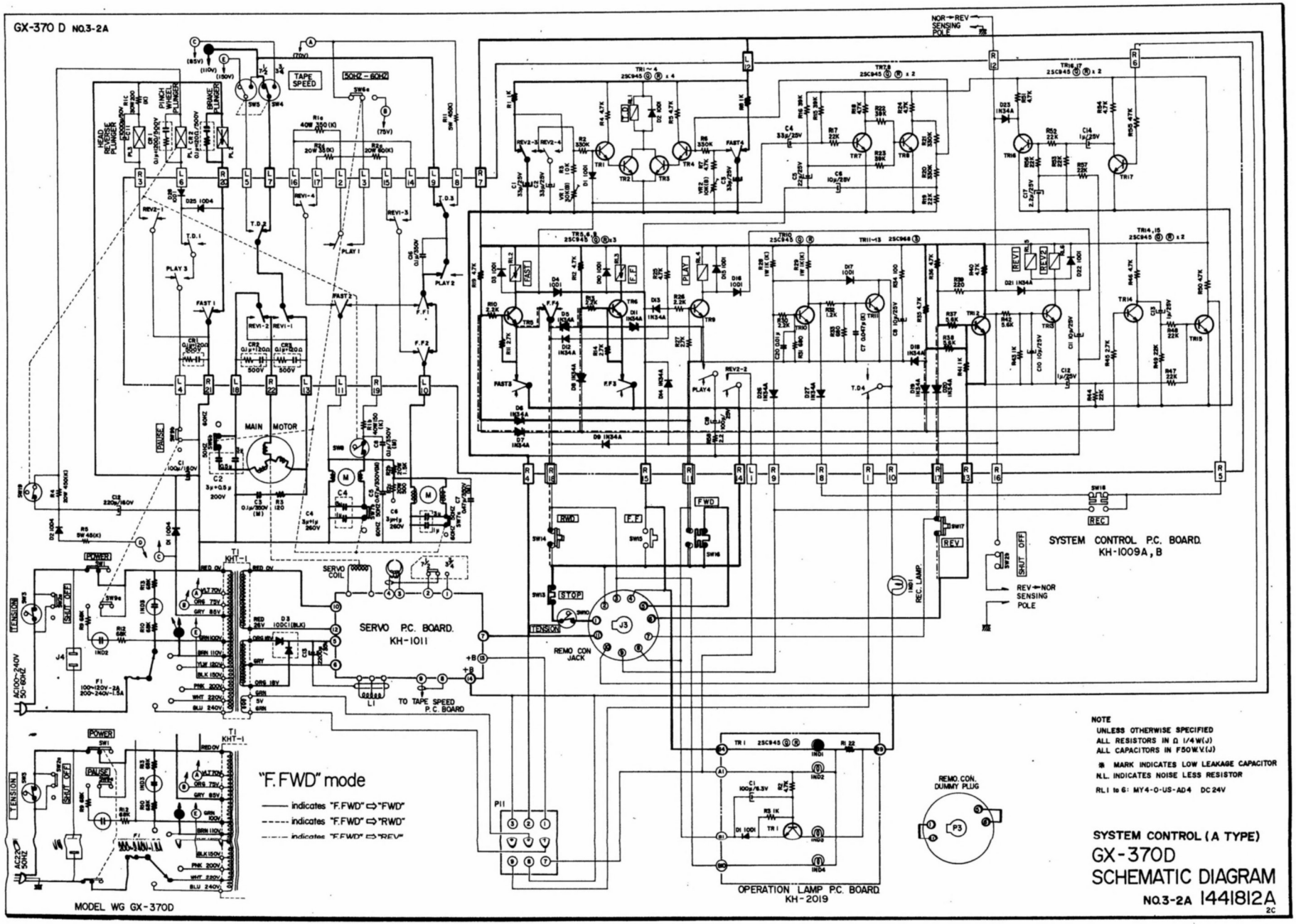
○ mark indicates "engaged"

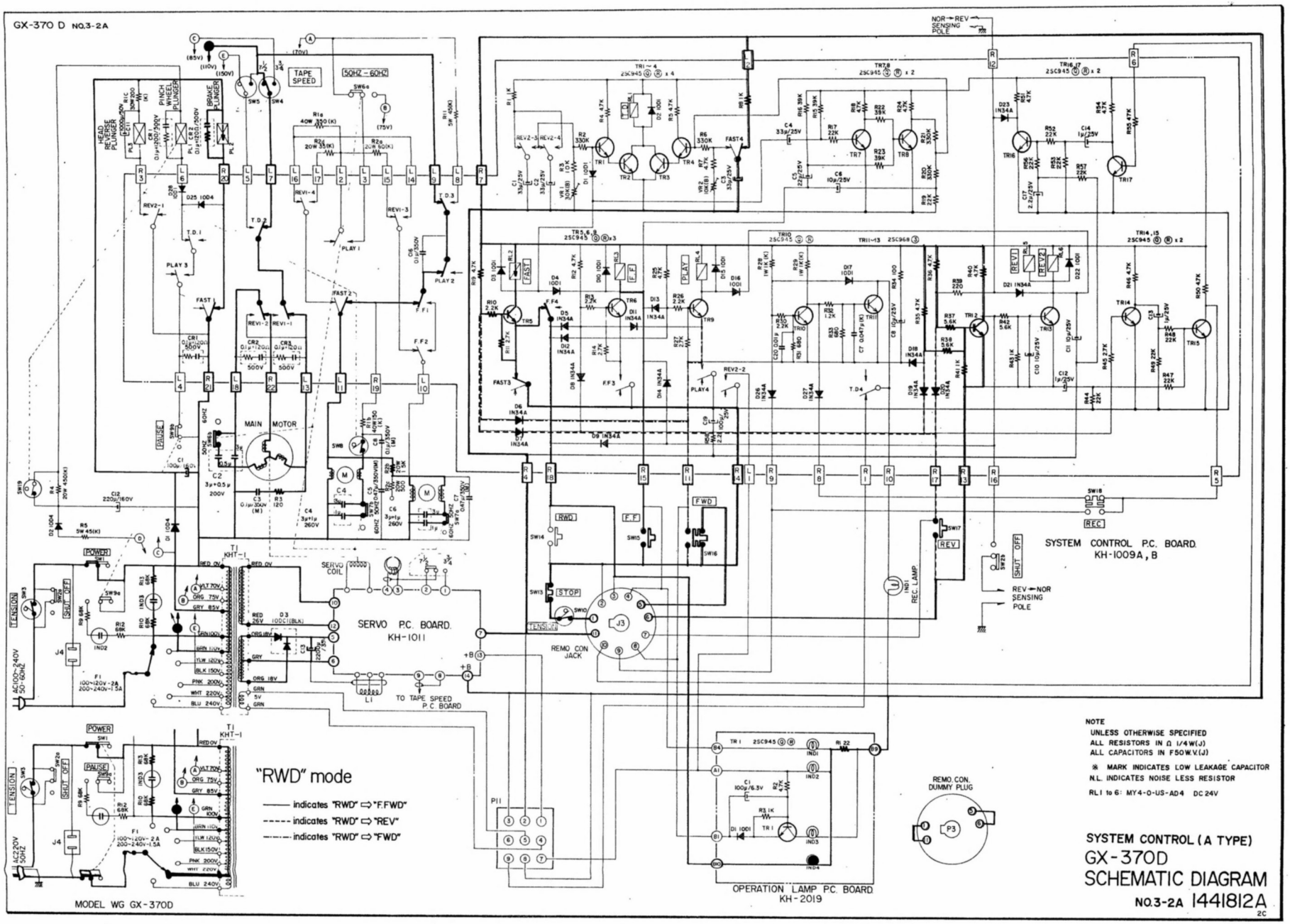
△ mark indicates "momentarily engaged" when the REC, FWD or REV button is depressed

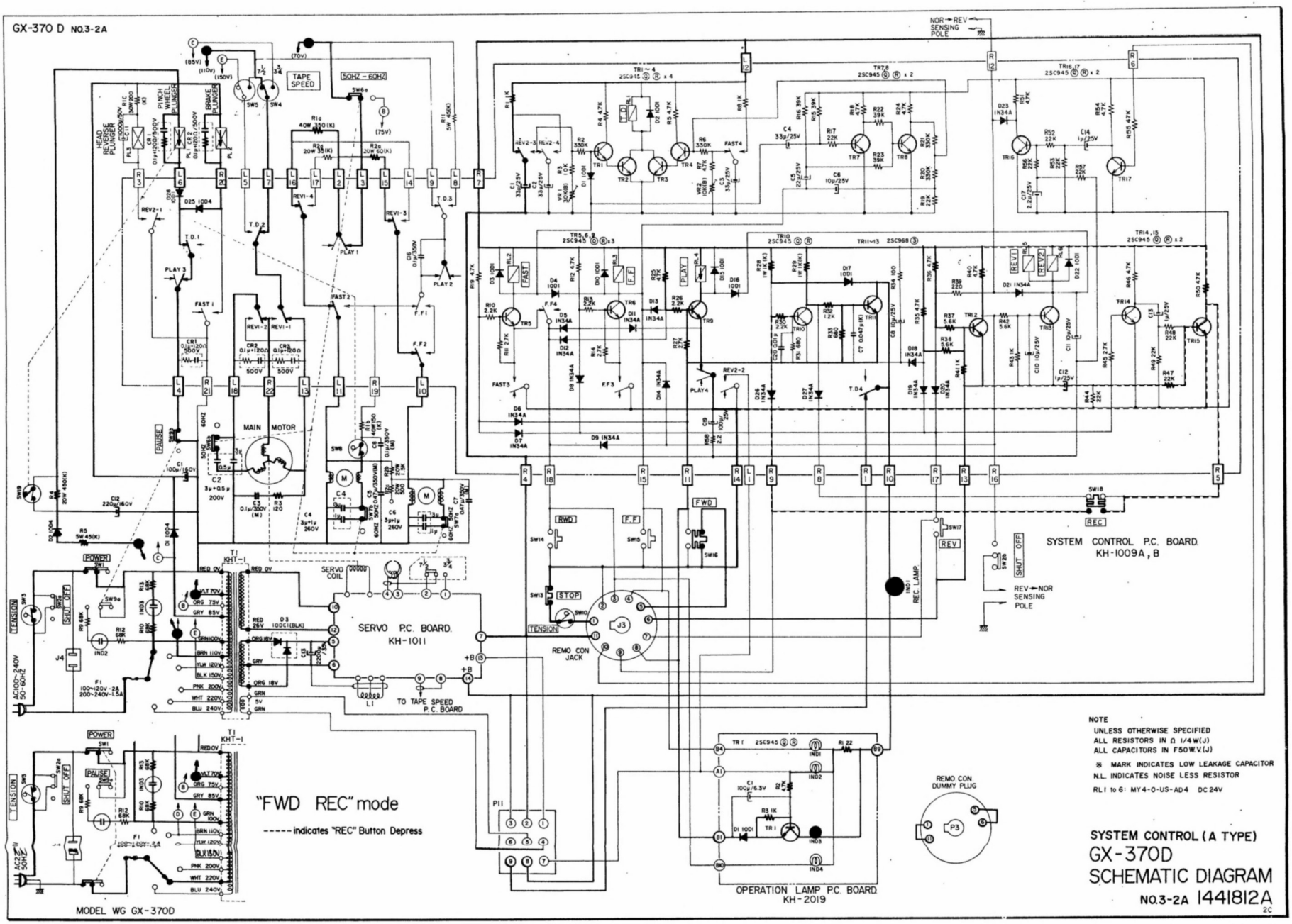
Chart 1

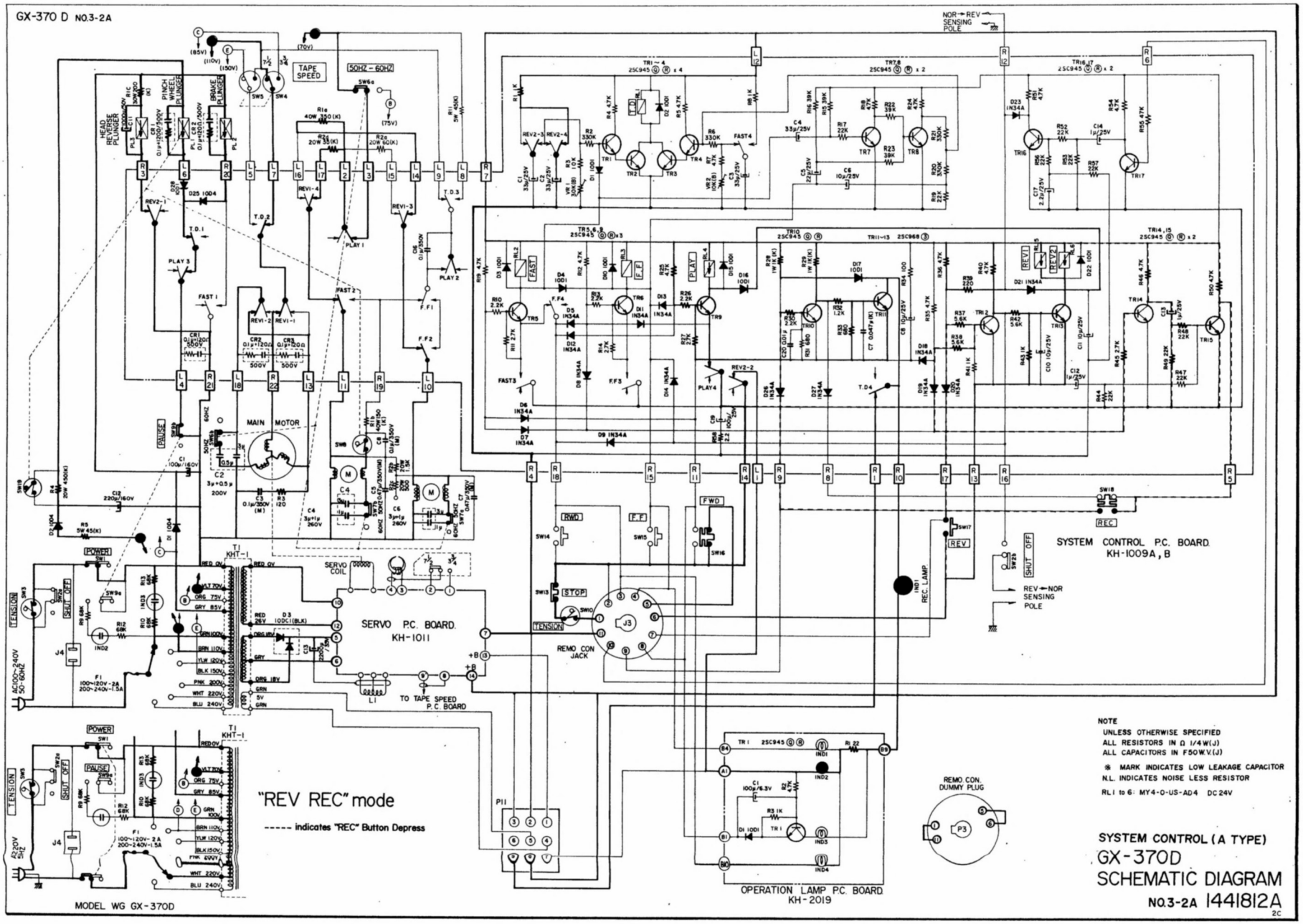

GX-370 D NO.3-2A
SYSTEM CONTROL P.C. BOARD
KH-1009A, B
SERVO P.C. BOARD
KH-1011
OPERATION LAMP P.C. BOARD
KH-2019
TO TAPE SPEED P.C. BOARD
REMO CON JACK
REMO. CON. DUMMY PLUG
MAIN MOTOR
"FWD" mode
indicates "FWD" ⇨ "REV"
indicates "FWD" ⇨ "F.FWD"
indicates "FWD" ⇨ "RWD"
indicates "FWD" ⇨ "REV" by Sensing Tape
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C


GX-370 D NO.3-2A
SYSTEM CONTROL P.C. BOARD KH-1009A, B
SERVO P.C. BOARD KH-1011
OPERATION LAMP P.C. BOARD KH-2019
TO TAPE SPEED P.C. BOARD
REMO. CON JACK
REMO. CON. DUMMY PLUG
MAIN MOTOR
"REV" mode
indicates "REV" ⇨ "RWD"
indicates "REV" ⇨ "FWD"
indicates "REV" ⇨ "F.FWD"
indicates "REV" ⇨ "FWD" by Sensing Tape
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C


GX-370 D NO.3-2A
NOR→REV SENSING POLE
TAPE SPEED
50HZ - 60HZ
MAIN MOTOR
PAUSE
POWER
TENSION
SHUT OFF
SERVO P.C. BOARD KH-1011
SERVO COIL
TO TAPE SPEED P.C. BOARD
REMO CON JACK
SYSTEM CONTROL P.C. BOARD KH-1009A, B
REC
REV
REC. LAMP
REV→NOR SENSING POLE
FWD
RWD
F.F
STOP
"F.FWD" mode
indicates "F.FWD" ⇨ "FWD"
indicates "F.FWD" ⇨ "RWD"
indicates "F.FWD" ⇨ "REV"
REMO. CON. DUMMY PLUG
OPERATION LAMP P.C. BOARD KH-2019
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C


GX-370 D NO.3-2A
TAPE SPEED
50HZ - 60HZ
MAIN MOTOR
SERVO P.C. BOARD
KH-1011
SYSTEM CONTROL P.C. BOARD
KH-1009A, B
REMO. CON JACK
REMO. CON DUMMY PLUG
OPERATION LAMP P.C. BOARD
KH-2019
TO TAPE SPEED P.C BOARD
"RWD" mode
indicates "RWD" ⇨ "F.FWD"
indicates "RWD" ⇨ "REV"
indicates "RWD" ⇨ "FWD"
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C


GX-370 D NO.3-2A
SYSTEM CONTROL P.C. BOARD
KH-1009A, B
SERVO P.C. BOARD
KH-1011
REMO CON JACK
OPERATION LAMP P.C. BOARD
KH-2019
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
MAIN MOTOR
"FWD REC" mode
----- indicates "REC" Button Depress
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C

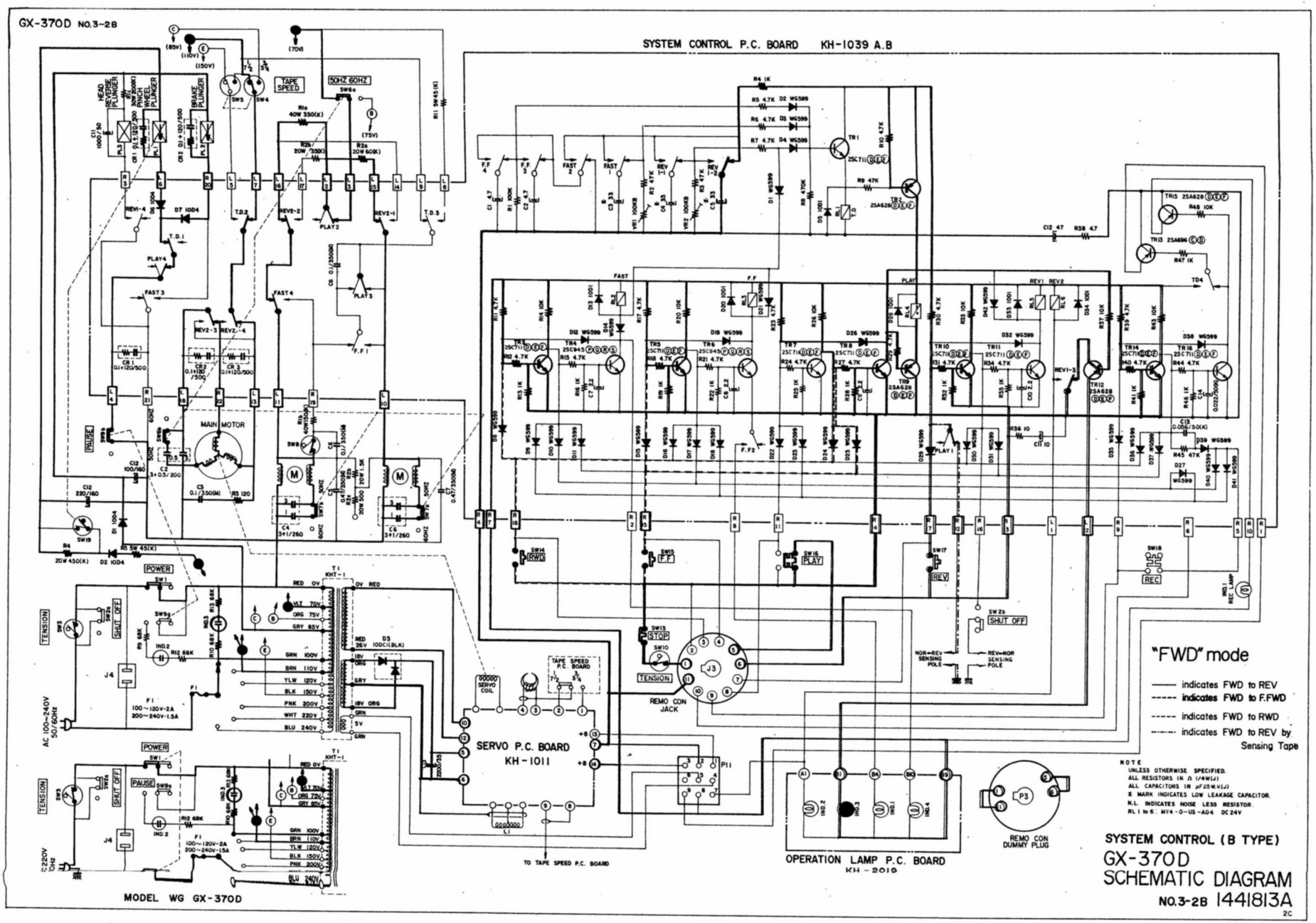

GX-370 D NO.3-2A
SYSTEM CONTROL P.C. BOARD
KH-1009A, B
SERVO P.C. BOARD
KH-1011
OPERATION LAMP P.C. BOARD
KH-2019
TO TAPE SPEED P.C. BOARD
REMO CON JACK
REMO CON. DUMMY PLUG
MAIN MOTOR
SERVO COIL
TAPE SPEED
50HZ - 60HZ
"REV REC" mode
----- indicates "REC" Button Depress
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-0-US-AD4 DC24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A
2C

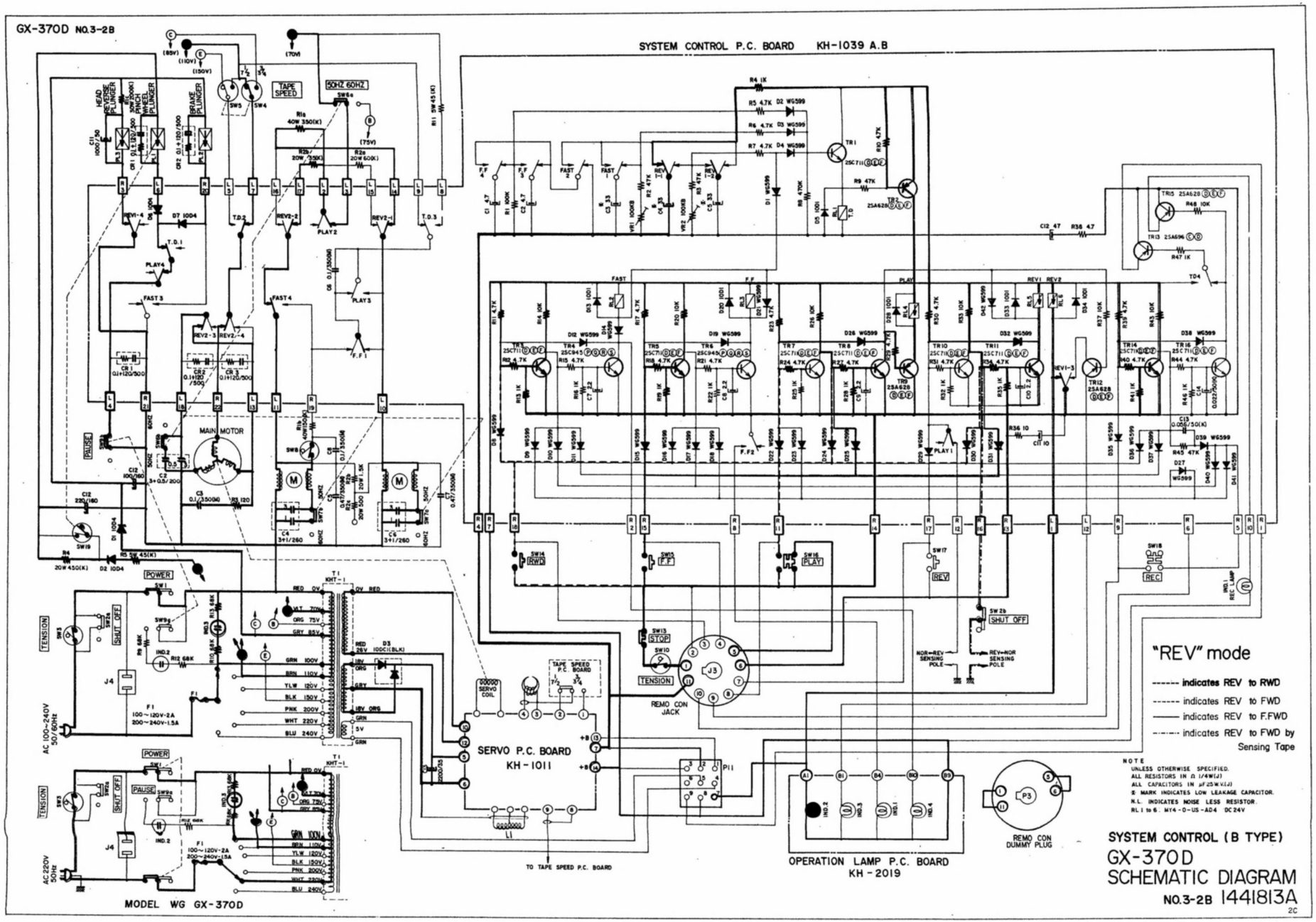
(Refer to Schematic Diagram 7 through 12)

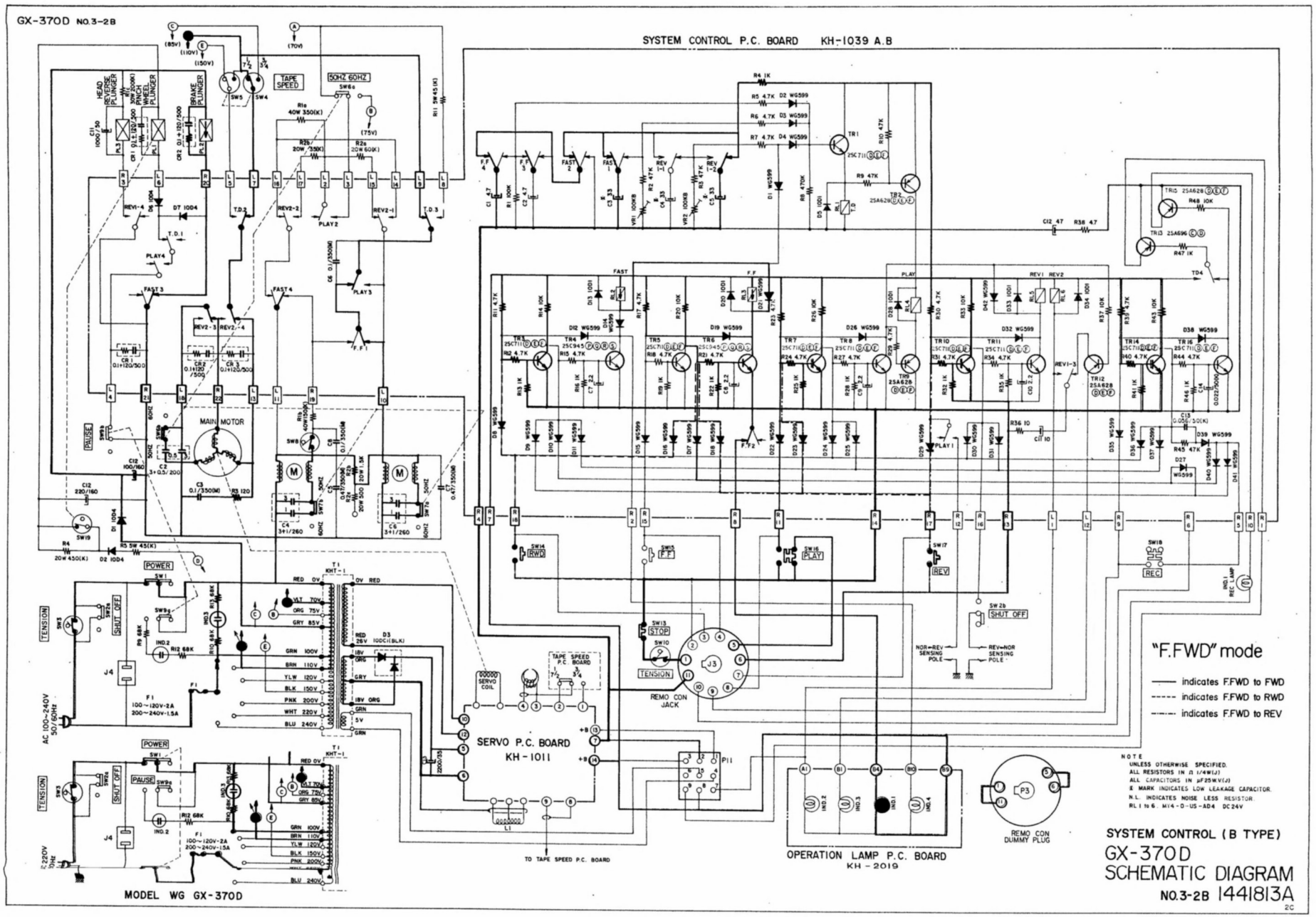
FUNCTION		RWD	REV	STOP	FWD	F.FWD	FWD REC	REV REC
TRANSISTORS	TR1							
	TR2		○		○		○	○
	TR3		○	○	○	○	○	○
	TR4	○						
	TR5	○	○	○	○		○	○
	TR6					○		
	TR7	○		○		○		
	TR8		○		○		○	○
	TR9		○		○		○	○
	TR10	○		○	○	○	○	
	TR11		○					○
	TR12				○		○	
	TR13						○	○
	TR14	○	○	○	○	○		
	TR15						○	○
	TR16						○	○
RELAYS	T.D RL1							
	FAST RL2	○				○		
	F.F RL3					○		
	PLAY RL4		○		○		○	○
	REV1 RL5		○					○
	REV2 RL6		○					○
PLUNGER SOLENOIDS	PINCH WHEEL PL1		○		○		○	○
	BRAKE PL2	○	○		○	○	○	○
	HEAD REV PL3		○					○

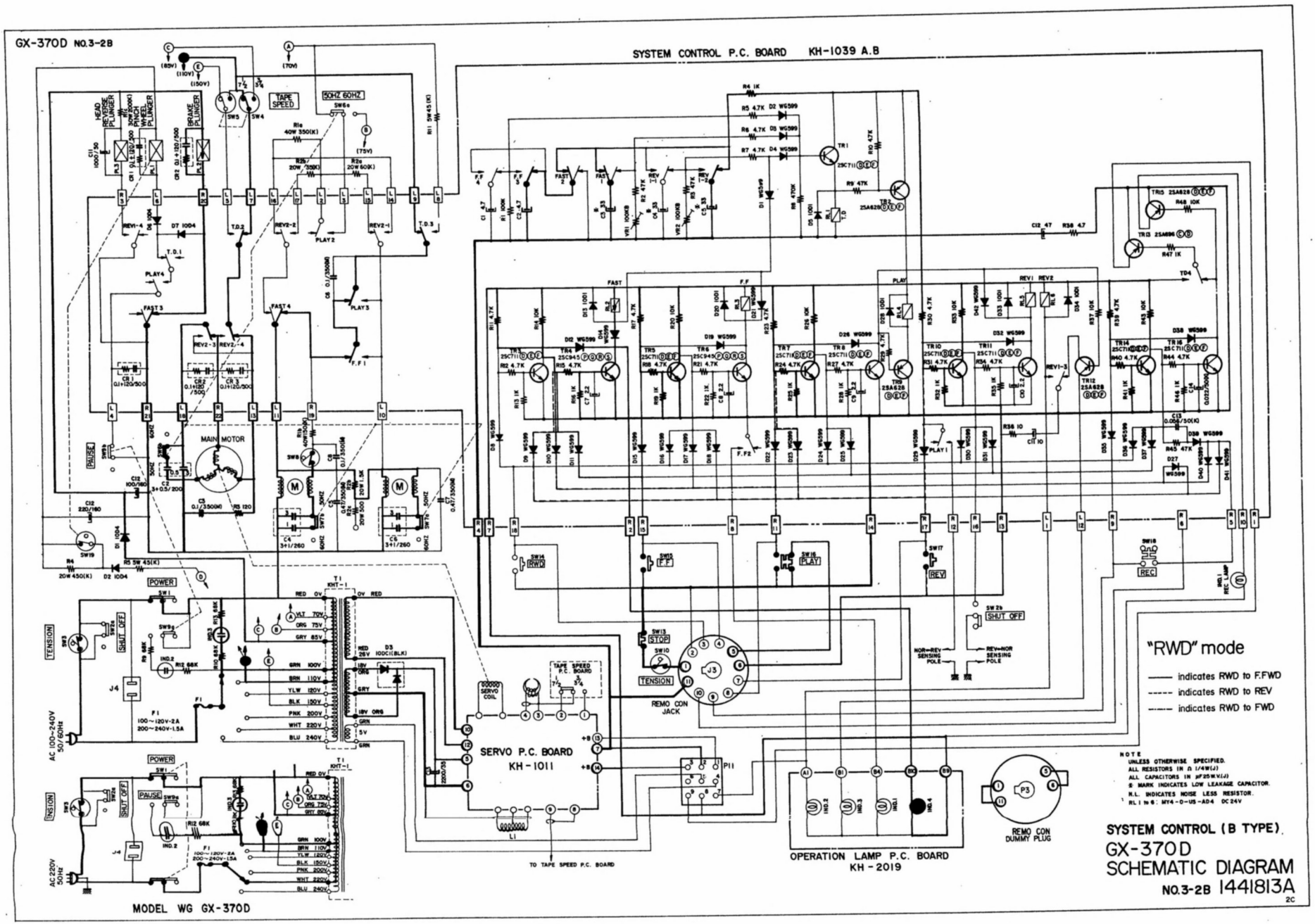
○ mark indicates "engaged"

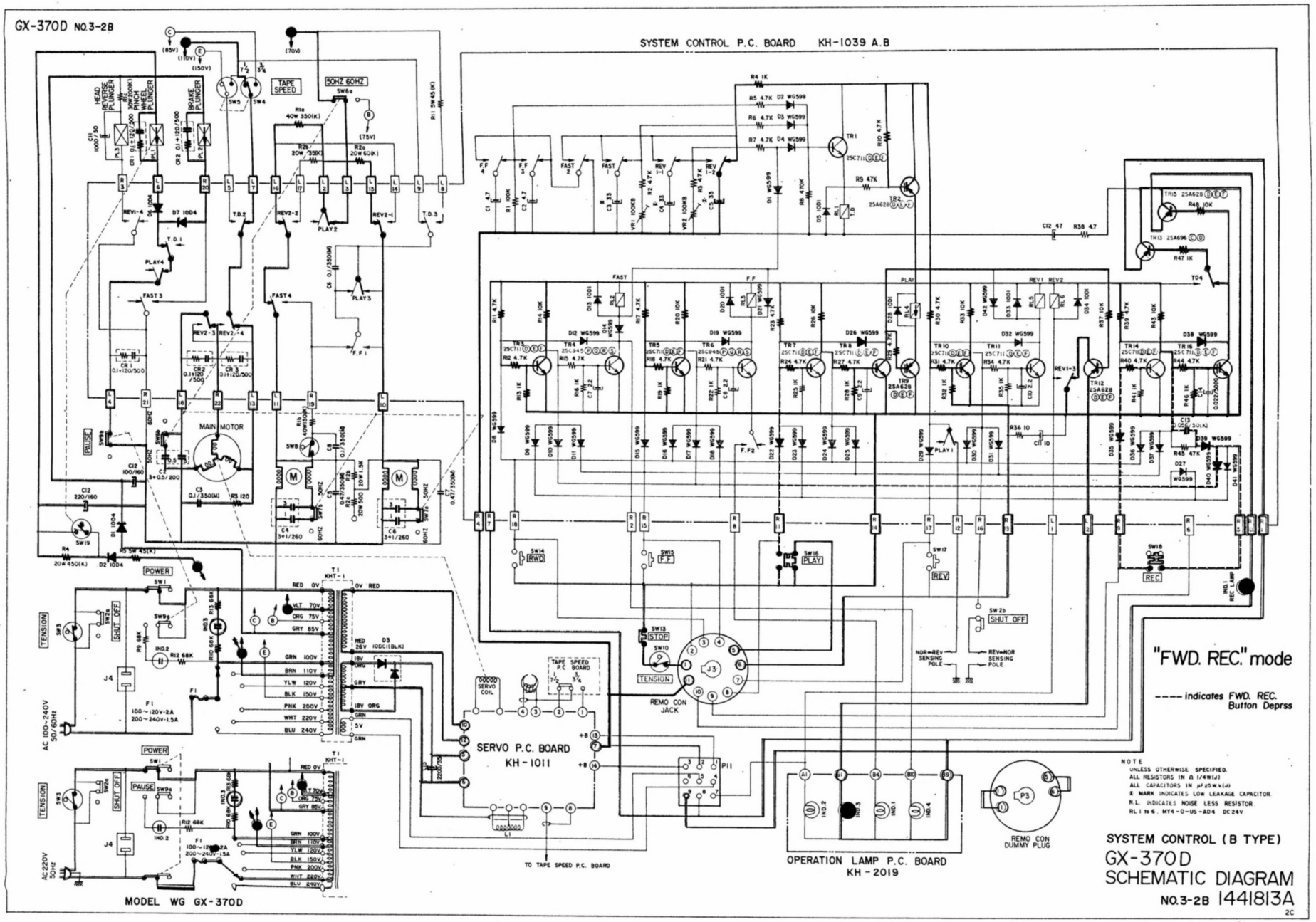
Chart 2

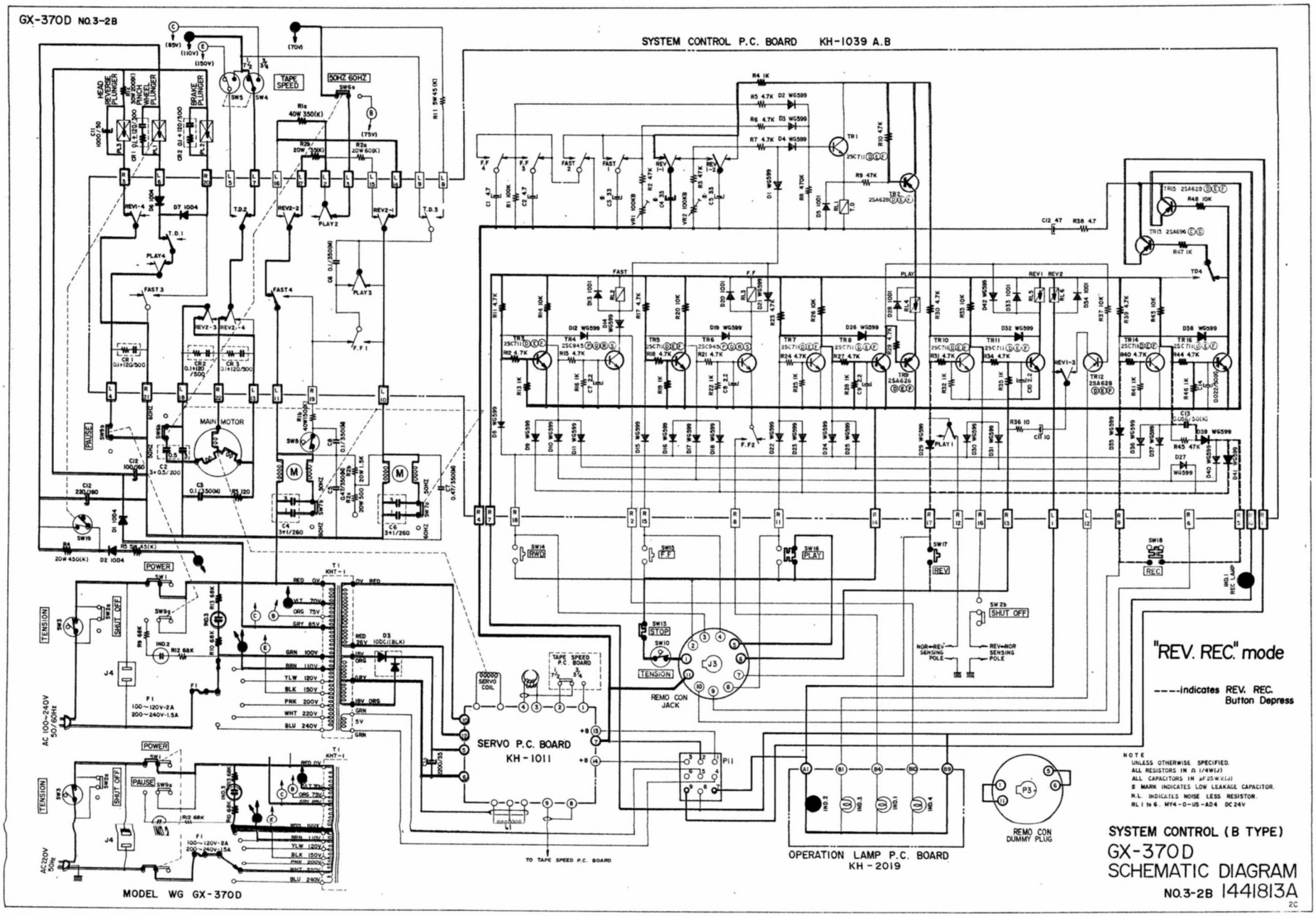

GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
"FWD" mode
indicates FWD to REV
indicates FWD to F.FWD
indicates FWD to RWD
indicates FWD to REV by Sensing Tape
NOTE
UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN μF 25W.V.(J)
S MARK INDICATES LOW LEAKAGE CAPACITOR.
N.L. INDICATES NOISE LESS RESISTOR.
RL 1 to 6: MY4-O-US-AD4 DC 24V
SERVO P.C. BOARD KH-1011
OPERATION LAMP P.C. BOARD KH-2019
REMO CON JACK
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
MODEL WG GX-370D
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A
2C


GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
"REV" mode
indicates REV to RWD
indicates REV to FWD
indicates REV to F.FWD
indicates REV to FWD by Sensing Tape
NOTE
UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN μF 25W(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR.
N.L. INDICATES NOISE LESS RESISTOR.
RL 1 to 6 : MY4-O-US-AD4 DC24V
SERVO P.C. BOARD KH-1011
OPERATION LAMP P.C. BOARD KH-2019
REMO CON JACK
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
MODEL WG GX-370D
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A
2C


GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
SERVO P.C. BOARD KH-1011
OPERATION LAMP P.C. BOARD KH-2019
MODEL WG GX-370D
"F.FWD" mode
indicates F.FWD to FWD
indicates F.FWD to RWD
indicates F.FWD to REV
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A


GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
"RWD" mode
indicates RWD to F.FWD
indicates RWD to REV
indicates RWD to FWD
NOTE
UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN μF/25WV(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR.
N.L. INDICATES NOISE LESS RESISTOR.
RL 1 to 5 : MY4-O-US-AD4 DC 24V
SYSTEM CONTROL (B TYPE).
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A
2C
SERVO P.C. BOARD
KH-1011
OPERATION LAMP P.C. BOARD
KH-2019
REMO CON JACK
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
MODEL WG GX-370D


GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
MAIN MOTOR
SERVO P.C. BOARD
KH-1011
OPERATION LAMP P.C. BOARD
KH-2019
REMO CON JACK
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
"FWD. REC." mode
---- indicates FWD. REC. Button Deprss
NOTE
UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN μF 25W(K)(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR.
N.L. INDICATES NOISE LESS RESISTOR.
RL 1 to 6 : MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A
MODEL WG GX-370D


GX-370D NO.3-28
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
MAIN MOTOR
SERVO P.C. BOARD
KH-1011
SERVO COIL
TAPE SPEED P.C. BOARD
REMO CON JACK
OPERATION LAMP P.C. BOARD
KH-2019
REMO CON DUMMY PLUG
TO TAPE SPEED P.C. BOARD
MODEL WG GX-370D
"REV. REC." mode
----indicates REV. REC. Button Depress
NOTE
UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN μF/25W.V.(J)
S MARK INDICATES LOW LEAKAGE CAPACITOR.
N.L. INDICATES NOISE LESS RESISTOR.
RL 1 to 6 MY4-0-US-AD4 DC 24V
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-28 1441813A
2C

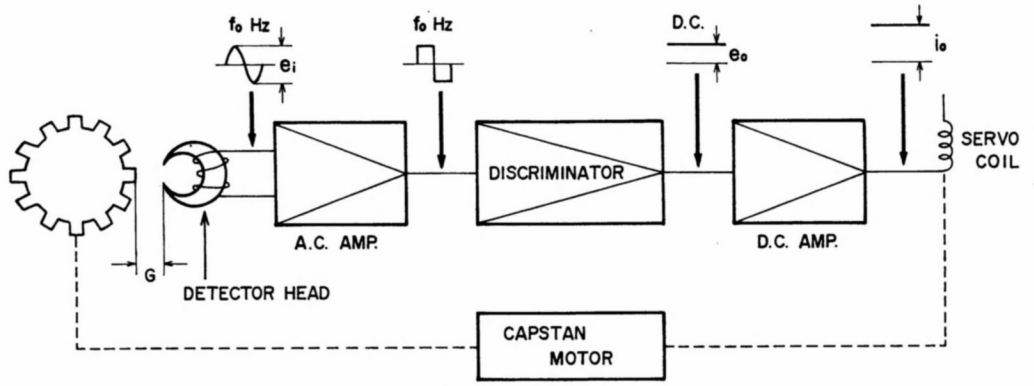
2. VOLTAGE SUPPLY TO TORQUE MOTOR AND TENSION AT VARIOUS MODES

TORQUE MOTOR / MODE	Left Side	Right Side
FWD	29V (35V) 50g	55V (62V) 170g
REV	61V (67V) 210g	29V (35V) 50g
F.FWD	10V (10V) 15g	118V (118V) 600g
RWD	118V (118V) 600g	10V (10V) 15g

( ) indicates Voltage at 60 Hz.

Chart 3

VIII. SERVO MOTOR OPERATING PRINCIPLES



G (Gap): Adjust to obtain a detector head terminal voltage of 3 ±0.5 mV at 7-1/2 ips.

Fig. 21

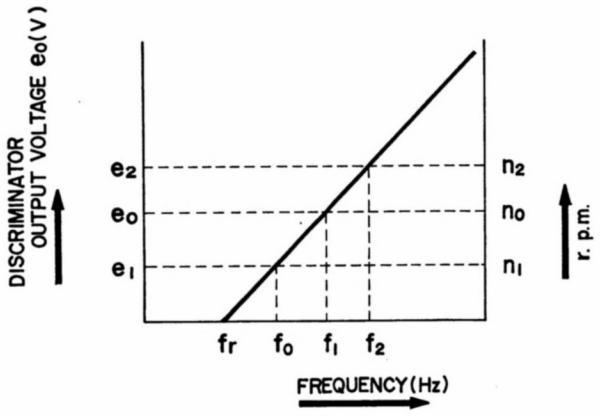


Fig. 22

1. The detector head core is comprised of a permanent magnet, and the gear installed on the motor, by means of the capstan motor revolutions, changes the magnetic flux of the detector head core. Accordingly, the detector head coil works in the same way and generates AC Voltage (becomes the detector signal described below). When this detector signal voltage (e_i) becomes detector signal frequency (f_o), this adjusts the capstan motor revolutions proportionately. (See Figs. 21 & 22)

2. When the detector signal voltage generated from the detector head is about 3 mV (at 7-1/2 ips), because the level is low, the perpendicular (up and down) waveform is amplified by the AC Amplifier until the waveform is clipped. (See Fig. 21)

3. Discriminator Coil L-1 (V12031SC-01) and C-210 (0.051/50) at 7-1/2 ips (and C-211 (0.27/100) at 3-3/4 ips) constitute the resonance circuit, and this resonance frequency becomes f_r. Because the detector signal frequency generated at the detector coil differs according to capstan motor revolutions, the capacity of the discriminator resonance condenser changes, and the resonance frequency changes at the different tape speeds of 7-1/2 and 3-3/4 ips.

4. When the discriminator input frequency and the resonance frequency f_r are simultaneous, the DC signal to be supplied to the next stage DC Amplifier is not generated. Consequently, when the capstan motor rotates at normal speed, a higher than resonance frequency fr, detector signal. Signal frequency f_o is established.

5. As shown in Chart 4, when electric current is not flowing to the capstan motor servo coil, the capstan motor revolutions are far faster than normal revolutions. Consequently, in order to maintain normal revolutions, an electro-magnetic field is generated at the servo coil by means of collector current flowing to TR-209 (2SD234), and this serves as an electro-magnetic brake. This electro-magnetic brake and the load torque balances the capstan motor torque and normal revolutions are maintained.

TAPE SPEED	Capstan motor supply voltage	Capstan motor supply voltage at FWD or REV starting time	Voltage and frequency generated at the detector coil	Controlled capstan motor speed	Uncontrolled capstan motor speed
7-1/2 ips	110V	150V	3 mV ± 0.5 mV r.m.s. / 1040 Hz	520 r.p.m.	1420 r.p.m.
3-3/4 ips	85V	110V	1.5 mV ± 0.25 mV r.m.s. / 520 Hz	260 r.p.m.	1380 r.p.m.

Chart 4

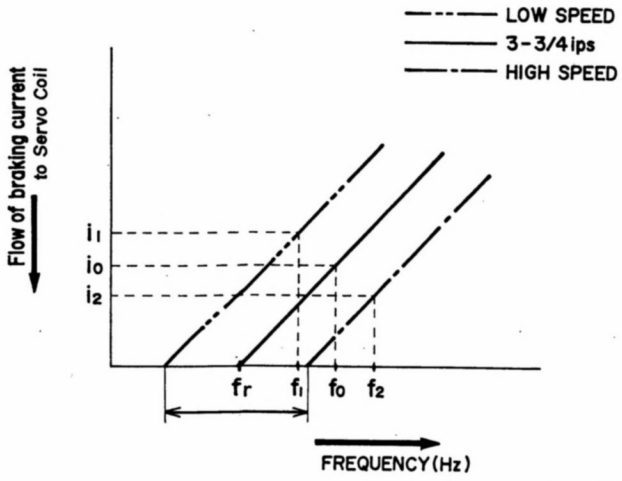


Fig. 23

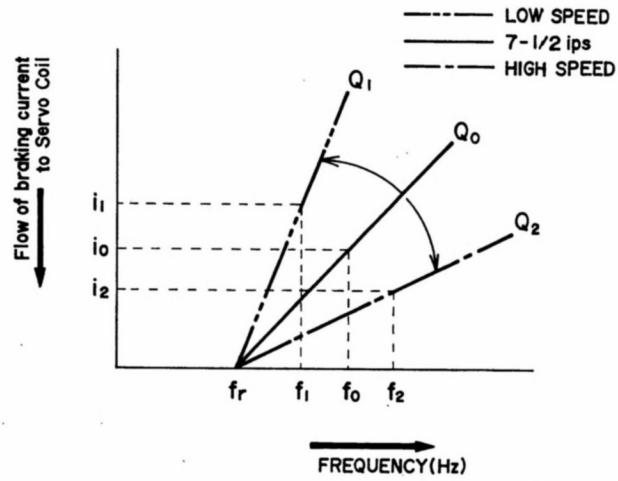


Fig. 24

6. In case of the capstan motor revolutions having reached the speed of n_2, the detector signal produced at the detector coil surpasses f_0 and advances toward the higher f_2 frequency. (See Figs. 23 & 24). Accordingly, the flow of current to the servo coil increases, and because the electro-magnetic braking supplied to the capstan motor is increased, the capstan motor revolutions become slower, and normal revolutions are regained.

7. In case of the capstan motor revolutions having slowed to n_1, the detector signal produced at the detector coil drops to lower than f_0 and descends toward the low f_1 frequency (See Figs. 23 & 24). Accordingly, the flow of current to the servo coil decreases, and because the electro-magnetic braking supplied to the capstan motor is decreased, the capstan motor revolutions speed up and normal revolutions are regained.

8. To obtain the proper number of revolutions, adjustment of the flow of brake current to the servo coil is necessary.

1) At 3-3/4 ips tape speed
As shown in Fig. 23, resonance frequency f_r (between the arrow mark) is changed by adjusting the dust core of discriminator coil L-1 (V1203 1SC-01). Accordingly, f_0 is also changed between f_1 and f_2, and the flow of braking current (i_0) to the servo coil is also changed between i_1 and i_2. Consequently, correct tape speed can be attained by using a tape speed measuring tape and a Frequency Counter and adjusting the dust core of coil L-1.

2) At 7-1/2 ips tape speed
As shown in Fig. 24, Q_0 of the resonance circuit (within the arrow mark with f_r as center frequency), is changed by adjusting discriminator semi-fixed resistor VR-202 (2k B). Therefore, f_0 is also changed between f_1 and f_2 and, the flow of current (i_0) to the servo coil is also changed between i_1 and i_2. Consequently, correct tape speed can be attained by using a tape speed measuring tape and a Frequency Counter and adjusting semi-fixed resistor VR-202.

IX. DIFFERENTIATION OF SYSTEM CONTROL SCHEMATIC DIAGRAM & P. C. BOARD

1. Because the System Control Schematic Diagram and the P.C. Board are differentiated by serial number, the following (Chart 5) is provided for reference.

Serial Number	Schematic Diagram No.	P.C. Board
# 70301-0001 to # 70809-2000	No. 3-3A	KH-1009A, B
from # 71011-0001	No. 3-3B	KH-1039A, B

Chart 5

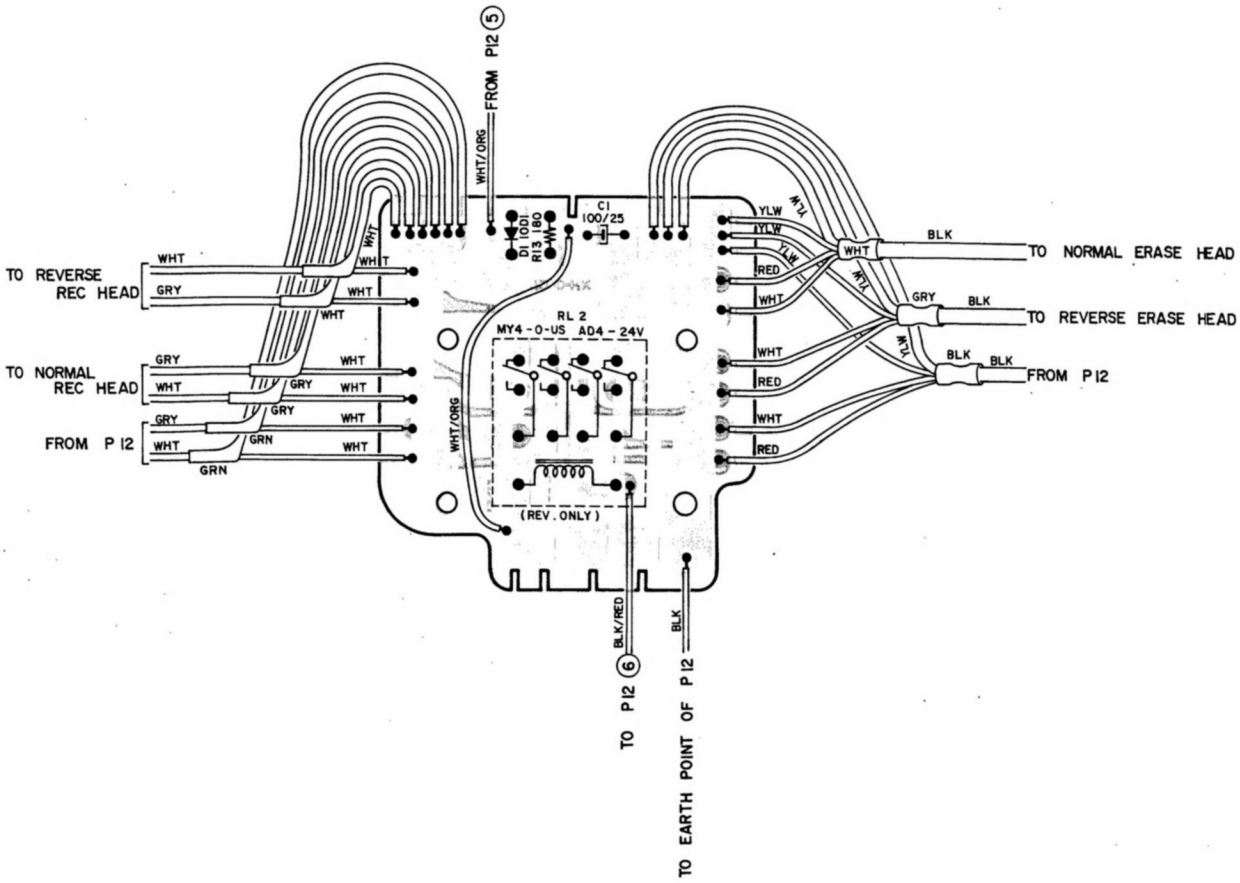
Accordingly, because System Control P.C. Board KH-1009A, B and KH-1039A, B are not interchangeable, when placing your order, be sure to state the System Control P.C. Board number.

2. When using a KH-1039A, B in a machine employing System Control P.C. Board KH-1009A, B, the following changes are also necessary.

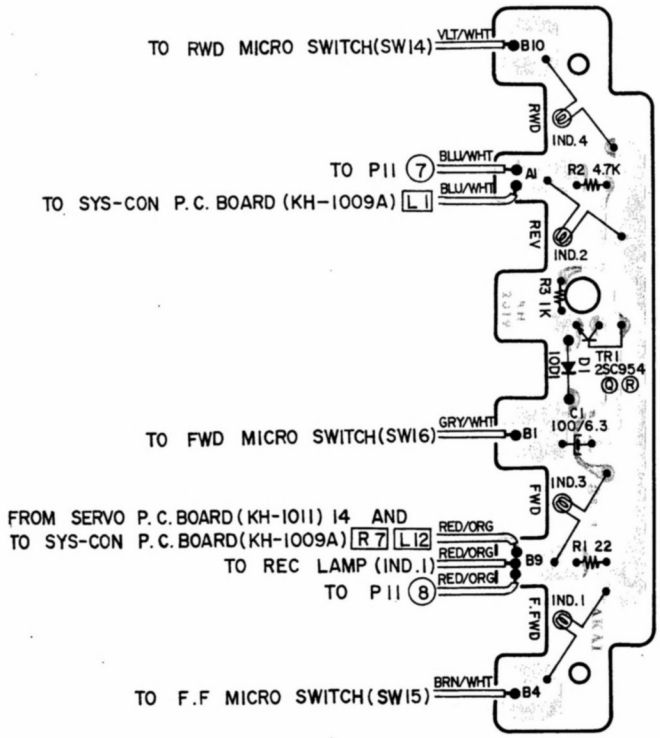
   1) Remove the lead wires connected to operation switches SW-14 (RWD), SW-15 (F.FWD), and SW-16 (FWD) from terminals (B1) (B4) and (B10) of the Operation Lamp P.C. Board.
   2) Remove the multi-socket terminal [L12] lead wire connected to the System Control P.C. Board, and connect terminals [L12] and (B1).
   3) Remove the multi-socket terminal [R8] lead wire connected to the System Control P.C. Board, and connect terminals [R8] and (B4).
   4) Remove the multi-socket terminal [R2] lead wire and connect terminals [R2] and (B10).
   5) Disconnect the various inner components (resistor, capacitor, diode, and transistor) of the Operation Lamp P.C. Board and directly connect Lamps IND-1 through IND-4.

X. COMPOSITE VIEWS OF COMPONENTS

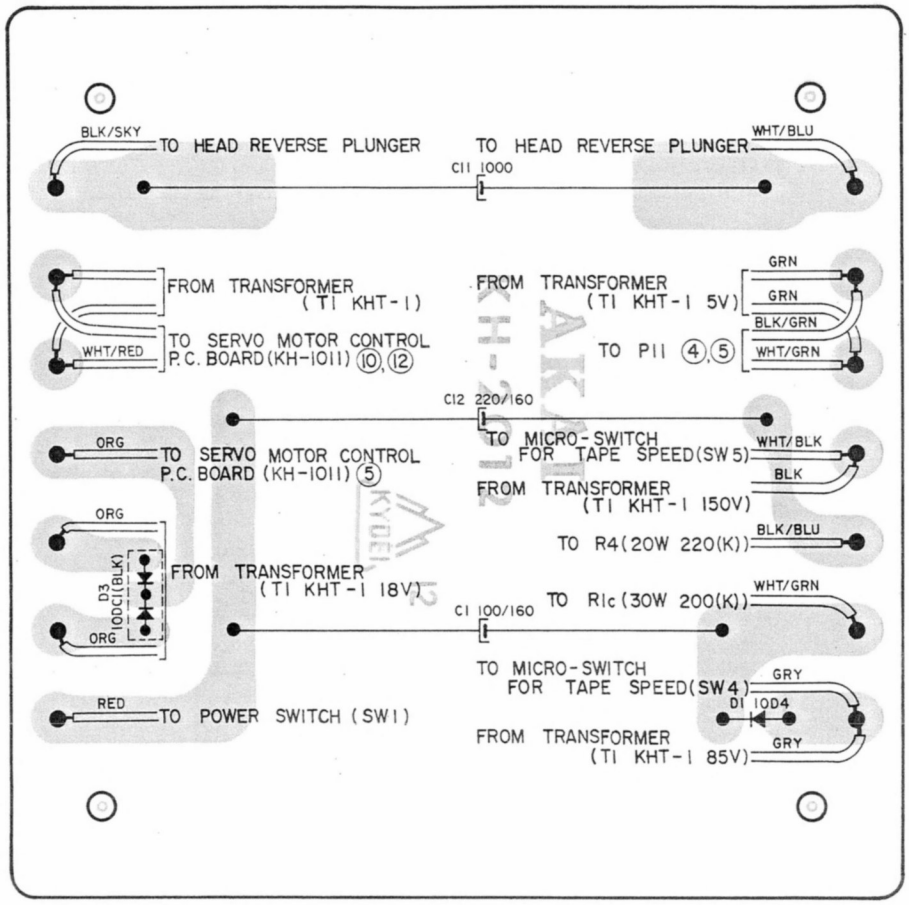
HEAD RELAY P.C. BOARD (KH-0029)



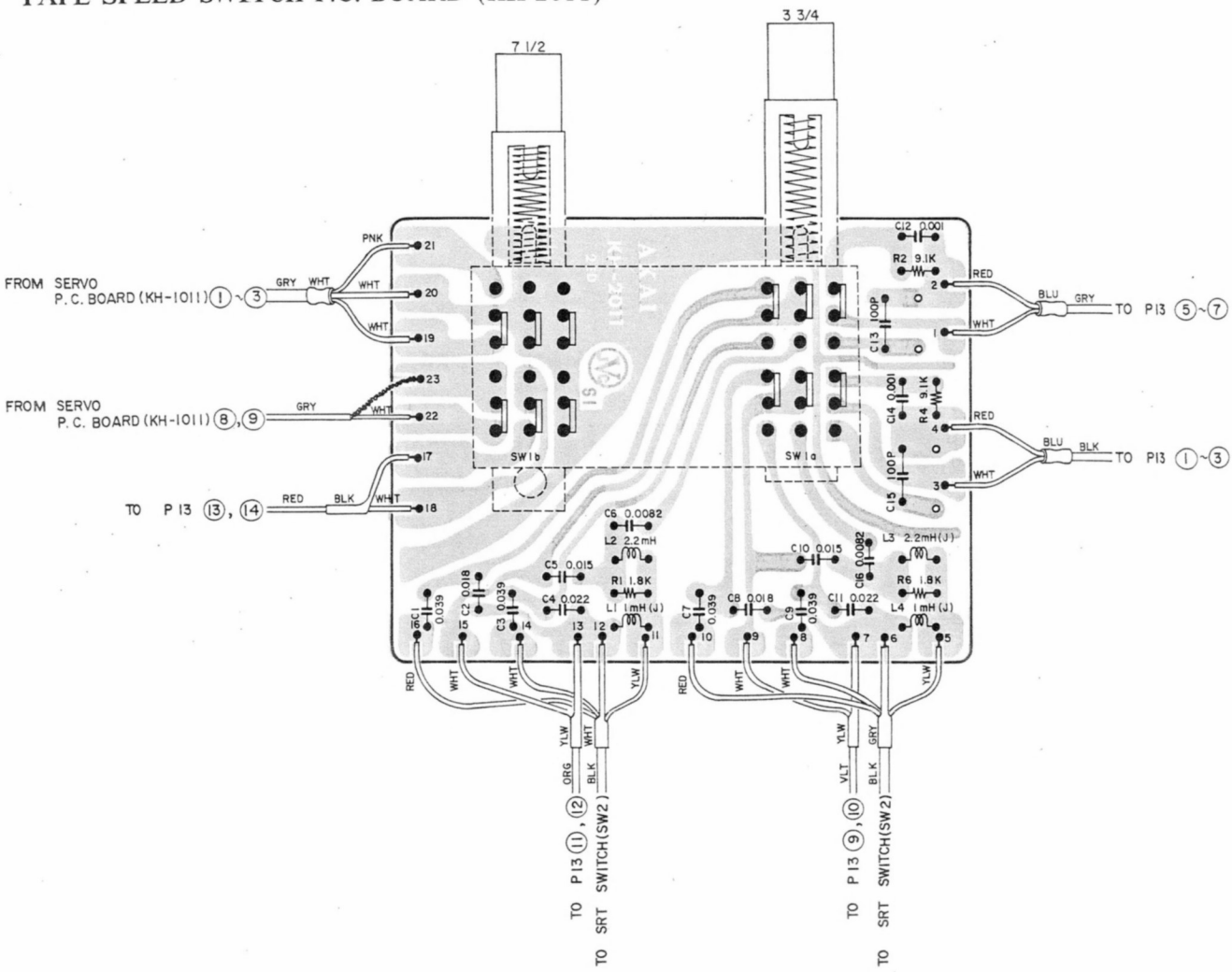
OPERATION LAMP P.C. BOARD (KH-2019)



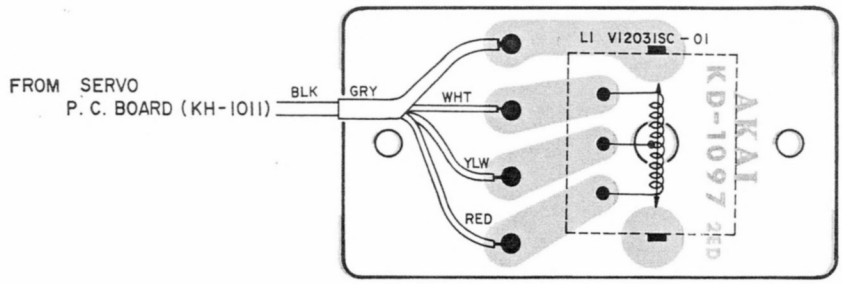
CAPACITOR P.C. BOARD (KH-2012)



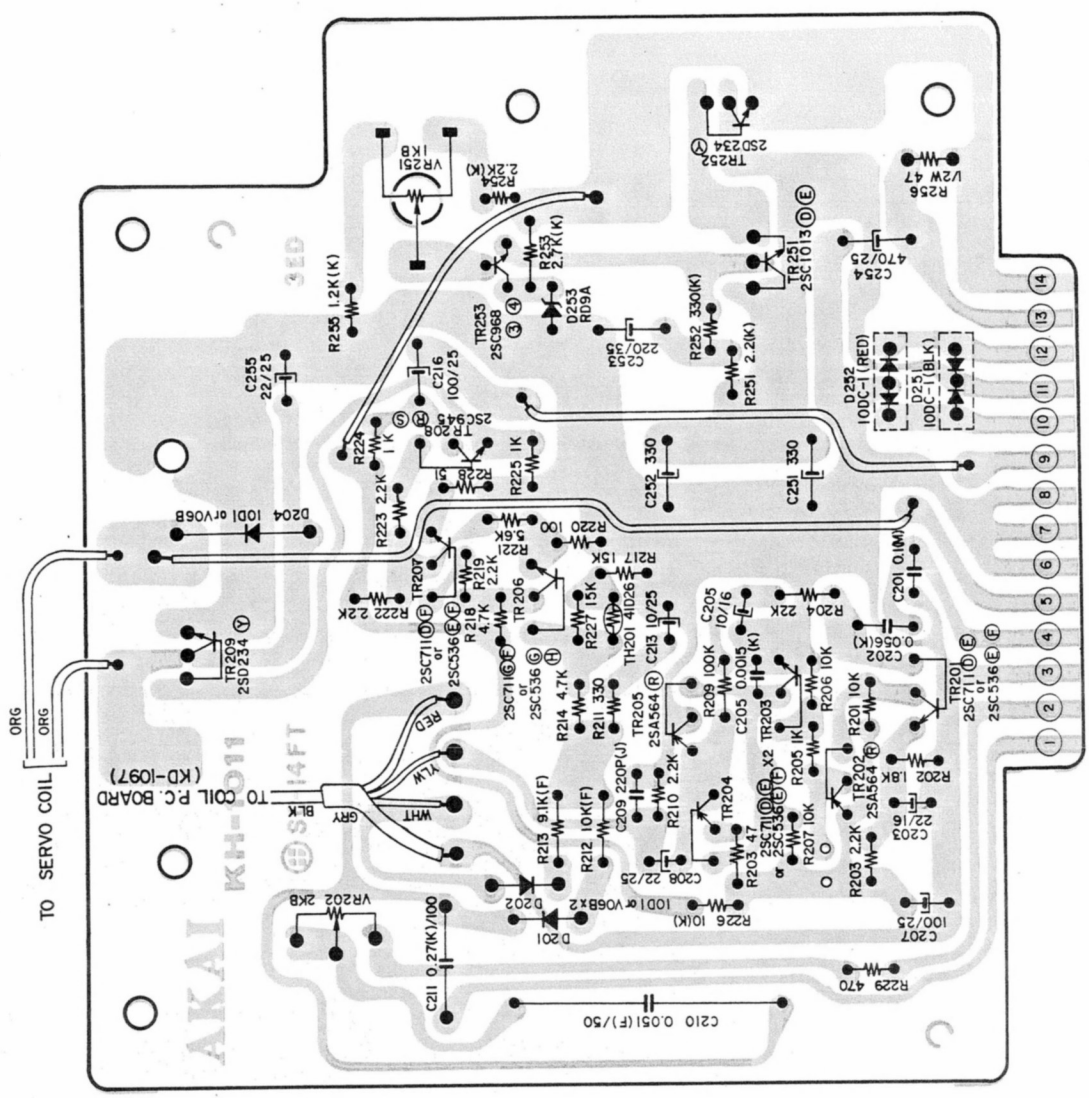
TAPE SPEED SWITCH P.C. BOARD (KH-2011)



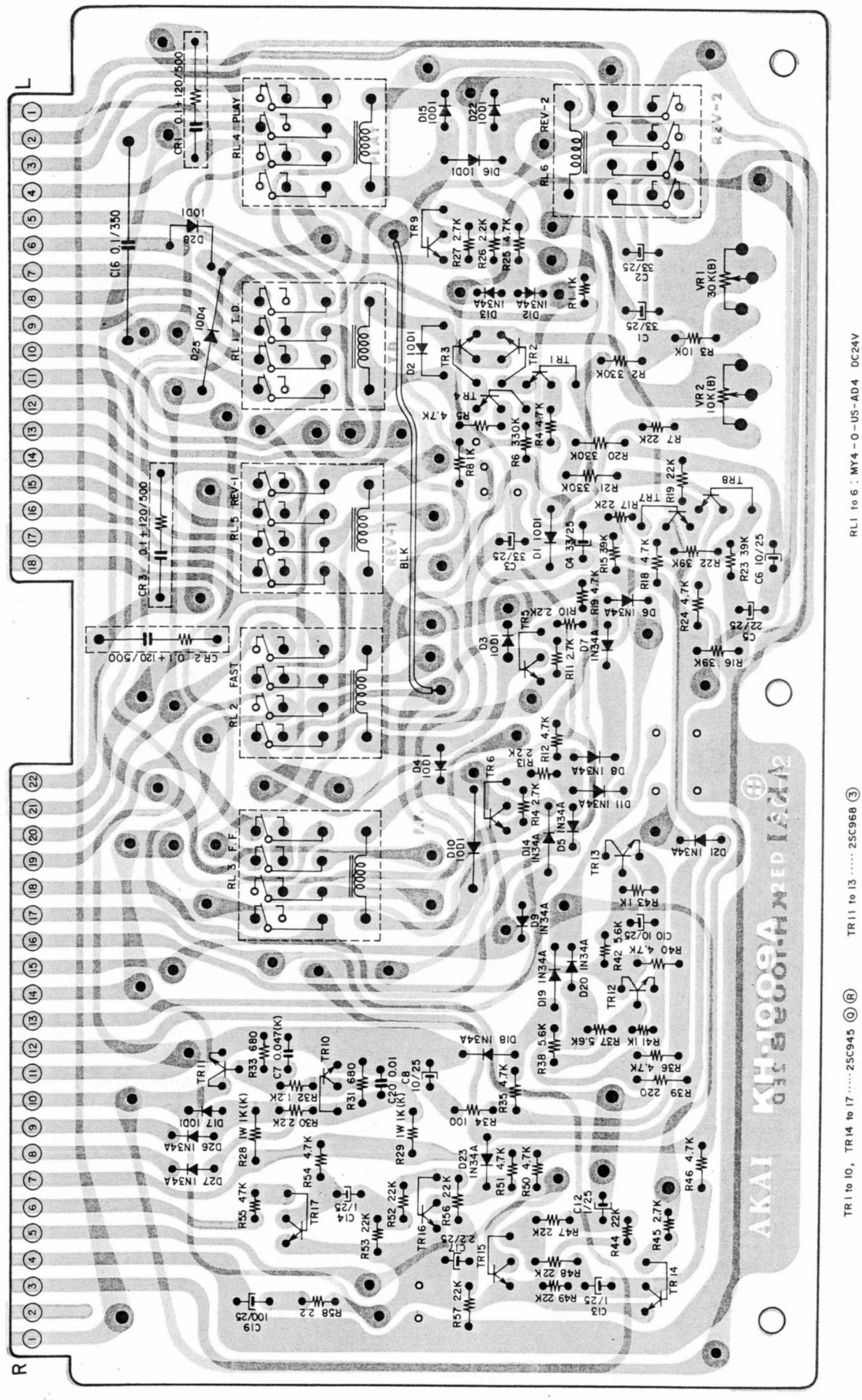
COIL P.C. BOARD (KD-1097 2ED)



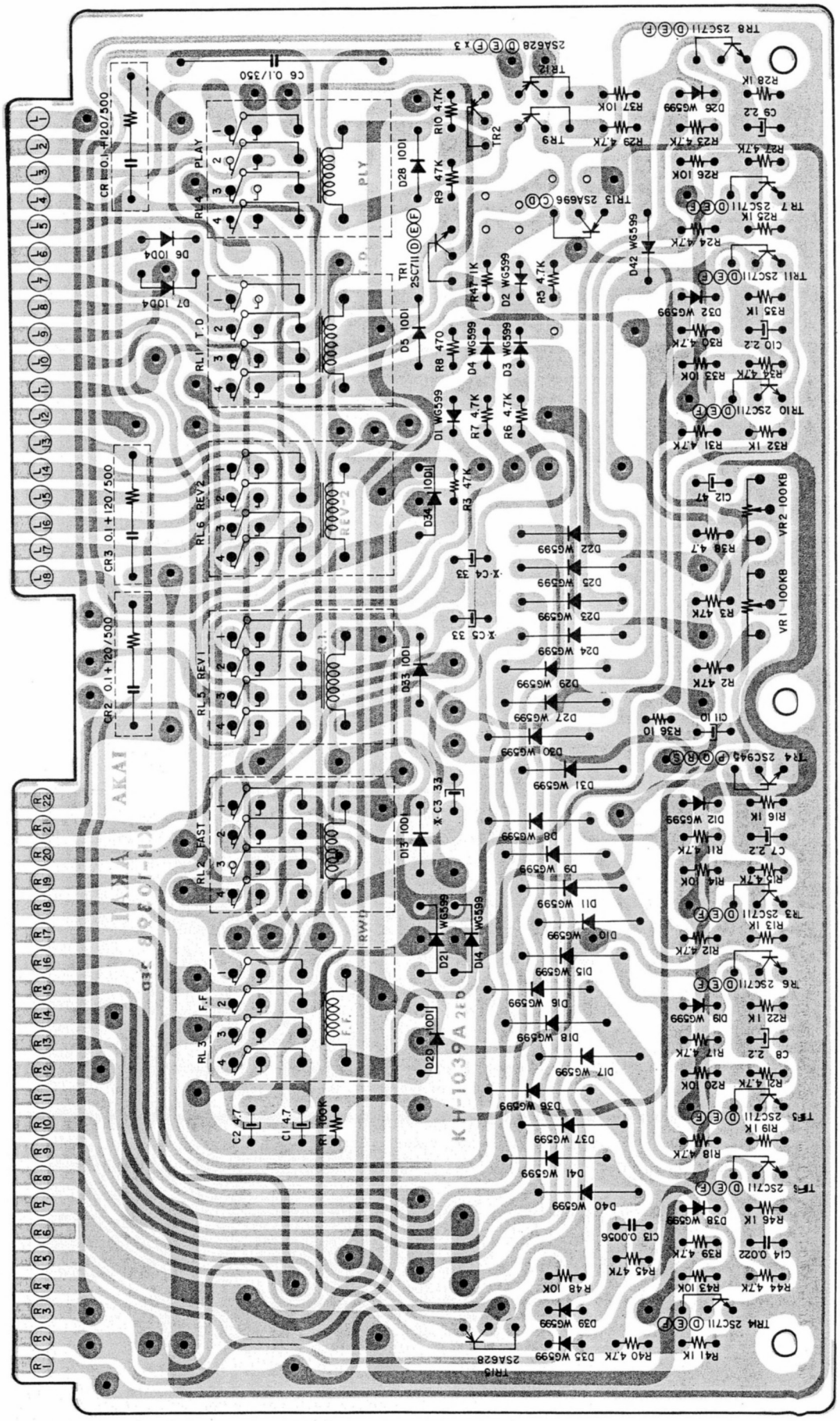
SERVO P.C. BOARD (KH-1011)



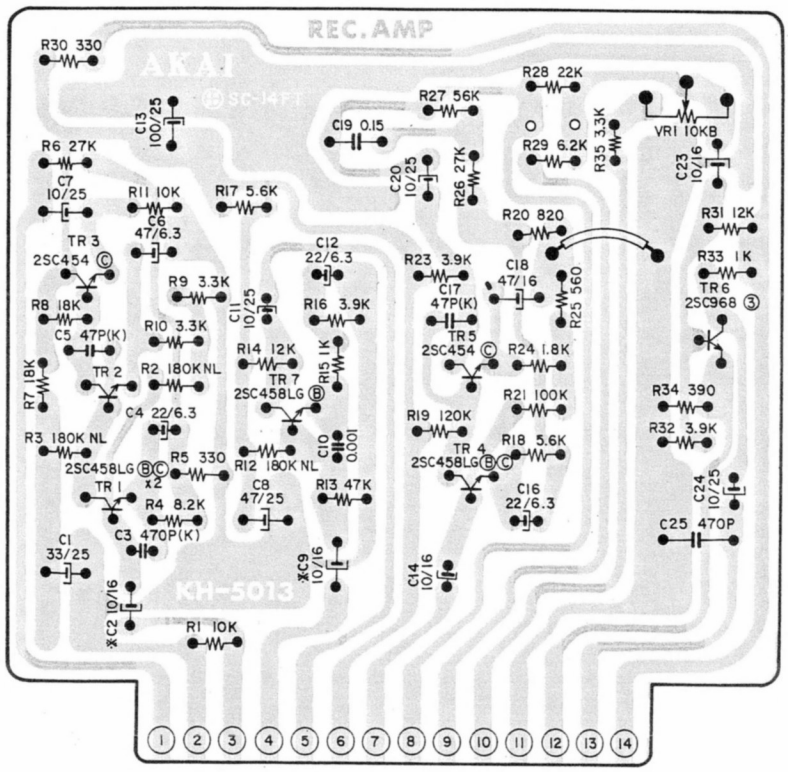
SYSTEM CONTROL P.C. BOARD (KH-1009)



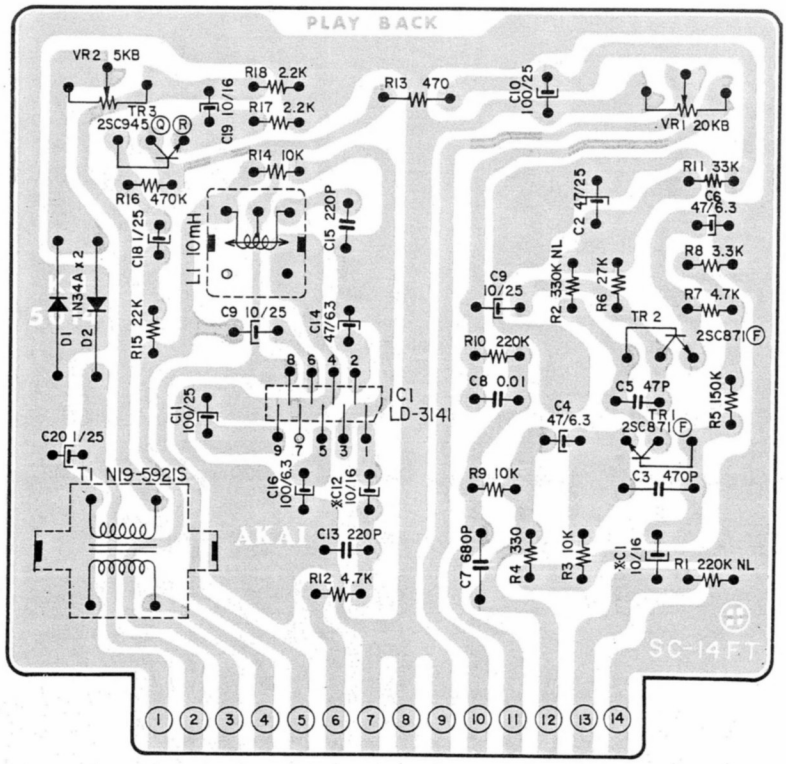
SYSTEM CONTROL P.C. BOARD (KH-1039)



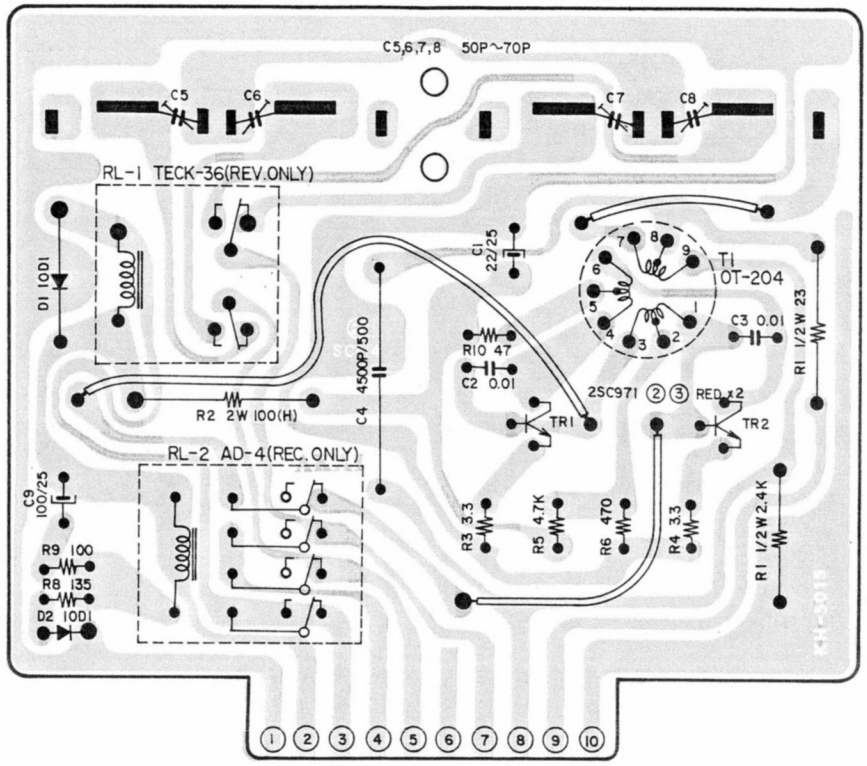
REC. AMP. P.C. BOARD (KH-5013)



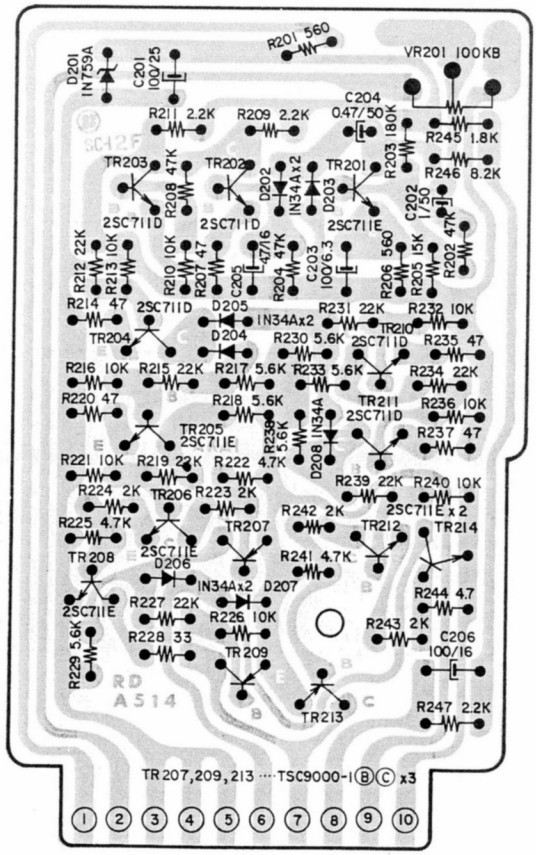
P.B. AMP P.C. BOARD (KH-5014)



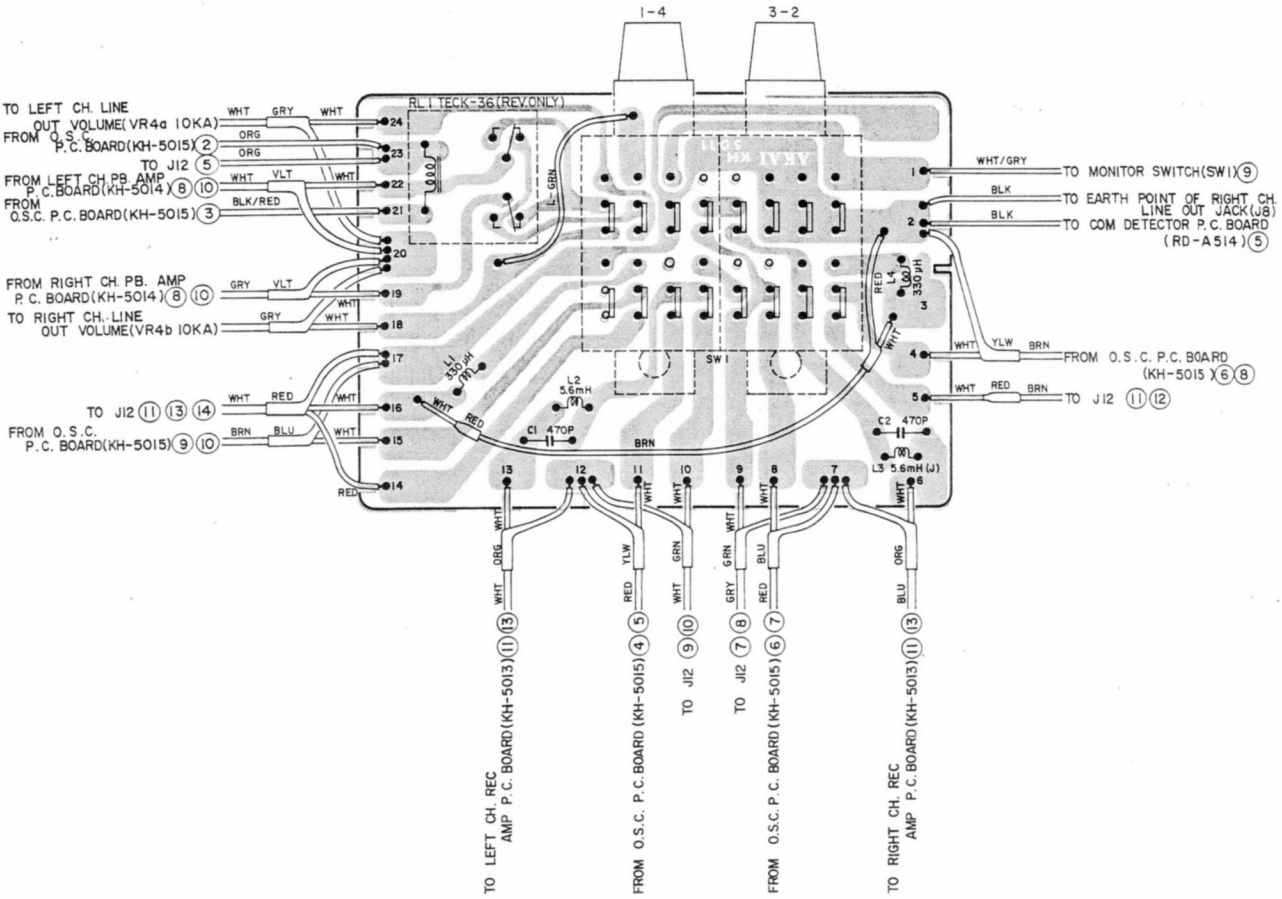
OSC. P.C.



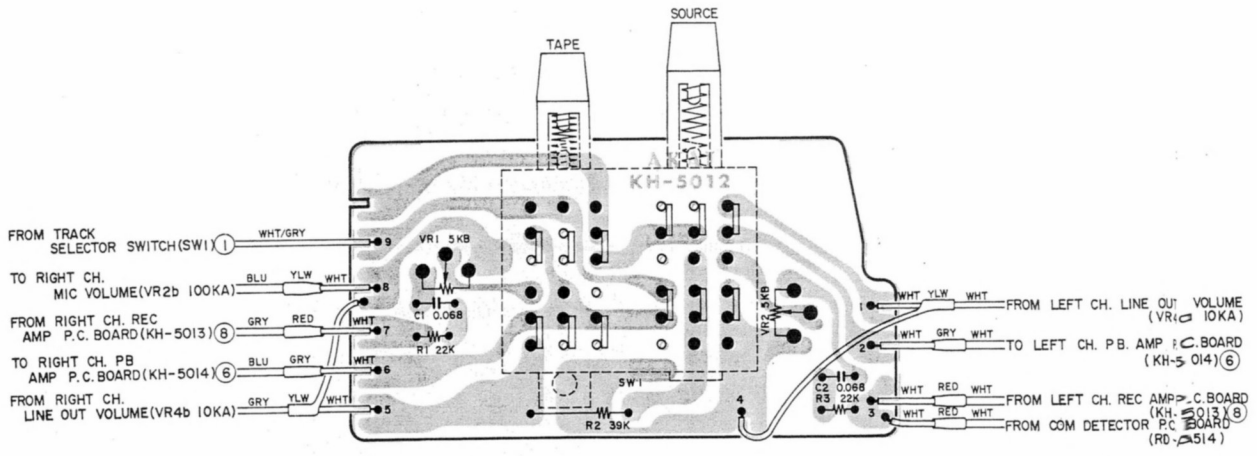
COM DETECTOR P.C. BOARD (RD-A514)



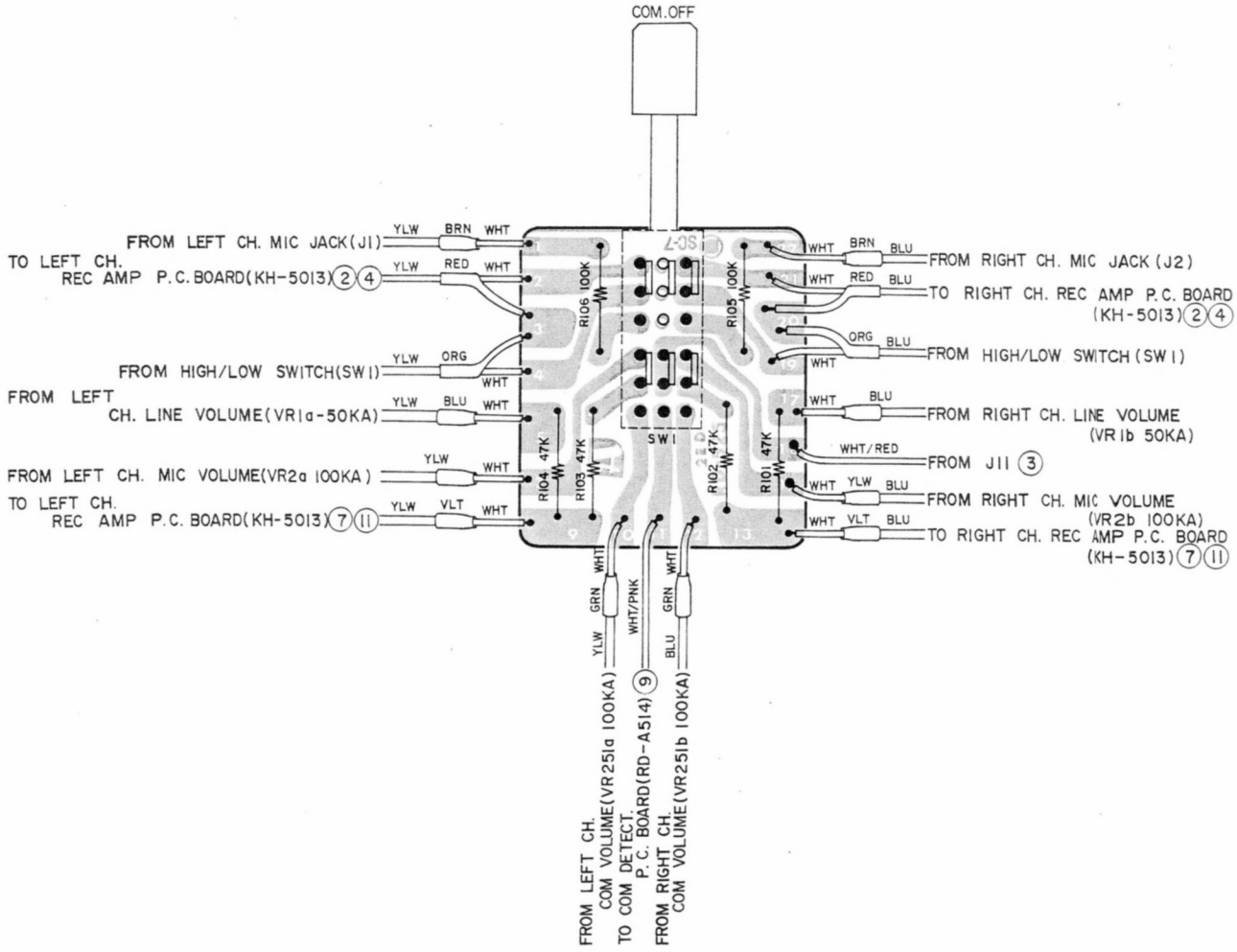
TRACK SELECTOR P.C. BOARD (KH-5011)



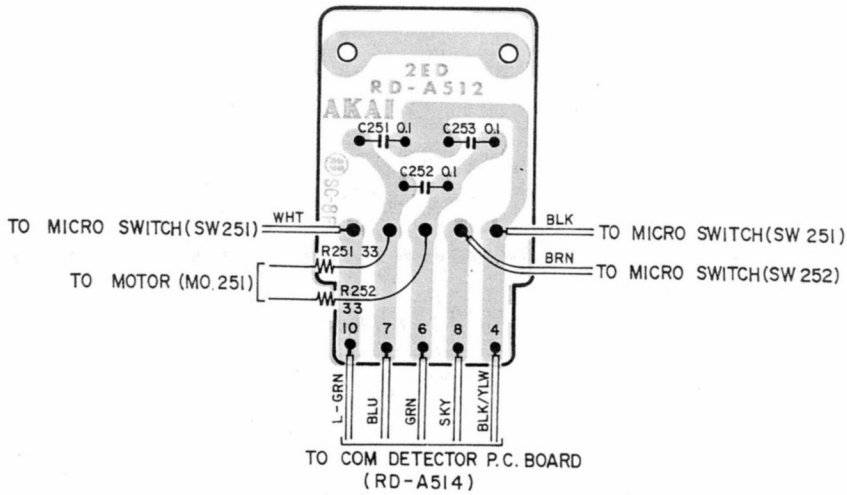
MONITOR SWITCH P.C. BOARD (KH-5012)



COM SWITCH P.C. BOARD (RD-525 2ED)



TERMINAL P.C. BOARD (RD-A512 2ED)



SECTION 2

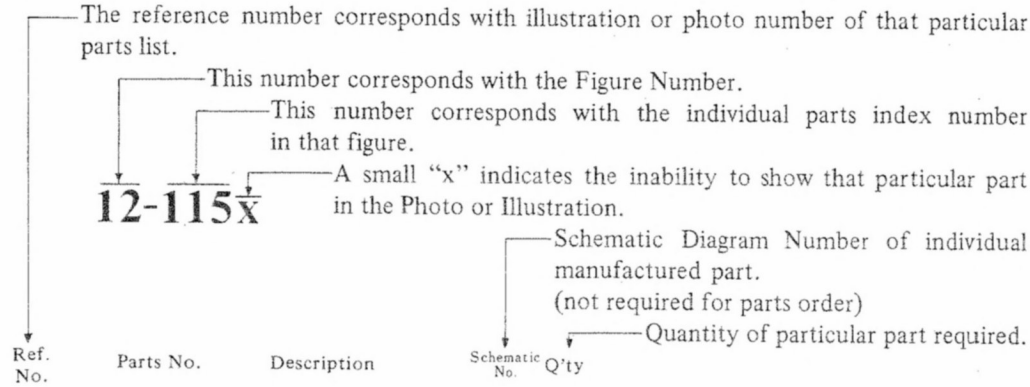
PARTS LIST

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FIG. 6 OPERATION BLOCK 57
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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



FLYWHEEL BLOCK #13

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
12-115x	800425	Flywheel Block Assy. Comp.	RDG #13	1
12-116	244506	Flywheel Only	RD-233	1
12-117x	244754	Felt, Flywheel	RD-275	1
12-118	251324	Main Metal Case	RD-236	1
12-119	253080	Main Metal	RD-237	1

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of components of 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 List 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 LIST TABLE

ELECTRICAL PARTS LIST TABLE

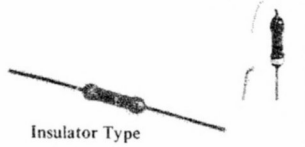
Because the indication of resistors and capacitors in the P.C. Board photos are being eliminated, please confirm parts name and shape by comparing them with the parts shown in this table.

1



Solid Resistor

2 Stopper Type



Insulator Type

Carbon Resistor

3



Metal Oxide Film Resistor

4



Cement Resistor

5



Wire-Wound Resistor

6



Thermistor

7



Enamel Resistor

1



MP Capacitor (Tubler Type)

2



Plastic Capacitor

3



Mylar Capacitor

4



VFM (Hi-Q) Capacitor

5



Mylar Capacitor

6



Tantalum Capacitor

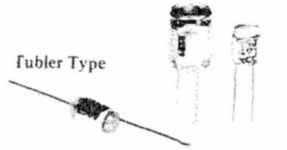
7



Oil Capacitor (Tubler Type)

8 Vertical Type

Tubler Type



Styrol Capacitor

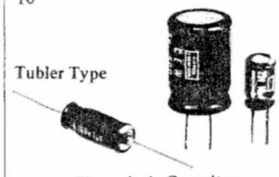
9



Electrolytic Capacitor (Tubler Type)

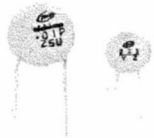
10 Vertical Type

Tubler Type



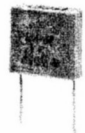
Electrolytic Capacitor

11



Ceramic Capacitor

12



Metalized Mylar (Paper) Capacitor

13



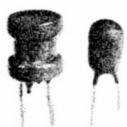
Trimer Condenser

VR



Semi-Fixed Volume

L



Ferri Inductor

TR



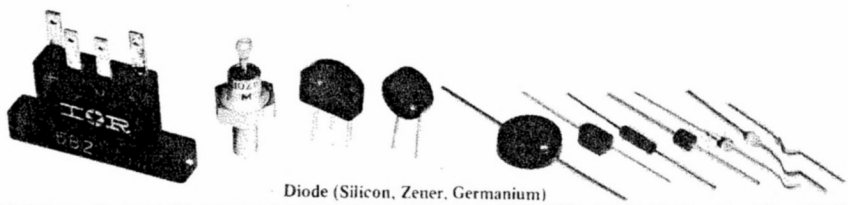
Transistor

CR



Spark Quencher

D



Diode (Silicon, Zener, Germanium)

FIG. 1 (A) ILLUSTRATION OF KH HEAD BLOCK

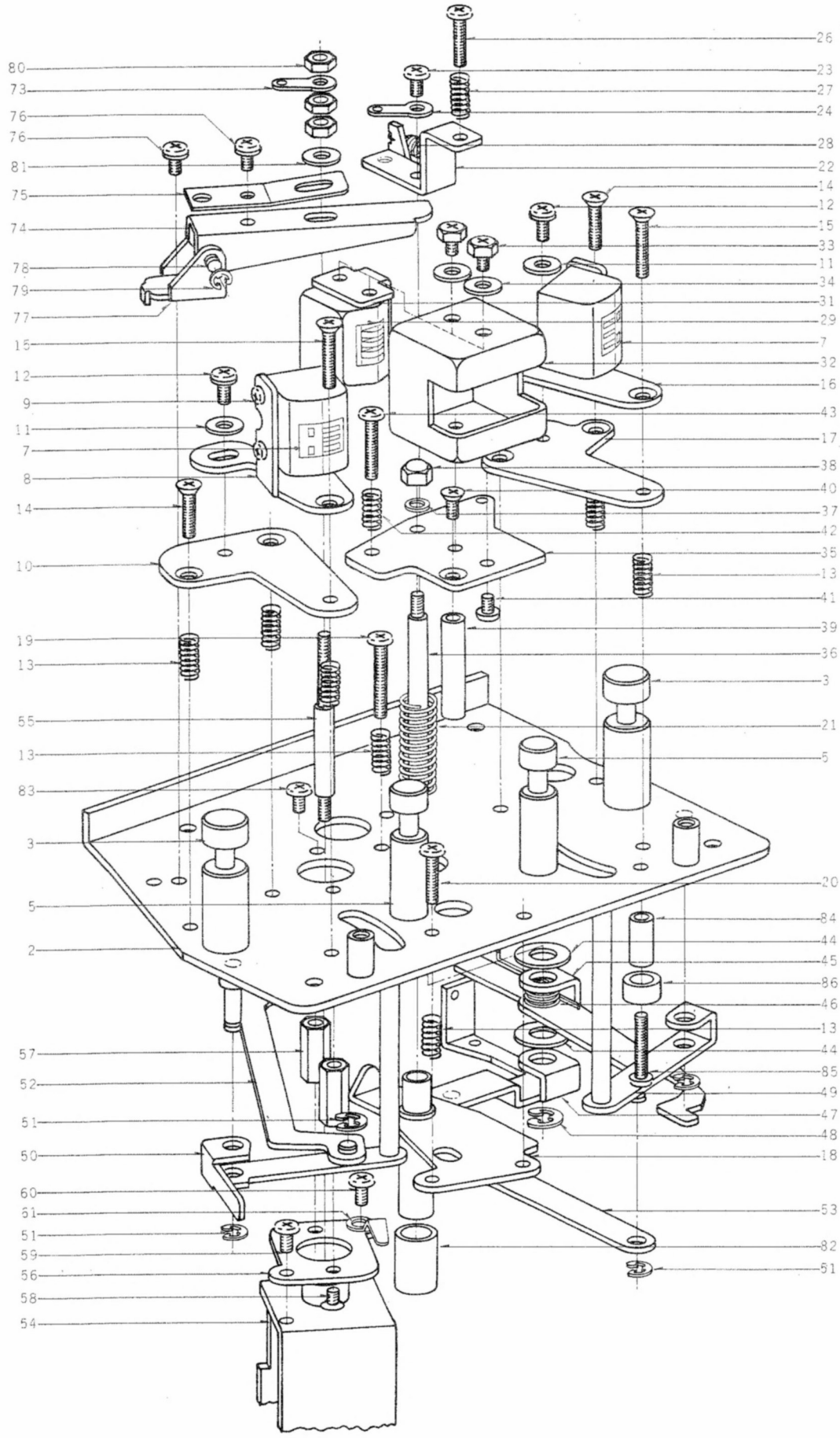
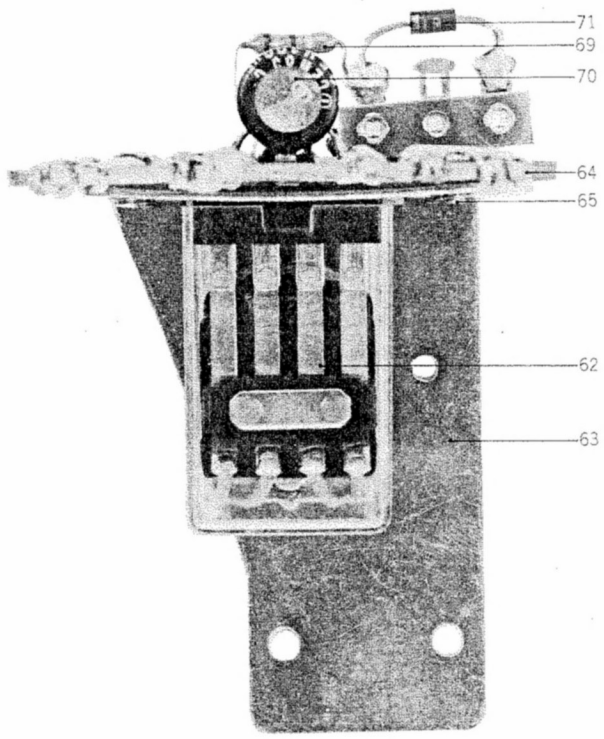


FIG. 1 (B) PHOTO OF KH HEAD BLOCK

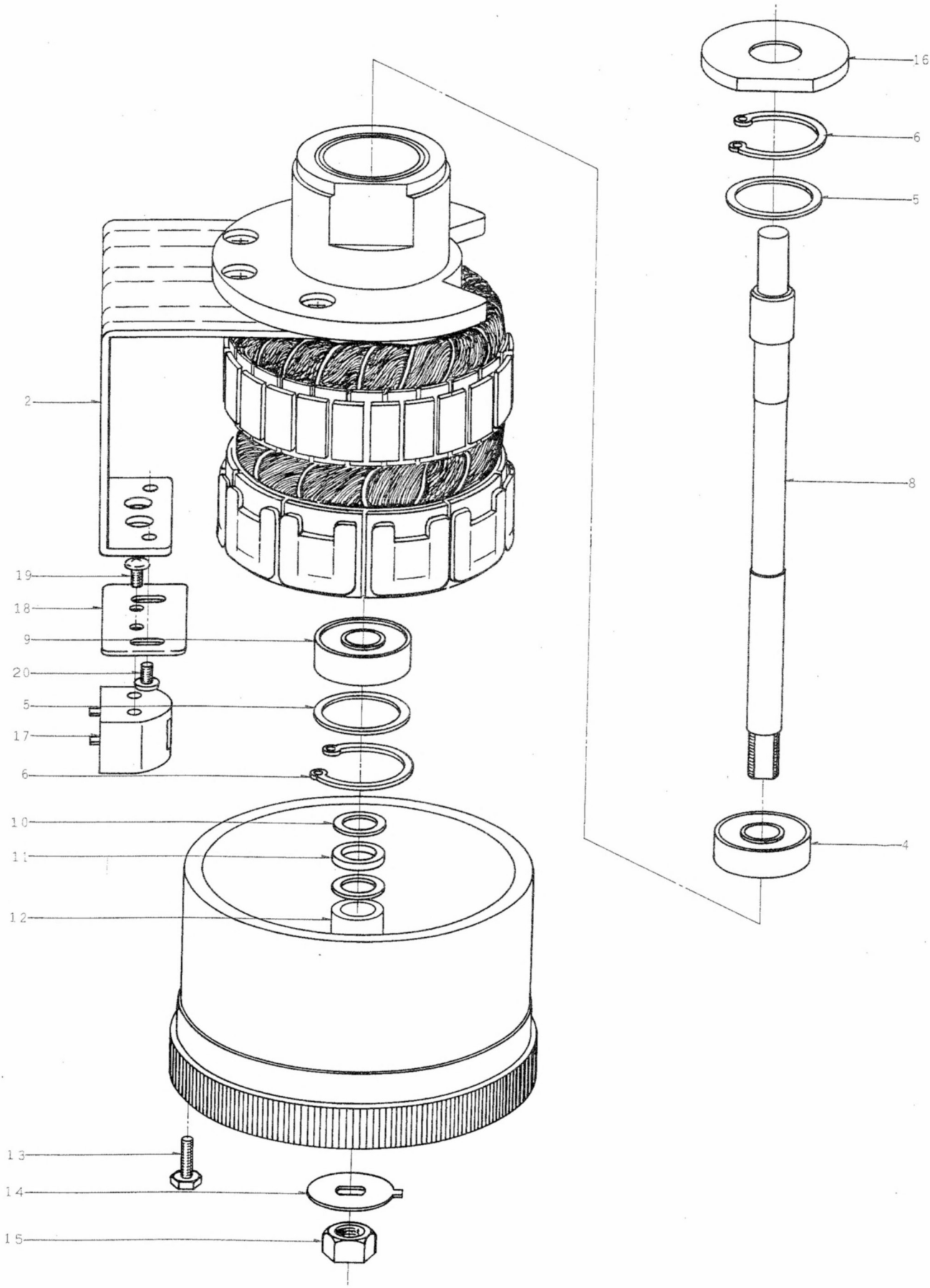


KH HEAD BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
1-1x	BH482310	KH Head Block Comp.	KH	1
1-2	HZ473084	Head Chassis, w/pin	KH-0001	1
1-3	HZ473332	Tape Guide B	KH-0027	2
1-4x	ZW434250	Screw, pan head 4x8, w/washer		2
1-5	HZ482714	Tape Guide C	KH-0052	2
1-6x	ZW414033	Screw, countersunk head 3x8		2
1-7	HR482321	REC./ERASE HEAD RE4-1		2
1-8	HZ473152	Combo Head Angle B	KH-0008	1
1-9	ZW477876	Screw, pan head 2x3		6
1-10	HZ473343	Combo Head Base B	KH-0033	1
1-11	ZW413256	Washer (SPC) D3.4x7.8x0.5t		2
1-12	ZW413728	Screw, binding head 3x6, w/washer		2
1-13	ZG303300	Angle Adjust Spring B	RD-55	9
1-14	ZW419793	Screw, countersunk head 3x12		4
1-15	ZW482736	Screw, countersunk head 3x15		2
1-16	HZ473141	Combo Head Angle A	KH-0007	1
1-17	HZ473163	Combo Head Base A	KH-0009	1
1-18	HZ473185	PH Head Chassis B, w/metal	KH-0011	1
1-19	ZW439514	Screw, binding head 3x18		1
1-20	ZW413785	Screw, binding head 3x12		2
1-21	ZG473218	Reverse Spring	KH-0014	1
1-22	HZ473174	Head Height Adjust Table	KH-0010	1
1-23	ZW413155	Screw, binding head 3x6		1
1-24	ZW273778	M3 Earth Lug		2
1-25x	ZW273802	M3 Toothed Lock Washer		1
1-26	ZW413785	Screw, binding head 3x12		1
1-27	ZG303300	Angle Adjust Spring B	RD-55	1
1-28	ZG810055	PH Hold-down Pull Spring	RD-52	1
1-29	HP384524	P.B. HEAD P4-200		1
1-30x	EA463206	P.C. Board, Terminal A	RD-A36	2
1-31	HZ473130	PH Head Angle	KH-0006	1
1-32	HZ382667	Triple-shield	RD-A3	1
1-33	ZW375963	Hexagon Bolt 3x4		2
1-34	ZW413256	Washer (SPC)D3.4x7.8x0.5t		2
1-35	HZ473128	PH Head Chassis A	KH-0005	1
1-36	MH473207	UD Shaft	KH-0013	1
1-37	ZW259648	Washer (PBP)D3x5x0.1t		1
1-38	ZW482758	M3 Cap Nut		1
1-39	HZ809976	PH Hold-down Guide	RD-14	1
1-40	ZW432685	Screw, countersunk head 3x6 D=5		1
1-41	ZW413223	Screw, binding head 3x5, w/washer		2
1-42	ZG303300	Angle Adjust Spring B	RD-55	1
1-43	ZW417148	Screw, binding head 3x15		1
1-44	ZW260188	Washer (Nylon)D6.2x13x0.5t		2
1-45	HZ473231	Stopper	KH-0017	1
1-46	ZG473321	Stopper Spring	KH-0026	1
1-47	HL473242	Shifter Lever 1, w/pin	KH-0018	1
1-48	ZW270134	'E' Ring 5M	6-1-9	1
1-49	HL473253	Shifter Lever 2, w/pin	KH-0019	1
1-50	HL473264	Shifter Lever 3, w/pin	KH-0020	1
1-51	ZW270101	'E' Ring 3M	6-1-9	6
1-52	HZ473297	Shifter Joint A	KH-0023	1
1-53	HZ473308	Shifter Joint B	KH-0024	1
1-54	EP804813	Plunger Solenoid M-10B-34V	44-1-16	1
1-55	HZ473365	Plunger Joint	KH-0031	1
1-56	HZ473354	Plunger Base	KH-0015	1
1-57	HZ321344	Plunger Retaining Prop	RD-7	2
1-58	ZW432685	Screw, countersunk head 3x6 D=5		2
1-59	ZW413728	Screw, binding head 3x6, w/washer		1
1-60	ZW413155	Screw, binding head 3x6		1
1-61	HZ321366	Retaining Plate	3A-72	1
1-62	EP344136	Relay MY4-0-US-AD4-24V	47-1-8	1
1-63	HZ473220	Relay Mt. Parts	KH-0016	1
1-64	EA473376	Head Relay P.C. Board	KH-0029	1
1-65	ZW461935	Screw, round head 2.6x4		4
1-66x	ZW317801	M2.6 Toothed Lock Washer		1
1-67x	EA222096	Connector P.C. Board	RD-140	1
1-68x	EZ328320	Nylon Clip HP-5N		1
1-69	ER361563	Carbon/R. RD1/4 180(J) (Stop. type)	35-10-1	1
1-70	EC220151	Elect./C. 100 μF 25WV (Vert. type)	24-12-91	1
1-71	ED224526	Silicon Diode 10D1	45-2-11	1
1-72x	HZ488092	P.C. Board Shield (for connector)	KH-0055	2
1-73	ZW273778	M3 Earth Lug		1
1-74	HL809998	PH Hold-down Lever	RD-24	1
1-75	ZG246857	Pull Lever Spring	RD-25	1
1-76	ZW413223	Screw, binding head 3x5, w/washer		2
1-77	HL473387	PH Hold-down Lever Support	KH-0032	1
1-78	ZW257477	Connecting Pin	RD-211	1
1-79	ZW270088	'E' Ring 1.9M	6-1-9	1
1-80	ZW273756	M3 Nut		5
1-81	ZW413256	Washer (SPC)D3.4x7.8x0.5t		1
1-82	HZ321434	Dust-proof Cap B	RD-54	1
1-83	ZW417025	Screw, binding head 3x8, w/washer		2
1-84	HZ434272	Shifter Stopper Collar	KD-A0010	1
1-85	ZW417148	Screw, binding head 3x15		1
1-86	MZ428343	KD Stopper Rubber	KD-1088	1

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

FIG. 2 ILLUSTRATION OF MAIN MOTOR BLOCK (SCM-24)

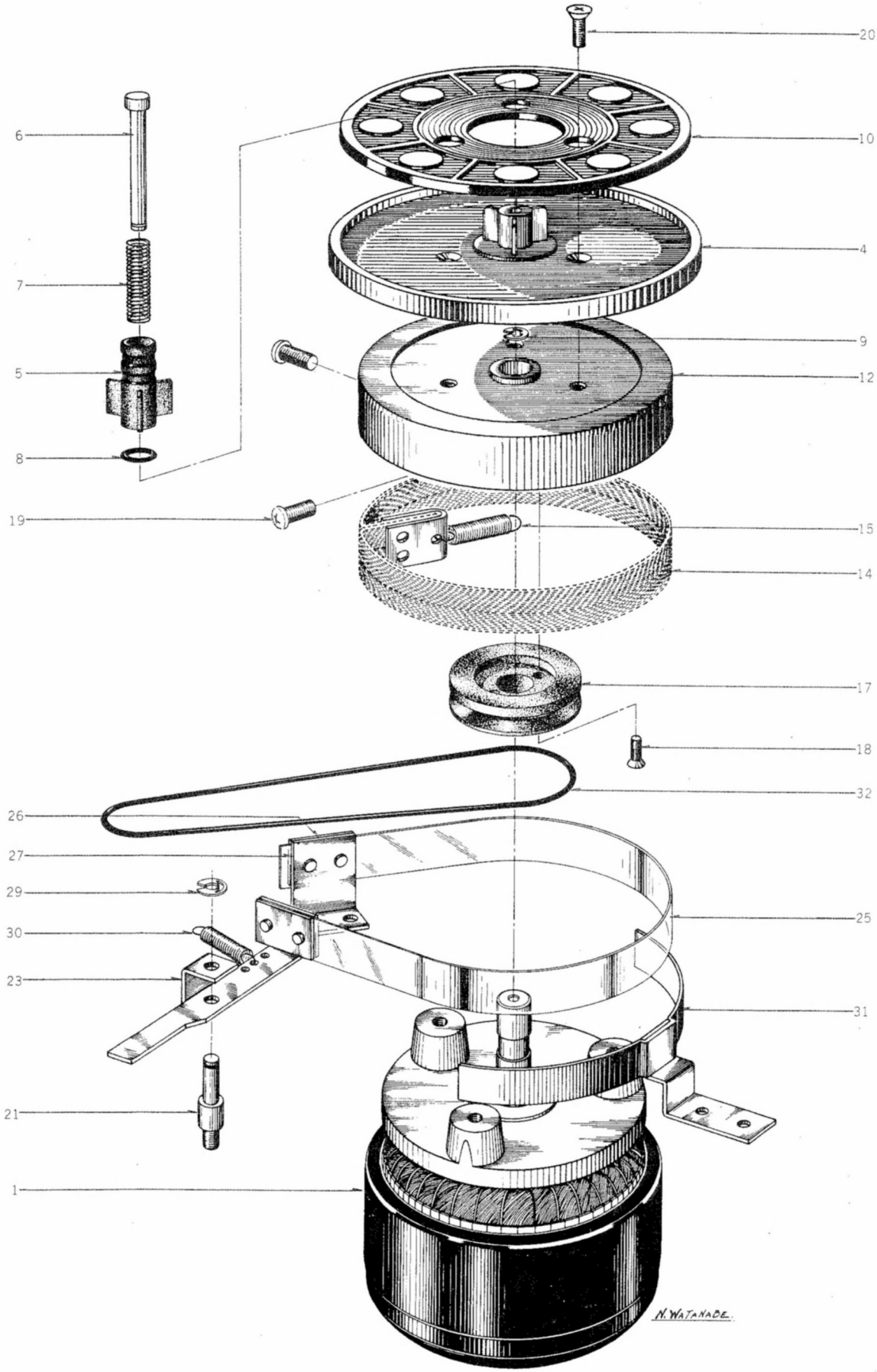


MAIN MOTOR BLOCK (SCM-24)

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
2-1x	BM482286	Main Motor Block (SCM-24) Comp.	KH,KD,KF	1
2-2	MZ405437	Detector Head Mt. Base	KD-7029	1
2-3x	ZW419747	Screw, countersunk head 4x6		4
2-4	MV408510	Bearing 608VVC2E-AV2-L	100707	1
2-5	ZW398125	Adjust Washer A	KD-7019	2
2-6	ZW206021	'C' Ring (hollow) D22	6-1-2	2
2-7x	ZW391476	Set Screw, hexagon socket 4x4(cup)		1
2-8	MS473657	Motor Shaft	KH-7001	1
2-9	MV248130	Bearing 608VVC2E-B32	100707	1
2-10	ZW321592	Washer (SUS)D8.1x13x0.3t		2
2-11	ZW356883	Washer (Hycar)D8.3x11.8x0.5t		3
2-12	ZW424203	Spacer	KD-7057	1
2-13	ZW403525	Hexagon Bolt 3x10		4
2-14	ZW398158	Servo Motor Anti Loosening Washer	KD-7022	1
2-15	ZW403536	M7 Nut P=0.5		1
2-16	MZ398182	Cap	KD-7026	1
2-17	HK398452	DETECTOR HEAD	KH,KD,KF	1
2-18	MZ400421	Detector Head Plate	KD-3008	1
2-19	ZW201475	Screw, pan head 2x3		2
2-20	ZW413155	Screw, binding head 3x6		2

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

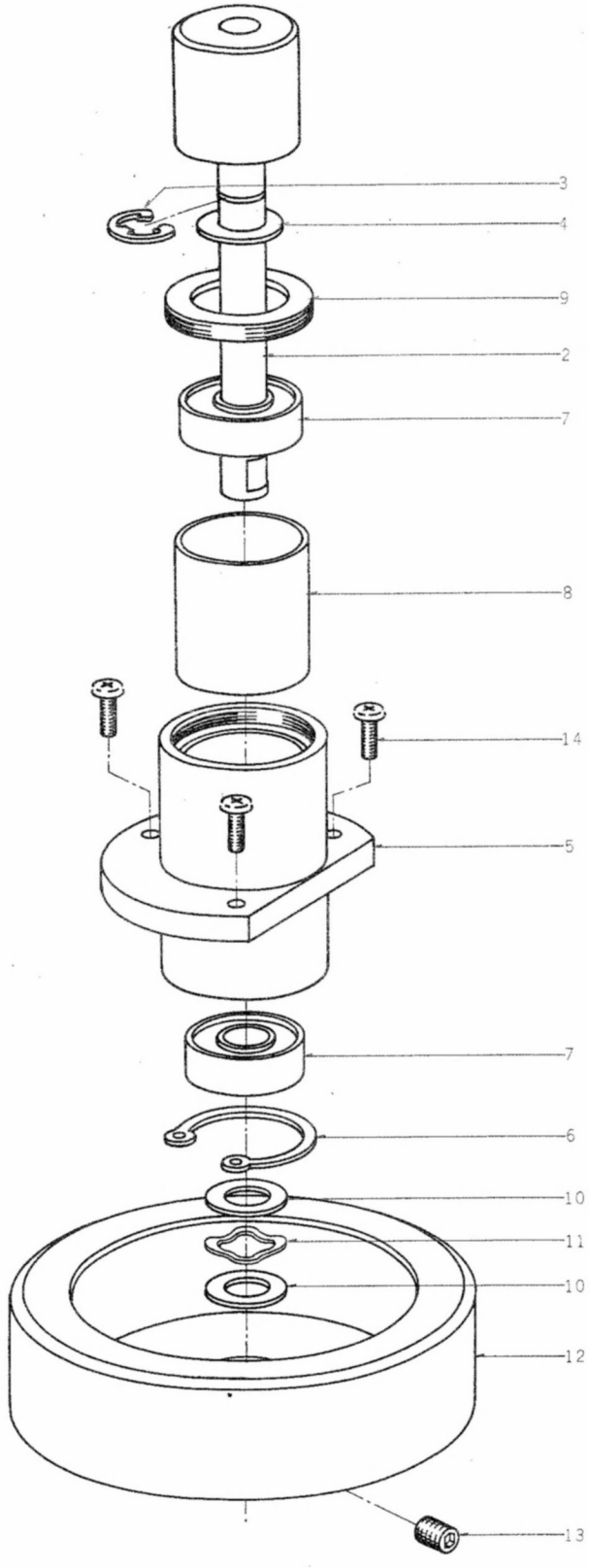
FIG. 3 ILLUSTRATION OF REEL MOTOR/REEL TABLE BLOCK



REEL MOTOR/REEL TABLE BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
		REEL MOTOR BLOCK		
3-1	BM314741	Reel Motor Block (24XO-2) Comp.	KD,MR,MS, MC	2
		REEL TABLE BLOCK		
3-2x	BR482400	Supply Reel Table Comp.	KH,MR,MC	1
3-3x	BR482411	Take-up Reel Table Comp.	KH,MR,MC	1
3-4	MT488147	RD Reel Table Disk B	RD-272	2
3-5	MT255420	Reel Retainer	3R-102	2
3-6	MS342000	Reel Shaft	3R-108	2
3-7	ZG255633	Reel Spring	3R-109	2
3-8	MT297663	3R 'O' Ring 2.9x1.65M	3R-139	2
3-9	ZW270088	'E' Ring 1.9M	6-1-9	2
3-10	MT473422	Reel Table Rubber (KH)	KH-2042	2
3-11x	MT473444	Brake Drum (left) (Supply)	KH-2031	1
3-12	MT473433	Brake Drum (right) (Take-up)	KH-2031	1
3-13x	ZW273778	M3 Earth Lug		2
3-14	MT436860	Brake Cloth Comp.	MR-269	2
3-15	ZG317496	Felt Tension Spring	MR-260	2
3-16x	ZW425981	Screw, binding head 3x3		2
3-17	MR317507	Counter Pulley (Take-up)	MR-217	1
3-18	ZW365973	Screw, countersunk head 2.3x12		2
3-19	ZW424056	Screw, pan head 4x10		4
3-20	ZW403222	Screw, countersunk head 3x10		6
3-21	MZ317373	Brake Lever Prop	MR-102	2
3-22x	ZW413188	M4 Nut		2
3-23	ML314976	Brake Lever A (Take-up)	MR-210	1
3-24x	ML396810	Brake Lever B (Supply)	KD-1038	1
3-25	MB314987	Brake Band	MR-213	2
3-26	MZ314998	Brake Band Retaining Plate	MR-212	4
3-27	MZ315000	Brake Band Support	MR-214	2
3-28x	ZW323728	Screw, binding head ^x5		8
3-29	ZW290283	'U' Ring 2.85M	6-1-1	2
3-30	ZG315011	Brake Lever Spring	MR-116	2
3-31	MZ317406	Brake Band Guide, w/base	MR-120	2
3-32	MB303535	Counter Belt D91x1.6	3A-617	1

FIG. 4 ILLUSTRATION OF IMPEDANCE ROLLER BLOCK

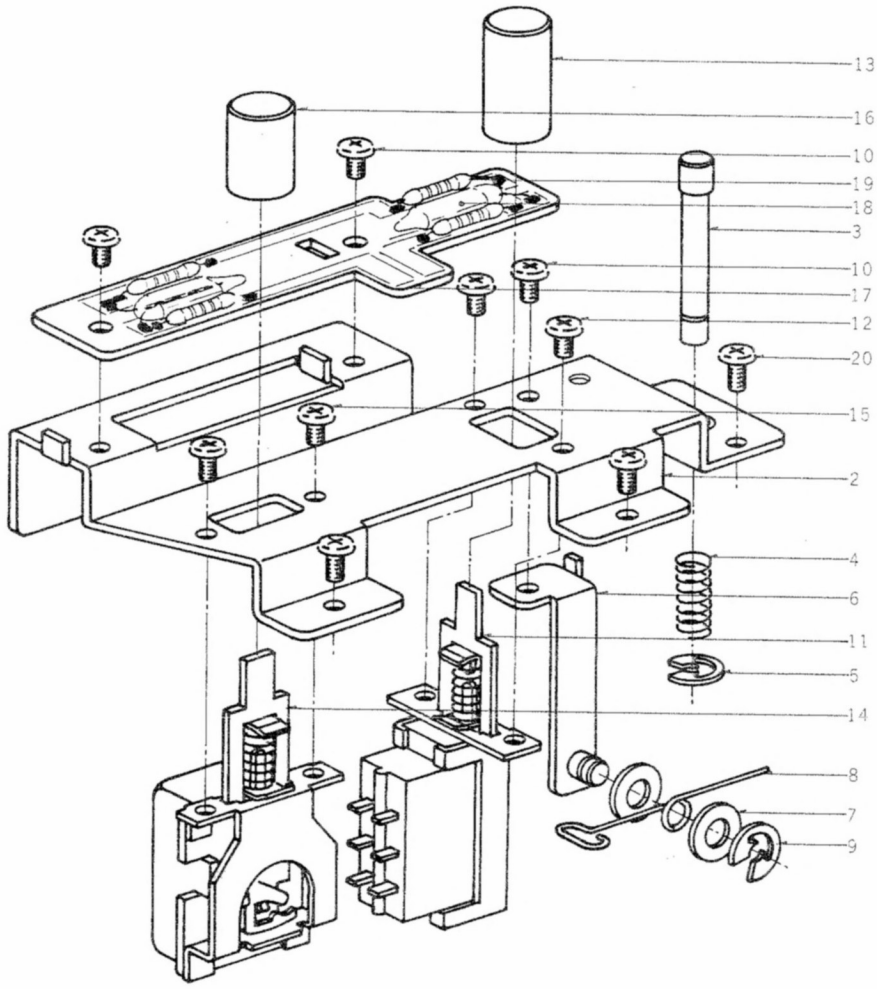


IMPEDANCE ROLLER BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
4-1x	BL482422	Impedance Roller Block Comp.	KH	1
4-2	MS473916	Impedance Roller Arm Shaft, w/roller	KH-D 36	1
4-3	ZW334653	'E' Ring 7M	6-1-1	1
4-4	ZW321592	Washer (SUS)D8.1x13x0.3t		1
4-5	BC473927	Impedance Case	KH-D 32	1
4-6	ZW206021	'C' Ring (hollow) D22	6-1-1	1
4-7	MV248141	Bearing 608VVC2E-B32-L		2
4-8	MZ473938	Bearing Collar	KH-D 33	1
4-9	ZW292667	Z Bearing Screw	3A-15	1
4-10	ZW260256	Washer (PBP)D8.1x13x0.1t		2
4-11	ZG300431	8M/M Oil-pressure Spring WW-8	6-2-1	1
4-12	MZ292678	Z Wheel	RD-15	1
4-13	ZW487912	Set Screw, hexagon socket 5x6(cup)		2
4-14	ZW413201	Screw, pan head 4x8		3

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

FIG. 5 ILLUSTRATION OF POWER & PAUSE SWITCH BLOCK



POWER & PAUSE SWITCH BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
5-1x	BS482308	Power & Pause Switch Comp.	KH	1
5-2	MZ474006	Power & Pause Switch Table, w/metal	KH-2050	1
5-3	MS473962	Pause Lock Shaft	KH-2005	1
5-4	ZG473973	Pause Spring	KH-2006	1
5-5	ZW482635	'U' Ring 2.85M	6-1-1	1
5-6	MZ473995	Spring Mt. Plate, w/pin	KH-2049	1
5-7	ZW420682	Washer (Nylon)D4.2x9x0.5t		2
5-8	ZG472770	Pause Spring B	KH-2009	1
5-9	ZW290283	'U' Ring 2.85M	6-1-1	1
5-10	ZW417137	Screw, binding head 3x4		3
5-11	ES482938	Push Switch JH-3	25-5-61	1
5-12	ZW444273	Iso Screw, binding head 3x4		2
5-13	SB474118	Push Button 3	KH-1023	1
5-14	ES468426	Push Switch UEH-12BFN	25-5-58	1
5-15	ZW371856	Iso Screw, binding head 3x5		2
5-16	SK482646	Knob B-1	MC-5011	1
5-17	EA487991	Neon Lamp P.C. Board	KH-1031	1
5-18	EL236125	Neon Lamp NE-68	28-3-3	2
5-19	ER345756	Carbon/R. RD1/4 68k(J) (Insu. type)	35-9-5	4
5-20	ZW323728	Screw, binding head 3x5		3

FIG. 6 (A) ILLUSTRATION OF OPERATION BLOCK

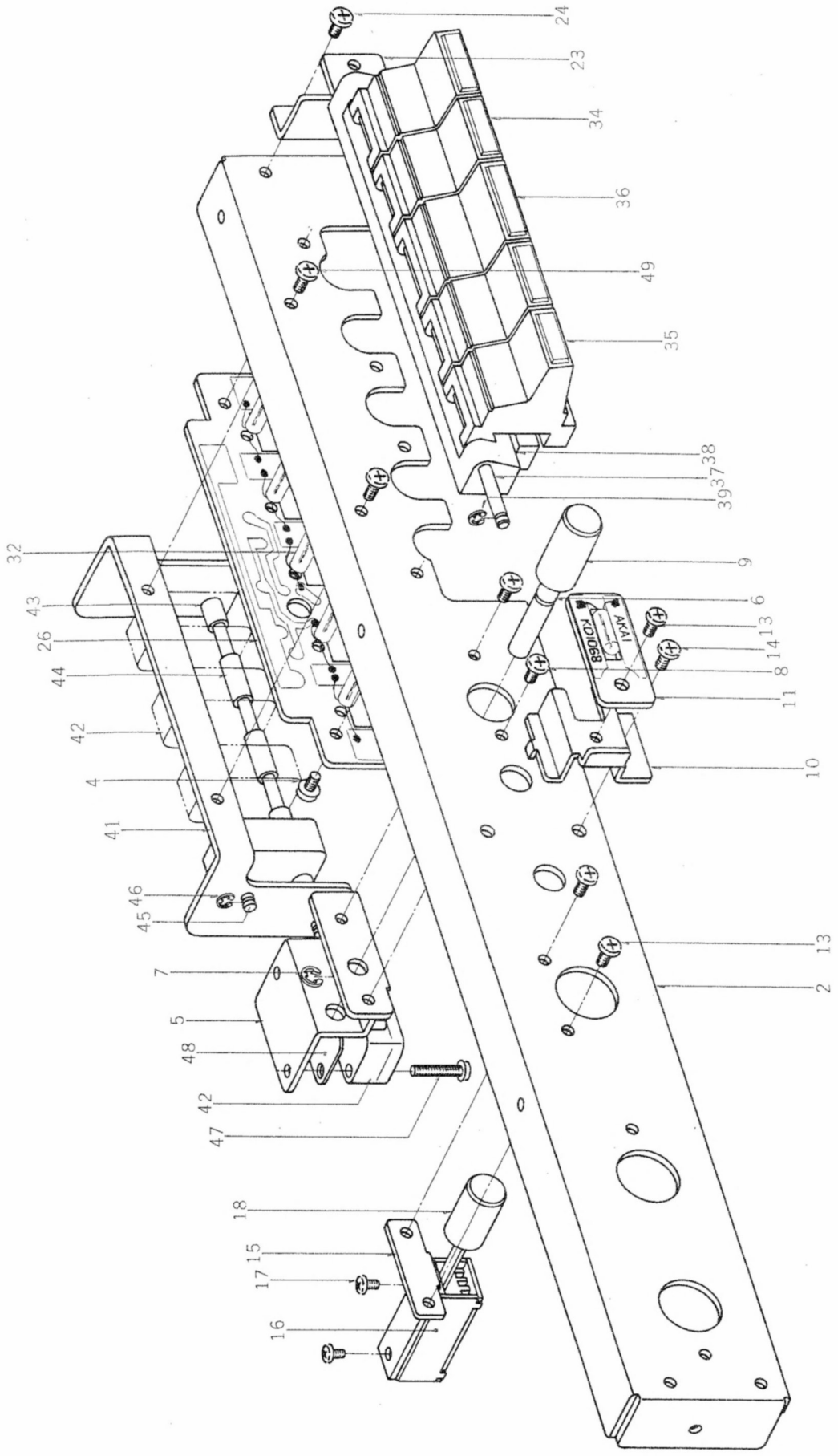
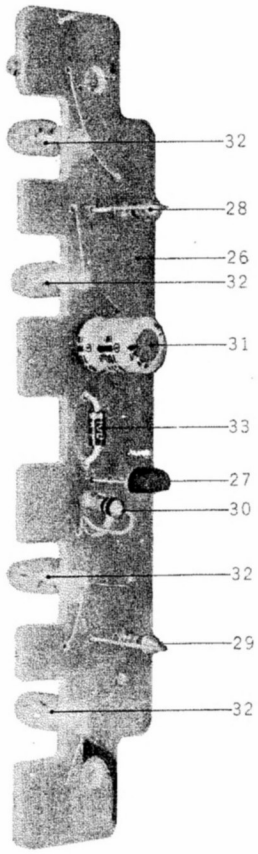


FIG. 6 (B) PHOTO OF OPERATION BLOCK



OPERATION BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
6-1x	BZ482376	Operation Block Comp.	KH	1
6-2	BZ472656	Operation Frame	KH-2016	1
6-3x	BA482398	Operation Lamp P.C. Board Comp. (KH-2019)		1
6-4	ZW323728	Screw, binding head 3x5		2
6-5	EZ397956	Rec. Button Bracket	KD-5015	1
6-6	MZ472667	Rec. Push Rod	KH-2028	1
6-7	ZW270101	'E' Ring 3M	6-1-9	1
6-8	ZW323728	Screw, binding head 3x5		2
6-9	SK472678	Rec. Knob	KH-2027	1
6-10	MZ472680	Rec. Lamp Mt. Plate	KH-2040	1
6-11	EA396898	Neon Lamp P.C. Board	KD-1068	1
6-12x	EL390576	Pilot Lamp RM6-24V-50MA	28-2-6	1
6-13	ZW323728	Screw, binding head 3x5		3
6-14	ZW472274	Tapping Screw #2 3x6		1
6-15	MZ472691	SRT Switch Mt. Part	KH-2024	1
6-16	ES482861	Push Switch UEG-63A	25-5-63	1
6-17	ZW442585	Screw, binding head 2.6x4		2
6-18	SK482850	Knob B-1	KF-2019	1
6-19x	BA482387	Tape Speed Switch P.C. Board Comp. (KH-2011)		1
6-20x	ZW371856	Iso Screw, binding head 3x5		2
6-21x	SB474052	Push Button 1	KH-1022	2
6-22x	ZW259413	Washer (ALP)D2.7x4.9x1t	BT-112	1
6-23	MZ472792	Amp. Panel Retaining Metal	KH-2029	2
6-24	ZW472274	Tapping Screw #2 3x6		4
6-25x	BA482398	Operation Lamp P.C. Board Comp. (KH-2019)		1
6-26	EA472724	Operation Lamp P.C. Board (KH-2019)	KH-2019	1
6-27	ET398711	Transistor 2SC945(Q)(R)	45-1-85	1
6-28	ER430053	Carbon/R. RD1/4 22(J) (Stop. type)	35-10-1	1
6-29	ER212883	Carbon/R. RD1/4 4.7k(J) (Stop. type)	35-10-1	1
6-30	ER211465	Carbon/R. RD1/4 1k(J)	35-10-1	1
6-31	EC220364	Elect./C. 100μF 6.3WV (Vert. type)	24-12-9	1
6-32	EL390576	Pilot Lamp RM6-24V-50MA	28-2-6	4
6-33	ED224526	Silicon Diode 10D1	45-2-11	1
6-34	SB867205	Operation Button A, w/bush A(blue)	KH-2022	2
6-35	SB867565	Operation Button A, w/bush B(orange)	KH-2022	2
6-36	SB472768	Operation Button B	KH-2021	1
6-37	MS438243	Button Shaft	KF-2009	1
6-38	MZ472781	Lamp Cover	KH-2018	1
6-39	ZW270088	'E' Ring 1.9M	6-1-9	2
6-40x	ZW323728	Screw, binding head 3x5		2
6-41	MZ474513	Operation Switch Base	KH-2017	1
6-42	ES250075	Micro Switch V-1A10 U/L	25-1-8	7
6-43	MZ397337	Switch Spacer A	KD-2005	2
6-44	MZ472836	Operation Button Collar	KH-2023	2
6-45	MS250165	Micro Switch Shaft B	RD-122B	2
6-46	ZW270088	'E' Ring 1.9M	6-1-9	4
6-47	ZW417148	Screw, binding head 3x15		2
6-48	ZG466154	Switch Spring	KD-A2-012	1
6-49	ZW323728	Screw, binding head 3x5		2

FIG. 7 (A) ILLUSTRATION OF POWER SUPPLY BLOCK

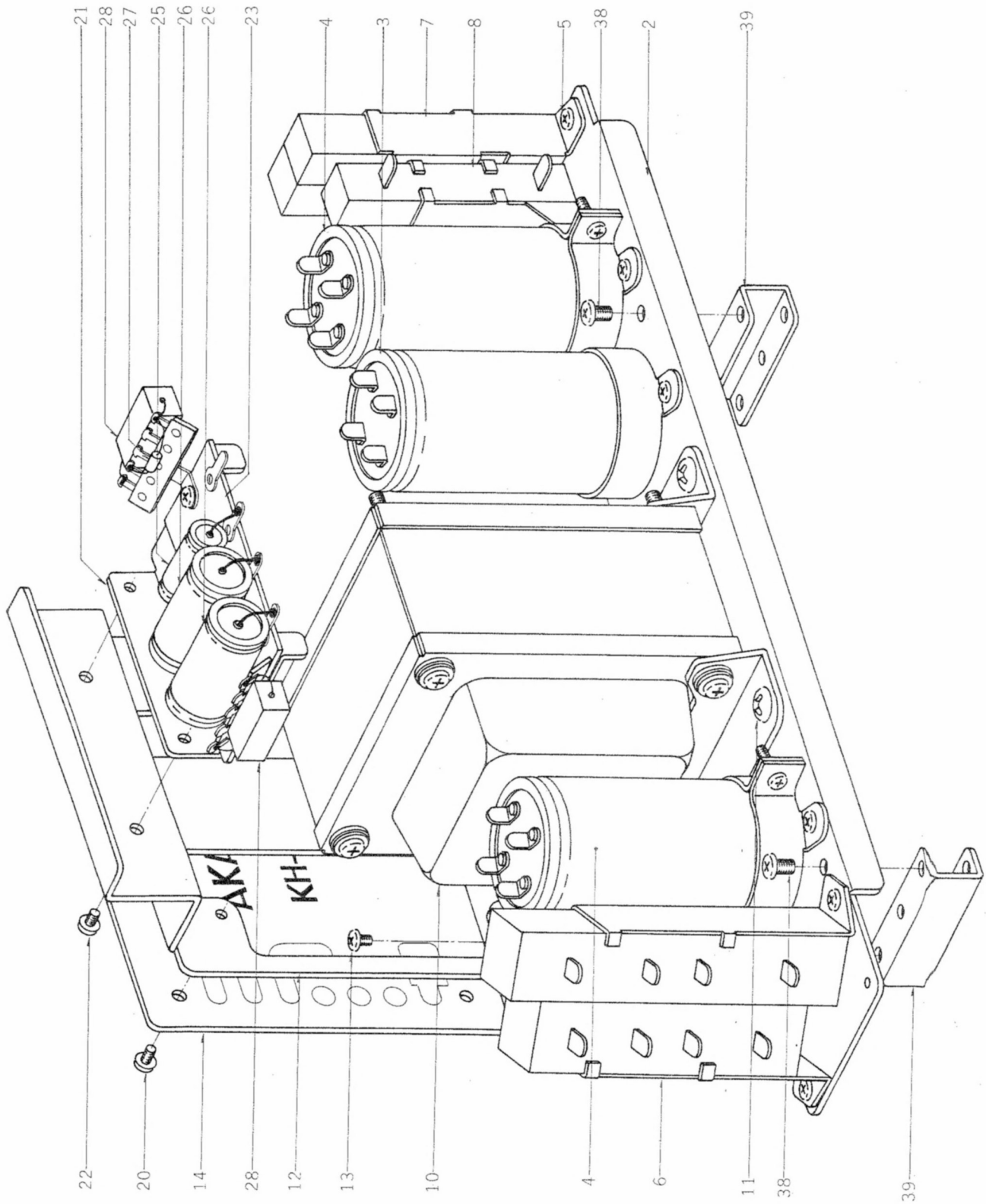
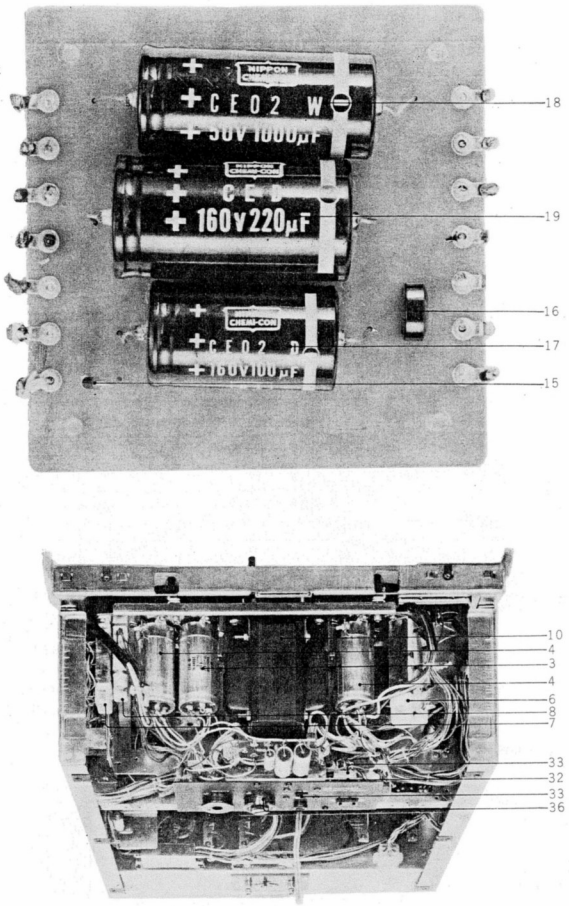


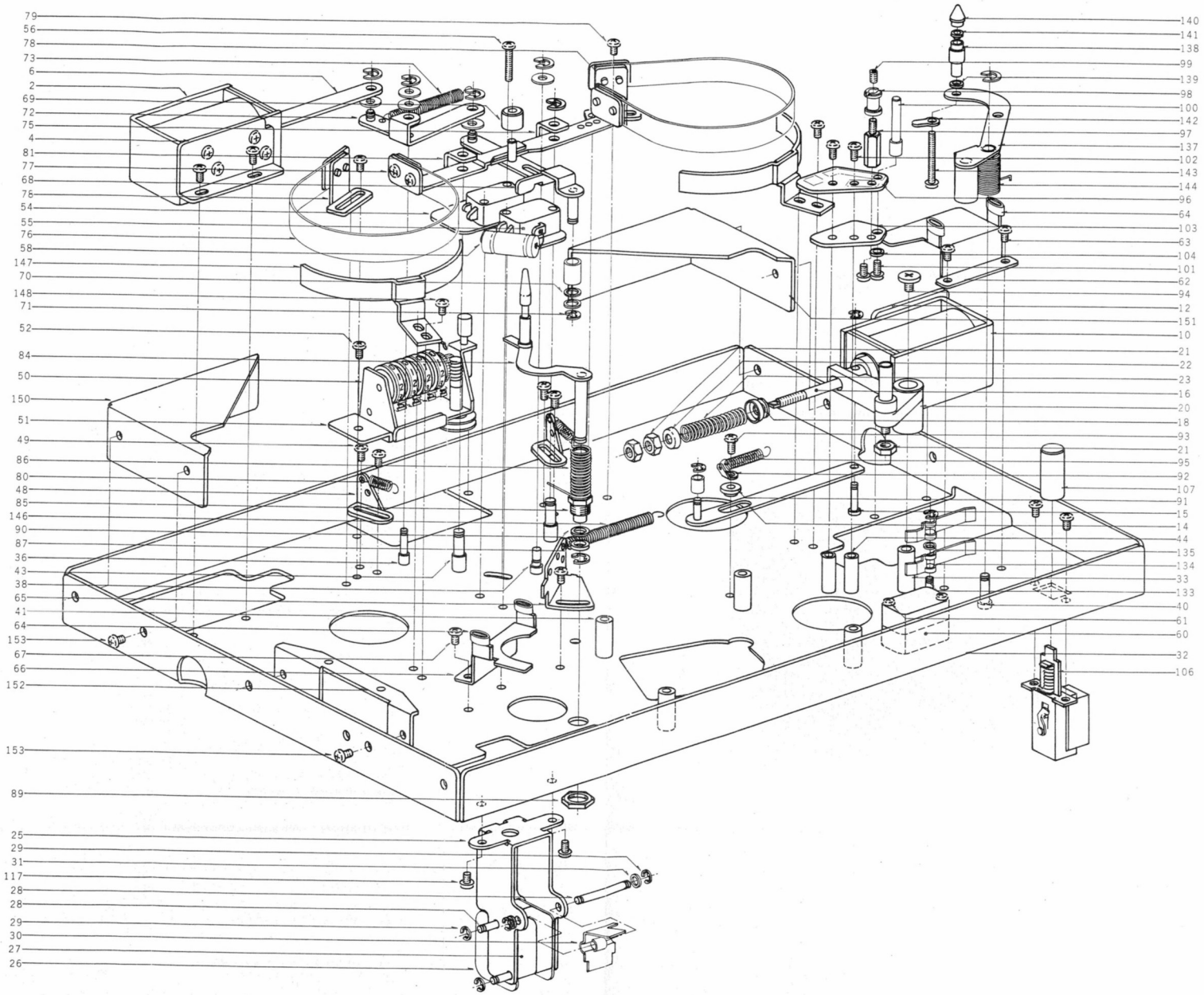
FIG. 7 (B, C) PHOTO OF POWER SUPPLY BLOCK



POWER SUPPLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
7-1x	BP482343	Power Supply Block Comp.	KH, KD, KF, KG	1
7-2	UM488924	Trans. Table	KH-2052	1
7-3	EC434081	MP/C. 3+0.5 μF 200WV (Lug type Uni/D.)	24-9-58	1
7-4	EC398632	MP/C. 3+1 μF 260WV (Lug type Uni/D.)	24-9-52	2
7-5	ZW472274	Tapping Screw #2 3x6		11
7-6	ER426690	Cement/R. H(40+30) H2B (350+150x200+500)	35-16-25	1
7-7	ER493097	Cement/R. H(20+20) H1B (60+35x1.5k+500)k	35-16-35	1
7-8	ER339805	Cement/R. H20B 450(K) (wire-wound type), w/belt	35-16-16	1
7-9x	ER472296	Cement/R. H20B 220(K)	35-16-16	1
7-10	BT472702	Power Trans. KHT-1	38-4-153	1
7-11	ZW468112	Tapping Screw #2 4x8(truss)		4
7-12	MZ465772	Trans. Table D	KD-A2008	1
7-13	ZW490228	Tapping Screw #2 3x8		2
7-14	BA482578	Capacitor P.C. Board (KH-2012) Comp.	KH-2051	1
7-15	ED224550	Silicon Diode 10D4	45-2-16	1
7-16	ED329130	Silicon Diode 10DC-1(black)	45-2-27	1
7-17	EC316091	Elect./C. 100 μF 160WV (Tub. type)	24-14-14	1
7-18	EC365692	Elect./C. 1000 μF 50WV (Tub. type)	24-13-15	1
7-19	EC346746	Elect./C. 220 μF 160WV (Tub. type)	24-14-8	1
7-20	ZW490228	Tapping Screw #2 3x8		4
7-21	EZ397282	Capacitor Retaining Base	KD-2027	1
7-22	ZW323728	Screw, binding head 3x5		4
7-23	EZ398946	Terminal Plate SP-0501 B type 4P	33-4-9	1
7-24x	ER430143	Carbon/R. RD1/4 120(J) (Insu. type)	35-9-5	1
7-25	EC273464	MP/C. 0.1 μF(M) 350WVDC (Tub. type)	24-9-4	1
7-26	EC341842	MP/C. 0.47 μF(M) 300WVAC (Tub. type)	24-9-35	2
7-27	EJ255115	Lug Plate VB2L2	33-4-3	2
7-28	ER466986	Cement/R. S5W 45(K) (Wire-wound type)	35-16-3	2
7-29x	ED224550	Silicon Diode 10D4	45-2-16	1
7-30x	EZ328320	Nylon Clip HP-5N		2
7-31x	ZW462194	Tapping Screw #2 3x8(pan), w/washer		2
7-32	EZ397304	Frequency Change Switch Plate A	KD-2043	1
7-33	ES375478	Slide Switch ESD-279DU	25-3-23	2
7-34x	ZW371856	Iso Screw, binding head 3x5		2
7-35x	ZW440291	Iso Screw, countersunk head 3x6		2
7-36	EJ233370	Power Plug Socket S-18010	40-2-3	1
7-37x	EF277413	Fuse ST-2 2A	39-1-26	1
7-38	ZW417150	Screw, pan head 4x6		4
7-39	MZ397170	Trans. Base C	KD-1065	2

FIG. 8 (A) (B) ILLUSTRATION OF MECHANISM ASSEMBLY BLOCK



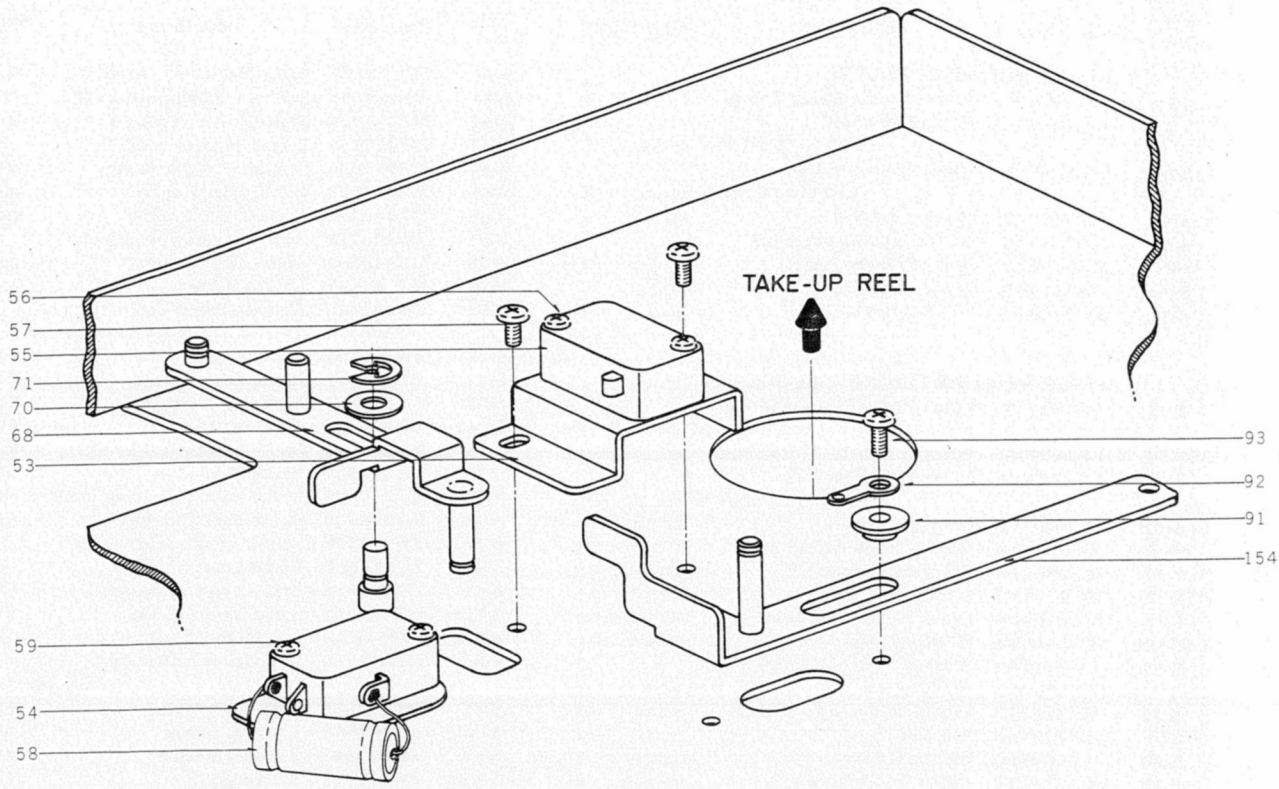
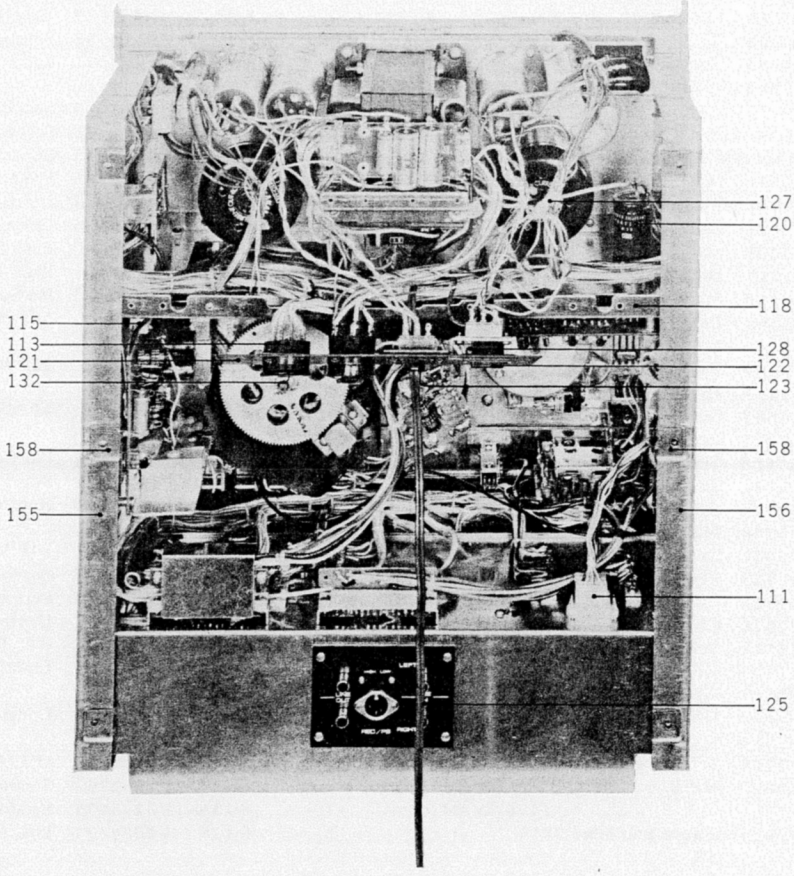


FIG. 8 (C) PHOTO OF MECHANISM ASSEMBLY BLOCK



MECHANISM ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
	BRAKE PLUNGER BLOCK			
8-1x	BZ398338	Brake Plunger Block Comp.	KH.KD.KF	1
8-2	EP398610	Plunger Solenoid SDC-10-M-C-100V	44-1-36	1
8-3x	ER376424	Spark Quencher U/L 0.1μ+120 500WV	41-1-36	1
8-4	MZ396911	Plunger Bracket	KD-1028	1
8-5x	ZW201835	Screw, binding head 3x5		4
8-6	MZ396977	Brake Plunger Joint	KD-1039	1
8-7x	ZW257477	Connecting Pin	RD-211	1
8-8x	ZW270088	'E' Ring 1.9M	6-1-9	1
	PINCH ROLLER PLUNGER BLOCK			
8-9x	BZ482297	Pinch Roller Plunger Block Comp.	KH.KD.KF	1
8-10	EP441990	Plunger 1660THTI Solenoid	44-1-45	1
8-11x	ER376424	Spark Quencher U/L 0.1μ+120 500WV	41-1-36	1
8-12	MZ396911	Plunger Bracket	KD-1028	1
8-13x	ZW323728	Screw, binding head 3x5		3
8-14	MZ396966	Plunger Joint, w/pin	KD-1033	1
8-15	ZW257477	Connecting Pin	RD-211	1
8-16	MZ396944	Pinch Roller Arm Joint	RD-1031	1
8-17x	ZW270088	'E' Ring 1.9M	6-1-9	1
8-18	ZW345442	Washer (Nylon)D4.2x9x1t		1
8-19x	ZW270101	'E' Ring 3M	6-1-9	1
8-20	MZ396933	Pinch Roller Arm, w/shaft	KD-1030	1
8-21	ZW273960	M4 Nut		3
8-22	MZ802980	Spring Holder	RD-276	2
8-23	ZG428927	Pinch Roller Spring B	KD-1032	1
	SPEED CHANGE SWITCH BLOCK			
8-24x	BS482354	Speed Change Switch Block Comp.	KH.KF	1
8-25	MZ473455	Speed Change Switch Stand	KH-2010	1
8-26	MZ402377	Micro Insulator D	KD-2050	2
8-27	ES250064	Micro Switch V-1A44 U/L	25-1-7	2
8-28	MS438254	Micro Switch Shaft	KF-2023	3
8-29	ZW270088	'E' Ring 1.9M	6-1-9	6
8-30	ML397383	Speed Change Switch Lever 2	KD-2016	1
8-31	ZW425733	Washer (ALP)D3.1x8x1t		2
	MECHANISM ASSEMBLY BLOCK			
8-32	MZ472814	Mech. Frame	KD-1001	1
8-33	MS397001	Pinch Roller Arm Shaft	KD-1002	1
8-34x	ZW274026	M5 Spring Washer		1
8-35x	ZW413278	M5 Nut		1
8-36	MS397012	Brake Lever Shaft	KD-1003	1
8-37x	ZW413188	M4 Nut		4
8-38	MS465480	Brake Lever Shaft B	KD-1093	1
8-39x	ZW273756	M3 Nut		1
8-40	MS397023	Tension Arm Shaft	KD-1004	1
8-41	HZ397034	Head Base Prop	KD-1005	4
8-42x	ZW416687	Screw, binding head 4x8		4
8-43	MZ317373	Brake Lever Prop	MR-102	2
8-44	MH487888	Sensing Table Prop B	KH-1034	2
8-45x	ZW413741	Screw, binding head 3x8		8
8-46x	MZ397045	Sys. Con. Connector Prop	KD-1006	4
8-47x	ZW273778	M3 Earth Lug		1
8-48	MZ397080	Spring Hanger	KD-1010	2
8-49	ZW323728	Screw, binding head 3x5		4
8-50	MC399521	Counter M-470D	9-1-14	1
8-51	MZ397078	Counter Base	KD-1009	1
8-52	ZW323728	Screw, binding head 3x5		2
8-53	MZ512133	Micro Switch Table	KH-2059	1
8-54	MZ250413	Micro Insulator C	RC-127	2
8-55	ES250064	Micro Switch V-1A44 U/L	25-1-7	2
8-56	ZW439514	Screw, binding head 3x18		2
8-57	ZW323728	Screw, binding head 3x5		2
8-58	EC273464	MP/C. 0.1μF(M) 350WVDC (Tub. type)	24-9-4	1
8-59	ZW422965	Screw, pan head 3x15		2
8-60	ES250064	Micro Switch V-1A44 U/L	25-1-7	2
8-61	ZW414066	Screw, binding head 3x25		2
8-62	MZ472904	Shut-off Arm Stopper	KH-1006	1
8-63	ZW417137	Screw, binding head 3x4		4
8-64	MZ499634	Stopper Rubber (KH)	KH-1037	4
8-65	MZ434237	KD Spring Hanger	KD-A1007	1
8-66	MZ486450	Roller Arm Stopper	KH-1033	1
8-67	ZW323728	Screw, binding head 3x5		2
8-68	MZ396832	Brake Slide, w/pin	KD-1044	1
8-69	MZ397181	Lever Cushion	KD-1069	1
8-70	ZW482545	Washer (Polyslider) D4.1x10x0.13t		5
8-71	ZW270101	'E' Ring 3M	6-1-9	1
8-72	ML396742	Brake Lever, w/pin	KD-1041	1
8-73	ZG465478	Brake Lever Spring	KD-1092	1
8-74x	ZW290283	'U' Ring 2.85M	6-1-1	4
8-75	ML314976	Brake Lever A (Take-up)	MR-210	1
8-76	MB314987	Brake Band	MR-213	2
8-77	MZ314998	Brake Band Retaining Plate	MR-212	4
8-78	MZ315000	Brake Band Support	MR-214	2
8-79	ZW323728	Screw, binding head 3x5		8
8-80	ZG315011	Brake Lever Spring	MR-116	2
8-81	ML396810	Brake Lever B (Supply)	KD-1038	1
8-82x	MZ467111	Servo Motor Shield	KD-A1010	2
8-83x	EJ254970	Lug Plate KP1L1	33-3-3	1
8-84	ML472950	Impedance Roller Arm, w/guide	KH-1018	1
8-85	MZ473005	Arm Shaft Metal	KH-1015	1
8-86	ZG472994	Tension Spring	KH-1017	1
8-87	ZW472983	Z Roller Washer	KH-2043	1
8-88x	ZW270101	'E' Ring 3M	6-1-9	1
8-89	ZW273363	M9 Hexagon Nut	RD-254	1
8-90	ZW499443	Washer (Nylon)D5.1x7.8x0.2t		1
8-91	ZW397157	Graduated Washer	KD-1036	1
8-92	ZW273778	M3 Earth Lug		1
8-93	ZW413155	Screw, binding head 3x6		1
8-94	ZW243516	Screw, Pinch Roller	XR-140	1
8-95	ZG208091	Impedance Arm Spring	RD-259	1
8-96	EA473016	Sensing P.C. Board	KH-2013	1
8-97	MH473027	Tape Guide Prop	KH-1028	1
8-98	MZ473038	Sensing Guide B	KH-2014	1
8-99	ZW433001	Set Screw, hexagon socket 3x5(cup)		1
8-100	MZ473040	Sensing Pole	KH-2015	1
8-101	ZW413741	Screw, binding head 3x8		1
8-102	ZW413155	Screw, binding head 3x6		2
8-103	MZ486448	Print Reinforcement Board	KH-1132	1
8-104	MZ397214	Insulator Liner A	KD-2031	1
8-105x	MB303535	Counter Belt D91x1.6	3A-67	1
8-106	ES482938	Push Switch JH-3	25-5-1	1
8-107	SB474041	Push Button 2	KH-1023	1
8-108x	ZW444273	Iso Screw, binding head 3x4		2
8-109x	EJ310871	18P Multi-Jack J-2 3250-018-001	31-4-1	1
8-110x	EJ347670	22P Multi-Jack-3 3250-022-001S	31-4-3	1
8-111	EJ450573	9P Mate-N-Lock Cap Housing 1-480277-0	52-1-1	1
8-112x	HZ243191	Pin Contact 60511-1	52-1-1	7
8-113	EJ222748	Sub Magnale Socket #311SG	31-1-9	1
8-114x	MZ302400	Remote Control Socket Mt. Plate	RX-35	1
8-115	EJ368785	14P Multi-Jack 3250-014-001	31-4-4	1
8-116x	MH487890	Servo P.C. Board Prop	KH-2053	2
8-117	ZW417137	Screw, binding head 3x4		2
8-118	EZ397135	Center Frame	KD-1553	1
8-119x	EZ397743	P.C. Board Prop	KD-2444	3
8-120	EC348704	Elect./C. 2200μF 35WV (Lug type)	24-10553	1
8-121	MZ472858	Connector Plate	KH-2444	1
8-122	EJ378944	U/L AC Socket S-I 9122	31-1-7	1
8-123	EZ382263	Strain Relief SR-4K-4	2-7-1	1
8-124x	EZ246936	Strain Relief SR-6W-1 (3 core)	2-7-8	1
8-125	EZ374894	U/L AC Cord 3M	26-3-9	1

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

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
8-126x	EZ315448	Australia Cord	26-3-11	1
8-127	EJ205975	Cramp Terminal 1-SD	32-1-7	9
8-128	EZ397124	Cycle Change Switch Plate B	KD-1055	1
8-129x	ZW201150	Screw, truss head 3x6(black)		6
8-130x	ZW374128	Iso Screw, truss head 3x8 (black)		2
8-131x	ZW447761	Tapping Screw #2 3x6(BR) (black)		4
8-132	EJ326430	11P Short Plug A	42-1-25	1
8-133	MS408497	Switch Lever Shaft	KD-1080	1
8-134	ML409083	Micro Switch Lever	KD-1081	2
8-135	ZW259683	Washer (Nylon)D3x5x1t		1
8-136x	ZW270088	'E' Ring 1.9M	6-1-9	1
8-137	ML492906	Shut-off Lever B, w/metal	KD-1052	1
8-138	MZ473073	Sensing Collar	KH-1030	1
8-139	ZW492063	Insulator Washer	KH-2056	1
8-140	MZ473051	Sensing Top	KH-1028	1
8-141	HZ317632	Insulator Collar A	MR-36	1
8-142	ZW273633	M2.3 Earth Lug		1
8-143	ZW484828	Screw, binding head 2.3x25		1
8-144	ZG409015	Tension Arm Spring C	KD-1079	1
8-145x	ZW290283	'U' Ring 2.85M	6-1-1	1
8-146	ZG407575	Shifter Lever Spring	KD-1078	1
8-147	MZ317406	Brake Band Guide, w/base	MR-120	2
8-148	ZW323728	Screw, binding head 3x5		4
8-149x	MP424023	Pinch Roller (KD)	KD-1084	1
8-150	SZ397517	Corner Angle A (left)	KD-6003A	1
8-151	SZ397528	Corner Angle B (right)	KD-6003B	1
8-152	SZ473725	Mech. Panel Reinforcement Plate	KH-1004	2
8-153	ZW413741	Screw, binding head 3x8		8
8-154	MZ514653	Plunger Joint B, w/pin	KH-2060	1
8-155	SZ473681	Side Chassis A, w/angle (right)	KH-6010A	1
8-156	SZ473692	Side Chassis B, w/angle (left)	KH-6010B	1
8-157x	ZW290248	U type Speed Nut M4 #1 (small)	6-3-1	6
8-158	ZW290250	U type Speed Nut M4 #1 (large)	6-3-2	10
8-159x	ZW200610	Tapping Screw 4x12(truss)		6

FIG. 9 PHOTO OF TAPE SPEED SWITCH P.C. BOARD (KH-2011)

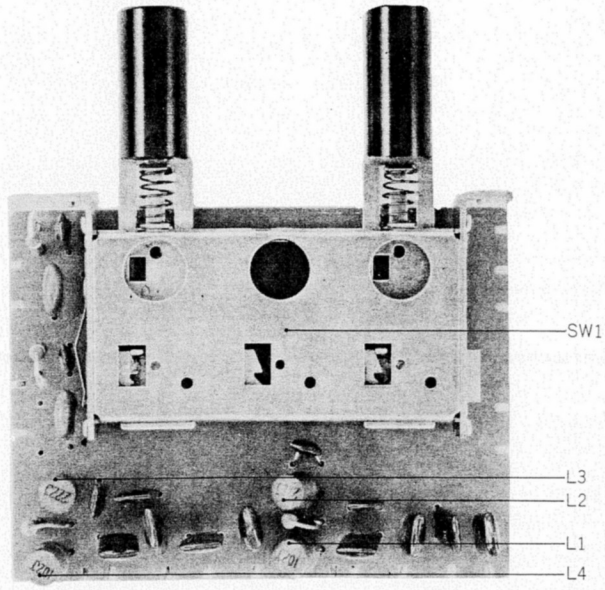
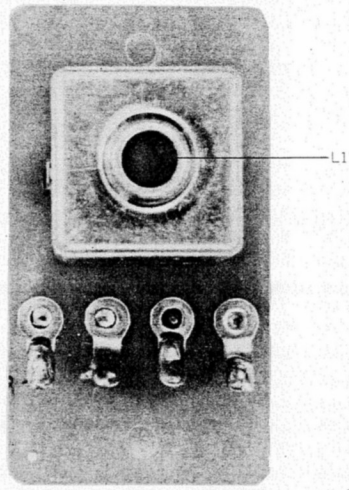


FIG. 10 PHOTO OF COIL P.C. BOARD (KD-1097)



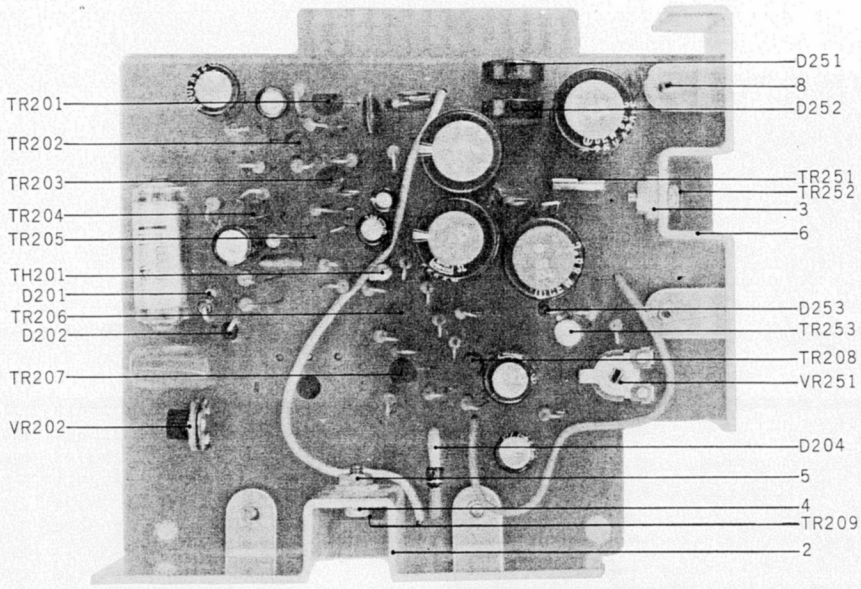
TAPE SPEED SWITCH P.C. BOARD (KH-2011) BLOCK

Symbol No.	Parts No.	Description	Q'ty
9-1x	BA482387	Tape Speed Switch P.C. Board Comp. (KH-2011)	1
9-L1	EO243977	Ferri Inductor FL7H 1MH(J)	1
9-L2, 3	EO458932	Ferri Inductor FL7H 2.2MH(J)	2
9-L4	EO243977	Ferri Inductor FL7H 1MH(J)	1
9-SW1	ES472645	Push Switch SPM025N	1
		Capacitor, Vertical Type	
9-C1	EC379157	Mylar 0.033μF(J) 50WV	1
9-C2	EC389485	Mylar 0.018μF(J) 50WV	1
9-C3	EC379157	Mylar 0.033μF(J) 50WV	1
9-C4	EC368335	Mylar 0.022μF(J) 50WV	1
9-C5	EC250975	Mylar 0.015μF(J) 50WV	1
9-C6	EC411827	Mylar 0.0082μF(J) 50WV	1
9-C7	EC379157	Mylar 0.033μF(J) 50WV	1
9-C8	EC389485	Mylar 0.018μF(J) 50WV	1
9-C9	EC379192	Mylar 0.039μF(J) 50WV	1
9-C10	EC250975	Mylar 0.015μF(J) 50WV	1
9-C11	EC368335	Mylar 0.022μF(J) 50WV	1
9-C12	EC350875	Mylar 0.001μF(J) 50WV	1
9-C13	EC329848	Hi-Q 100PF(J) 50WV	1
9-C14	EC350875	Mylar 0.001μF(J) 50WV	1
9-C15	EC329848	Hi-Q 100PF(J) 50WV	1
9-C16	EC411827	Mylar 0.0082μF(J) 50WV	1
		Resistor, Stopper Type	
9-R1	ER362441	Carbon RD1/4 1.8k(J)	1
9-R2	ER399060	Carbon RD1/4 9.1k(J)	1
9-R4	ER399060	Carbon RD1/4 9.1k(J)	1
9-R6	ER362441	Carbon RD1/4 1.8k(J)	1

COIL P.C. BOARD (KD-1097) BLOCK

Symbol No.	Parts No.	Description	Q'ty
10-1x	BA495808	Coil P.C. Board Comp. (KD-1097)	1
10-L1	EO403446	Variable Coil VI2031 SC-01	1
10-2x	EZ495843	Coil Retaining Angle	1
10-3x	ZW413155	Screw, binding head 3x6	2

FIG. 11 PHOTO OF SERVO P.C. BOARD (KH-1011)

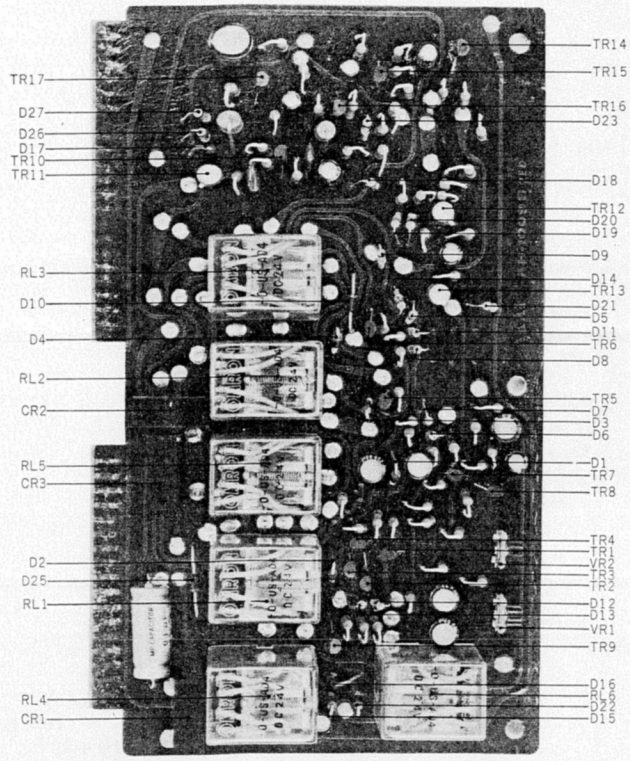


SERVO P.C. BOARD (KH-1011) BLOCK

Symbol No.	Parts No.	Description	Q'ty
11-1x	BA482332	Servo P.C. Board Comp. (KH-1011)	1
11-TR201	ET379462	Transistor 2SC711(D)(E)	1
11-TR202	ET356984	Transistor 2SA564(R)	1
11-TR203, 4	ET379462	Transistor 2SC711(D)(E)	2
11-TR205	ET356984	Transistor 2SA564(R)	1
11-TR206	ET398777	Transistor 2SC711(G)(F)	1
11-TR207	ET379462	Transistor 2SC711(D)(E)	1
11-TR208	ET399936	Transistor 2SC945(R)(S)	1
11-TR209	ET403042	Transistor 2SD234(Y)	1
11-TR251	ET408971	Transistor 2SC1013	1
11-TR252	ET403042	Transistor 2SD234(Y)	1
11-TR253	ET391138	Transistor 2SC968(3)(4)	1
11-D201, 2	ED224526	Silicon Diode 10D1	2
11-D204	ED224526	Silicon Diode 10D1	1
11-D251	ED329130	Silicon Diode 10DC-1(black)	1
11-D252	ED329128	Silicon Diode 10DC-1(red)	1
11-D253	ED384096	Zener Diode RD-9A	1
11-TH201	ED321390	Thermister 41D26	1
11-VR202	EV498060	Semi-fixed Volume V10K8-1-5 2k B(4US)	1
11-VR251	EV484863	Semi-fixed Volume V10K8-4-2 1k B	1
11-2	EZ407586	Heat-sink Plate B	1
11-3	ZW392940	Insulator Washer 1 G-473025-1	2
11-4	ZW421806	Screw, pan head 3x8	2
11-5	ZW273756	M3 Nut	4
11-6	EZ474017	Heat-sink Plate	1
11-7x	ZW413155	Screw, binding head 3x6	2
11-8	ZW413741	Screw, binding head 3x8	2
11-9x	ZW273802	M3 Toothed Lock Washer	1
11-10x	EZ473400	Servo P.C. Board Collar	2
11-11x	ZW413155	Screw, binding head 3x6	2
		Capacitor, Vertical Type	
11-C201	EC398957	Mylar 0.1μF(M) 50WV	1
11-C202	EC251190	Mylar 0.056μF(K) 50WV	1
11-C203	EC331705	Elect. 22μF 16WV	1
11-C204	EC379787	Mylar 0.0039μF(J) 50WV	1
11-C205	EC320051	Elect. 10μF 16WV	1
11-C206	EC250661	Mylar 0.0015μF(K) 50WV	1
11-C207	EC220151	Elect. 100μF 25WV	1
11-C208	EC350684	Elect. 22μF 25WV	1
11-C209	EC329850	VFM 220PF(J) 50WV	1
11-C210	EC424080	Styrol 0.051μF(F) 50WV (Tab. type)	1
11-C211	EC438524	Mylar 0.27μF(H) 100WV	1
11-C213	EC220994	Elect. 10μF 25WV	1
11-C215	EC368280	Solid Aluminum 33μF 6.3WV	1
11-C216	EC220151	Elect. 100μF 25WV	1
11-C251, 2	EC403468	Elect. 330μF 50WV	2
11-C253	EC372148	Elect. 220μF 35WV	1
11-C254	EC331817	Elect. 470μF 25WV	1
11-C255	EC350684	Elect. 22μF 25WV	1
11-C257	EC450281	Elect. 0.47μF 50WV	1
		Resistor, Stopper Type	
11-R201	ER336442	Carbon RD1/4 10k(J)	1
11-R202	ER362441	Carbon RD1/4 1.8k(J)	1
11-R203	ER357456	Carbon RD1/4 2.2k(J)	1
11-R204	ER212264	Carbon RD1/4 22k(J)	1
11-R205, 6, 7	ER336442	Carbon RD1/4 10k(J)	3
11-R208	ER361642	Carbon RD1/4 47(J)	1
11-R209	ER211757	Carbon RD1/4 100k(J)	1
11-R210	ER357456	Carbon RD1/4 2.2k(J)	1
11-R211	ER212681	Carbon RD1/4 330(J)	1
11-R212	ER403187	Carbon RD1/4 10k(F)(P type)	1
11-R213	ER403097	Carbon RD1/4P 9.1k(F) (P type)	1
11-R214	ER212883	Carbon RD1/4 4.7k(J)	1
11-R217	ER306887	Carbon RD1/4 15k(J)	1
11-R218	ER212883	Carbon RD1/4 4.7k(J)	1
11-R219	ER357456	Carbon RD1/4 2.2k(J)	1
11-R220	ER211667	Carbon RD1/4 100(J)	1
11-R221	ER213030	Carbon RD1/4 5.6k(J)	1
11-R222, 3	ER357456	Carbon RD1/4 2.2k(J)	2
11-R224, 5	ER211465	Carbon RD1/4 1k(J)	2
11-R226	ER304290	Carbon RD1/4 10(J)	1
11-R227	ER306887	Carbon RD1/4 15k(J)	1
11-R228	ER424078	Carbon RD1/4 51(J)	1
11-R229	ER304402	Carbon RD1/4 470(J)	1
11-R251	ER357456	Carbon RD1/4 2.2k(J)	1
11-R252	ER212681	Carbon RD1/4 330(J)	1
11-R253	ER343078	Carbon RD1/4 2.7k(J)	1
11-R254	ER357456	Carbon RD1/4 2.2k(J)	1
11-R255	ER306843	Carbon RD1/4 1.2k(J)	1
11-R256	ER447682	Solid RC1/2 47(J)	1
11-R257	ER347038	Carbon RD1/4 270(J)	1

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

FIG. 12 (A) PHOTO OF SYS. CON. P.C. BOARD (KH-1009)

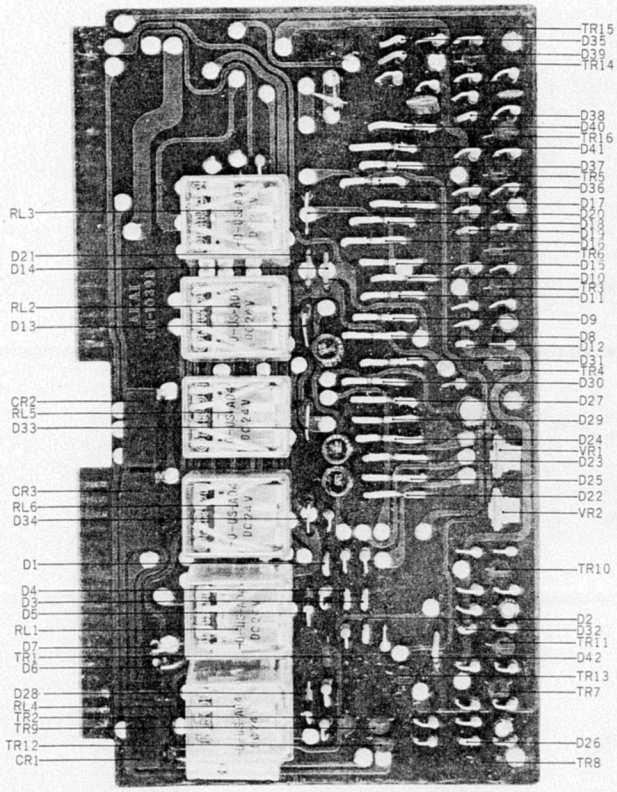


SYS. CON. P.C. BOARD (KH-1009) BLOCK

Symbol No.	Parts No.	Description	Q'ty
12-1x	BA482365	Sys. Con. P.C. Board Comp. (KH-1009)	1
12-TR1 to 10	ET398711	Transistor 2SC945(Q)(R)	10
12-TR11 to 13	ET338894	Transistor 2SC968(3)	3
12-TR14 to 17	ET398711	Transistor 2SC945(Q)(R)	4
12-D1 to 4	ED224526	Silicon Diode 10D1	4
12-D5 to 9	ED219464	Germanium Diode 1N34A	5
12-D10	ED224526	Silicon Diode 10D1	1
12-D11 to 14	ED219464	Germanium Diode 1N34A	4
12-D15 to 17	ED224526	Silicon Diode 10D1	3
12-D18 to 21	ED219464	Germanium Diode 1N34A	4
12-D22	ED224526	Silicon Diode 10D1	1
12-D23	ED219464	Germanium Diode 1N34A	1
12-D25	ED224550	Silicon Diode 10D4	1
12-D26, 7	ED219464	Germanium Diode 1N34A	2
12-RL1 to 6	EP344136	Relay MY4-0-US-AD4-24V	6
12-CR1 to 3	ER376424	Spark Quencher U/L 0.1μ+120 500WV	3
12-VR1	EV426936	Semi-fixed Volume V10K-5 30k B	1
12-VR2	EV221826	Semi-fixed Volume V10K-5 10k B	1

Symbol No.	Parts No.	Description	Q'ty
		Capacitor, Vertical Type	
12-C1 to 4	EC220612	Elect. 33μF 25WV	4
12-C5	EC350684	Elect. 22μF 25WV	1
12-C6	EC220994	Elect. 10μF 25WV	1
12-C7	EC308711	Mylar 0.047μF(K) 50WV	1
12-C8	EC220994	Elect. 10μF 25WV	1
12-C10, 11	EC220994	Elect. 10μF 25WV	2
12-C12, 3, 4	EC450055	Elect. 1μF 25WV	3
12-C16	EC273464	MP 0.1μF(M) 350WVDC (Tub. type)	1
12-C17	EC220432	Elect. 2.2μF 25WV	1
12-C19	EC220151	Elect. 100μF 25WV	1
12-C20	EC250885	Mylar 0.01μF(K) 50WV	1
		Resistor, Stopper Type	
12-R1	ER211465	Carbon RD1/4 1k(J)	1
12-R2	ER362485	Carbon RD1/4 330k(J)	1
12-R3	ER336442	Carbon RD1/4 10k(J)	1
12-R4, 5	ER212883	Carbon RD1/4 4.7k(J)	2
12-R6	ER362485	Carbon RD1/4 330k(J)	1
12-R7	ER212883	Carbon RD1/4 4.7k(J)	1
12-R8	ER211465	Carbon RD1/4 1k(J)	1
12-R9	ER212883	Carbon RD1/4 4.7k(J)	1
12-R10	ER357456	Carbon RD1/4 2.2k(J)	1
12-R11	ER343078	Carbon RD1/4 2.7k(J)	1
12-R12	ER212883	Carbon RD1/4 4.7k(J)	1
12-R13	ER357456	Carbon RD1/4 2.2k(J)	1
12-R14	ER343078	Carbon RD1/4 2.7k(J)	1
12-R15, 6	ER357535	Carbon RD1/4 39k(J)	2
12-R17	ER212264	Carbon RD1/4 22k(J)	1
12-R18	ER212883	Carbon RD1/4 4.7k(J)	1
12-R19	ER212264	Carbon RD1/4 22k(J)	1
12-R20, 1	ER362485	Carbon RD1/4 330k(J)	2
12-R22, 3	ER357535	Carbon RD1/4 39k(J)	2
12-R24, 5	ER212883	Carbon RD1/4 4.7k(J)	2
12-R26	ER357456	Carbon RD1/4 2.2k(J)	1
12-R27	ER343078	Carbon RD1/4 2.7k(J)	1
12-R28, 9	ER391623	Metal Oxide Film 1W 1k(K)	2
12-R30	ER357456	Carbon RD1/4 2.2k(J)	1
12-R31	ER213300	Carbon RD1/4 680(J)	1
12-R32	ER306843	Carbon RD1/4 1.2k(J)	1
12-R33	ER213300	Carbon RD1/4 680(J)	1
12-R34	ER211667	Carbon RD1/4 100(J)	1
12-R35, 6	ER212883	Carbon RD1/4 4.7k(J)	2
12-R37, 8	ER213030	Carbon RD1/4 5.6k(J)	2
12-R39	ER357412	Carbon RD1/4 220(J)	1
12-R40	ER212883	Carbon RD1/4 4.7k(J)	1
12-R41	ER211465	Carbon RD1/4 1k(J)	1
12-R42	ER213030	Carbon RD1/4 5.6k(J)	1
12-R43	ER211465	Carbon RD1/4 1k(J)	1
12-R44	ER212264	Carbon RD1/4 22k(J)	1
12-R45	ER343078	Carbon RD1/4 2.7k(J)	1
12-R46	ER212883	Carbon RD1/4 4.7k(J)	1
12-R47, 8, 9	ER212264	Carbon RD1/4 22k(J)	3
12-R50, 1	ER212883	Carbon RD1/4 4.7k(J)	2
12-R52, 3	ER212264	Carbon RD1/4 22k(J)	2
12-R54	ER212883	Carbon RD1/4 4.7k(J)	1
12-R55	ER346601	Carbon RD1/4 47k(J)	1
12-R56, 7	ER212264	Carbon RD1/4 22k(J)	2
12-R58	ER493110	Carbon RD1/4 2.2k(J)	1

FIG. 12 (B) PHOTO OF SYS. CON. P.C. BOARD (KH-1039)

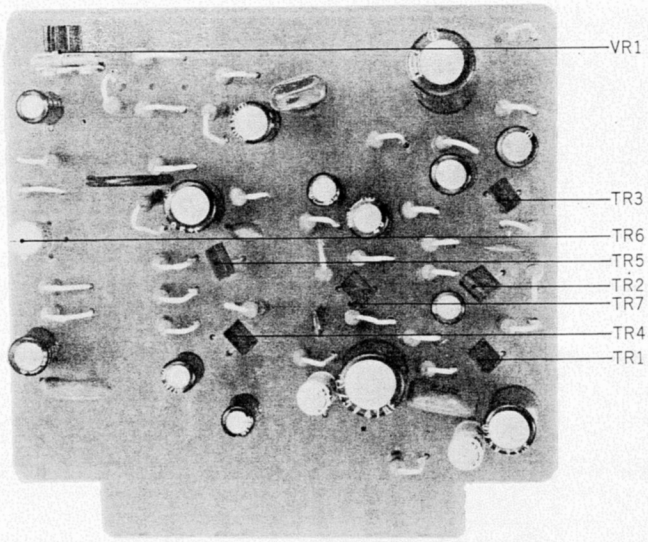


SYS. CON. P.C. BOARD (KH-1039) BLOCK

Symbol No.	Parts No.	Description	Q'ty
12-2x	BA515520	Sys. Con. P.C. Board (KH-1039)	1
12-TR1	ET515722	Transistor 2SC711 (D)(E)(F)	1
12-TR2	ET515700	Transistor 2SA628 (D)(E)(F)	1
12-TR3	ET515722	Transistor 2SC711 (D)(E)(F)	1
12-TR4	ET515733	Transistor 2SC945 (P)(Q)(R)(S)	1
12-TR5	ET515722	Transistor 2SC711 (D)(E)(F)	1
12-TR6	ET515733	Transistor 2SC945 (P)(Q)(R)(S)	1
12-TR7, 8	ET515722	Transistor 2SC711 (D)(E)(F)	2
12-TR9	ET515700	Transistor 2SA628 (D)(E)(F)	1
12-TR10, 1	ET515722	Transistor 2SC711 (D)(E)(F)	2
12-TR12	ET515700	Transistor 2SA628 (D)(E)(F)	1
12-TR13	ET515880	Transistor 2SA696 (C)(D)	1
12-TR14	ET515722	Transistor 2SC711 (D)(E)(F)	1
12-TR15	ET515700	Transistor 2SA628 (D)(E)(F)	1
12-TR16	ET515722	Transistor 2SC711 (D)(E)(F)	1
12-D1 to 4	ED514721	Silicon Diode WG-599	4
12-D5	ED224526	Silicon Diode 10D1	1
12-D6, 7	ED224550	Silicon Diode 10D4	2
12-D8 to 12	ED514721	Silicon Diode WG-599	5
12-D13	ED224526	Silicon Diode 10D1	1
12-D14 to 19	ED514721	Silicon Diode WG-599	6
12-D20	ED224526	Silicon Diode 10D1	1
12-D21 to 27	ED514721	Silicon Diode WG-599	7
12-D28	ED224526	Silicon Diode 10D1	1
12-D29 to 32	ED514721	Silicon Diode WG-599	4
12-D33, 34	ED224526	Silicon Diode 10D1	2
12-D35 to 42	ED514721	Silicon Diode WG-599	8
12-RL1 to 6	EP344136	Relay MY4-O-US-AD4-24V	6
12-CR1 to 3	ER376424	Spark Quencher 0.1μ+120 500WV	3
12-VR1, 2	EV513562	Semi-fixed Volume V10K8-1-5 100k B 4US	2

Symbol No.	Parts No.	Description	Q'ty
		Capacitor, Vertical Type	
12-C1, 2	EC450527	Elect. 4.7μF 25WV	2
12-C3 to 5	EC456041	Elect. 33μF 25WV	3
12-C6	EC273464	MP 0.1μF (M) 350WVDC (Tubular type)	1
12-C7 to 10	EC220432	Elect. 2.2μF 25WV	4
12-C11	EC220994	Elect. 10μF 25WV	1
12-C12	EC336126	Elect. 47μF 25WV	1
12-C13	EC251190	Mylar 0.056μF (K) 50WV	1
12-C14	EC251087	Mylar 0.022μF (K) 50WV	1
		Resistor, Stopper Type	
12-R1	ER211757	Carbon RD1/4 100k (J)	1
12-R2, 3	ER320207	Carbon RD1/4 47k (J)	2
12-R4	ER211465	Carbon RD1/4 1k (J)	1
12-R5, 6, 7	ER212883	Carbon RD1/4 4.7k (J)	3
12-R8	ER429996	Carbon RD1/4 470k (J)	1
12-R9	ER346601	Carbon RD1/4 47k (J)	1
12-R10 to 12	ER212883	Carbon RD1/4 4.7k (J)	3
12-R13	ER211465	Carbon RD1/4 1k (J)	1
12-R14	ER336442	Carbon RD1/4 10k (J)	1
12-R15	ER212883	Carbon RD1/4 4.7k (J)	1
12-R16	ER211465	Carbon RD1/4 1k (J)	1
12-R17, 8	ER212883	Carbon RD1/4 4.7k (J)	2
12-R19	ER211465	Carbon RD1/4 1k (J)	1
12-R20	ER336442	Carbon RD1/4 10k (J)	1
12-R21	ER212883	Carbon RD1/4 4.7k (J)	1
12-R22	ER211465	Carbon RD1/4 1k (J)	1
12-R23, 4	ER212883	Carbon RD1/4 4.7k (J)	2
12-R25	ER211465	Carbon RD1/4 1k (J)	1
12-R26	ER336442	Carbon RD1/4 10k (J)	1
12-R27	ER212883	Carbon RD1/4 4.7k (J)	1
12-R28	ER211465	Carbon RD1/4 1k (J)	1
12-R29 to 31	ER212883	Carbon RD1/4 4.7k (J)	3
12-R32	ER211465	Carbon RD1/4 1k (J)	1
12-R33	ER336442	Carbon RD1/4 10k (J)	1
12-R34	ER212883	Carbon RD1/4 4.7k (J)	1
12-R35	ER211465	Carbon RD1/4 1k (J)	1
12-R36	ER304290	Carbon RD1/4 10 (J)	1
12-R37	ER336442	Carbon RD1/4 10k (J)	1
12-R38	ER399723	Carbon RD1/4 4.7 (J)	1
12-R39, 40	ER212883	Carbon RD1/4 4.7k (J)	2
12-R41	ER211464	Carbon RD1/4 1k (J)	1
12-R43	ER336442	Carbon RD1/4 10k (J)	1
12-R44	ER212883	Carbon RD1/4 4.7k (J)	1
12-R45	ER346601	Carbon RD1/4 47k (J)	1
12-R46, 7	ER211465	Carbon RD1/4 1k (J)	2
12-R48	ER336442	Carbon RD1/4 10k (J)	1

FIG. 13 PHOTO OF REC. AMP. P.C. BOARD (KH-5013)

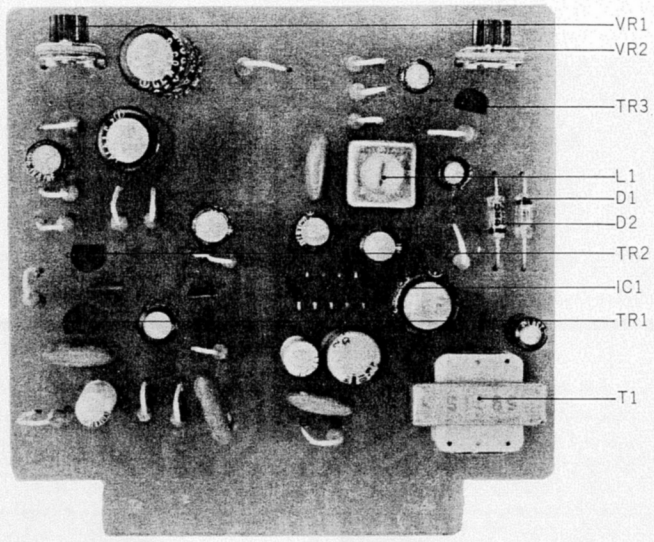


REC. AMP. P.C. BOARD (KH-5013) BLOCK

Symbol No.	Parts No.	Description	Q'ty
13-1x	BA482490	Rec. Amp. P.C. Board Comp. (KH-5013)	1
13-TR1, 2	ET234843	Transistor 2SC458LG(B)(C)	2
13-TR3	ET329242	Transistor 2SC454(C)	1
13-TR4	ET234843	Transistor 2SC458LG(B)(C)	1
13-TR5	ET329242	Transistor 2SC454(C)	1
13-TR6	ET338894	Transistor 2SC968(3)	1
13-TR7	ET234832	Transistor 2SC458LG(B)	1
13-VR1	EV221826	Semi-fixed Volume V10K-5 10k B	1
		Capacitor, Vertical Type	
13-C1	EC220612	Elect. 33μF 25WV	1
13-C2	EC432810	Elect. 10μF 16WV(noiseless)	1
13-C3	EC290586	VFM 470PF(K) 50WV	1
13-C4	EC220465	Elect. 22μF 6.3WV	1
13-C5	EC487394	VFM 47PF(K) 50WV	1
13-C6	EC329771	Elect. 47μF 6.3WV	1
13-C7	EC350684	Elect. 22μF 25WV	1
13-C8	EC220678	Elect. 47μF 25WV	1
13-C9	EC432810	Elect. 10μF 16WV(noiseless)	1
13-C10	EC250604	Mylar 0.001μF(K) 50WV	1
13-C11	EC220994	Elect. 10μF 25WV	1
13-C12	EC220465	Elect. 22μF 6.3WV	1
13-C13	EC220151	Elect. 100μF 25WV	1
13-C14	EC320051	Elect. 10μF 16WV	1
13-C16	EC220465	Elect. 22μF 6.3WV	1
13-C17	EC487394	VFM 47PF(K) 50WV	1
13-C18	EC320040	Elect. 47μF 16WV	1
13-C19	EC302253	Mylar 0.15μF(K) 50WV	1
13-C20	EC220994	Elect. 10μF 25WV	1
13-C23	EC320051	Elect. 10μF 16WV	1
13-C24	EC220994	Elect. 10μF 25WV	1
13-C25	EC423562	VFM 470PF(J) 50WV	1

Symbol No.	Parts No.	Description	Q'ty
		Resistor, Stopper Type	
13-R1	ER336442	Carbon RD1/4 10k(J)	1
13-R2, 3	ER383758	Carbon RD1/4 180k(J)(noiseless)	2
13-R4	ER349942	Carbon RD1/4 8.2k(J)	1
13-R5	ER212681	Carbon RD1/4 330(J)	1
13-R6	ER342933	Carbon RD1/4 27k(J)	1
13-R7, 8	ER346994	Carbon RD1/4 18k(J)	2
13-R9, 10	ER212477	Carbon RD1/4 3.3k(J)	2
13-R11	ER336442	Carbon RD1/4 10k(J)	1
13-R12	ER383758	Carbon RD1/4 180k(J) (noiseless)	1
13-R13	ER346601	Carbon RD1/4 47k(J)	1
13-R14	ER211858	Carbon RD1/4 12k(J)	1
13-R15	ER211465	Carbon RD1/4 1k(J)	1
13-R16	ER352045	Carbon RD1/4 3.9k(J)	1
13-R17, 8	ER213030	Carbon RD1/4 5.6k(J)	2
13-R19	ER450011	Carbon RD1/4 120k(J)	1
13-R20	ER213467	Carbon RD1/4 820(J)	1
13-R21	ER211757	Carbon RD1/4 100k(J)	1
13-R23	ER352045	Carbon RD1/4 3.9k(J)	1
13-R24	ER362441	Carbon RD1/4 1.8k(J)	1
13-R25	ER363644	Carbon RD1/4 560(J)	1
13-R26	ER342933	Carbon RD1/4 27k(J)	1
13-R27	ER361528	Carbon RD1/4 56k(J)	1
13-R28	ER212264	Carbon RD1/4 22k(J)	1
13-R29	ER380755	Carbon RD1/4 6.2k(J)	1
13-R30	ER212681	Carbon RD1/4 330(J)	1
13-R31	ER211858	Carbon RD1/4 12k(J)	1
13-R32	ER352045	Carbon RD1/4 3.9k(J)	1
13-R33	ER211465	Carbon RD1/4 1k(J)	1
13-R34	ER349784	Carbon RD1/4 390(J)	1
13-R35	ER212477	Carbon RD1/4 3.3k(J)	1

FIG. 14 PHOTO OF P.B. AMP. P.C. BOARD (KH-5014)



P.B. AMP. P.C. BOARD (KH-5014) BLOCK

Symbol No.	Parts No.	Description	Q'ty
14-1x	BA482501	P.B. Amp. P.C. Board Comp. (KH-5014)	1
14-IC1	EI412413	Line Amp. I.C. LD-3141	1
14-TR1, 2	ET399868	Transistor 2SC871(F)	2
14-TR3	ET398711	Transistor 2SC945(Q)(R)	1
14-D1, 2	ED219464	Germanium Diode 1N34A	2
14-T1	BT247768	Head Phone Trans. N19-5921S	1
14-L1	EO262484	DM Coil 10MH	1
14-VR1	EV221850	Semi-fixed Volume V10K-5 20k B	1
14-VR2	EV398812	Semi-fixed Volume V10K-5 5k B	1
		Capacitor, Vertical Type	
14-C1	EC432810	Elect. 10μF 16WV(noiseless)	1
14-C2	EC220678	Elect. 47μF 25WV	1
14-C3	EC290586	VFM 470PF(K) 50WV	1
14-C4	EC329771	Elect. 47μF 6.3WV	1
14-C5	EC377212	VFM 47PF(J) 50WV	1
14-C6	EC329771	Elect. 47μF 6.3WV	1
14-C7	EC429851	VFM 680PF(J) 50WV	1
14-C8	EC250841	Mylar 0.01μF(J) 50WV	1
14-C9	EC220994	Elect. 10μF 25WV	1
14-C10, 1	EC220151	Elect. 100μF 25WV	2
14-C12	EC432810	Elect. 10μF 16WV(noiseless)	1
14-C13	EC290564	VFM 220PF(K) 50WV	1
14-C14	EC329771	Elect. 47μF 6.3WV	1
14-C15	EC290564	VFM 220PF(K) 50WV	1
14-C16	EC220364	Elect. 100μF 6.3WV	1
14-C17	EC220994	Elect. 10μF 25WV	1
14-C18	EC450055	Elect. 1μF 25WV	1
14-C19	EC320051	Elect. 10μF 16WV	1
14-C20	EC450055	Elect. 1μF 25WV	1
		Resistor, Stopper Type	
14-R1, 2	ER427083	Carbon RD1/4 330k(J)(noiseless)	2
14-R3	ER336442	Carbon RD1/4 10k(J)	1
14-R4	ER212681	Carbon RD1/4 330(J)	1
14-R5	ER357570	Carbon RD1/4 150k(J)	1
14-R6	ER342933	Carbon RD1/4 27k(J)	1
14-R7	ER212883	Carbon RD1/4 4.7k(J)	1
14-R8	ER212477	Carbon RD1/4 3.3k(J)	1
14-R9	ER336442	Carbon RD1/4 10k(J)	1
14-R10	ER380711	Carbon RD1/4 220k(J)	1
14-R11	ER349907	Carbon RD1/4 33k(J)	1
14-R12	ER212883	Carbon RD1/4 4.7k(J)	1
14-R13	ER304402	Carbon RD1/4 470(J)	1
14-R14	ER336442	Carbon RD1/4 10k(J)	1
14-R15	ER212264	Carbon RD1/4 22k(J)	1
14-R16	ER429996	Carbon RD1/4 470k(J)	1
14-R17, 8	ER357456	Carbon RD1/4 2.2k(J)	2

FIG. 15 PHOTO OF
OSC. P.C. BOARD (KH-5015)

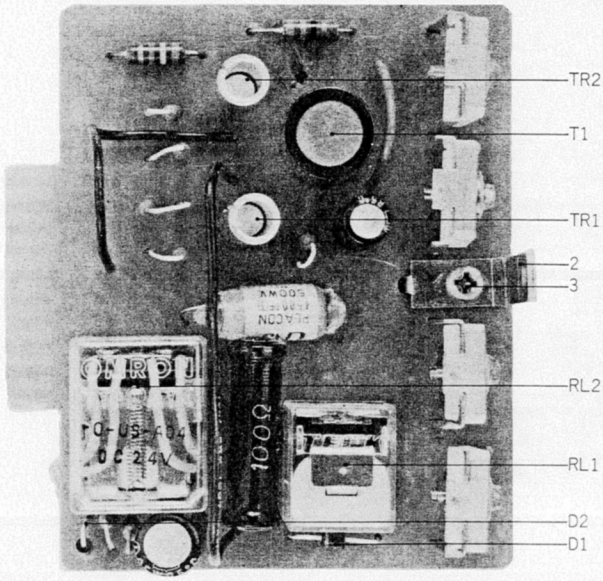
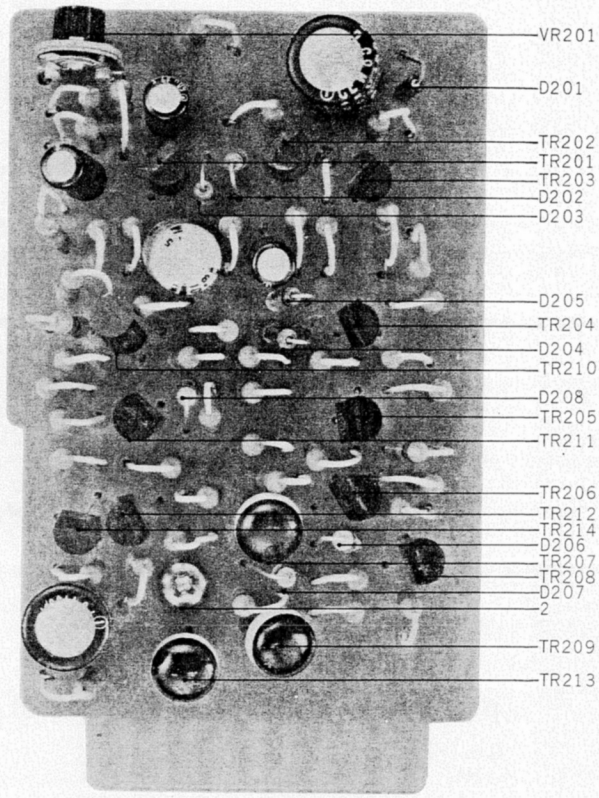


FIG. 16 PHOTO OF COM DETECTOR
P.C. BOARD (RD-A514)



OSC. P.C. BOARD (KH-5015) BLOCK

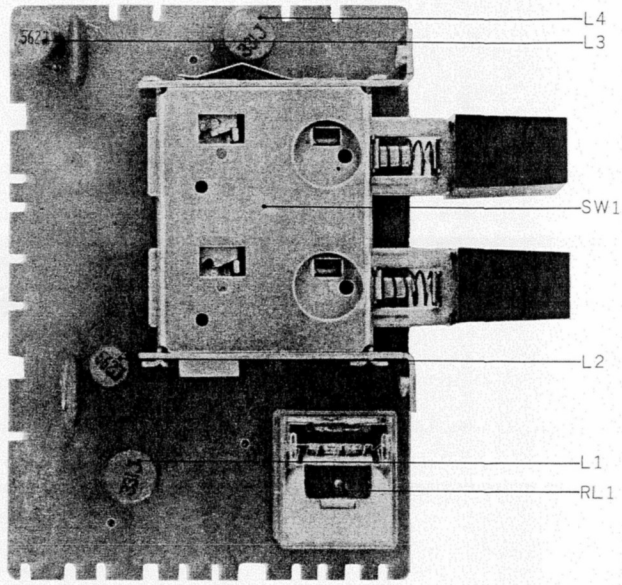
Symbol No.	Parts No.	Description	Q'ty
15-1x	BA482512	OSC. P.C. Board Comp. (KH-5015)	1
15-TR1, 2	ET304255	Transistor 2SC971(2)(3)(red)	2
15-T1	EO383365	OSC. Coil OT-204	1
15-D1, 2	ED224526	Silicon Diode 10D1	2
15-RL1	EP383321	Relay TECK-36 DC22V 1000	1
15-RL2	EP344136	Relay MY4-O-US-AD4-24V	1
15-2	EZ425226	P.C. Board Retaining Metal	1
15-3	ZW413155	Screw, binding head 3x6	1
15-4x	ZW273756	M3 Nut	1
		Capacitor, Vertical Type	
15-C1	EC350684	Elect. 22μF 25WV	1
15-C2, 3	EC250841	Mylar 0.01μF(J) 50WV	2
15-C4	EC442080	Plustic Film 4500PF(J) 500WV	1
15-C5 to 8	EC425250	Trimmer A-1P3-3 70PF	4
15-C9	EC220151	Elect. 100μF 25WV	1
		Resistor, Stopper Type	
15-R1	ER426892	Solid RC1/2W 2.4k(J)	1
15-R2	ER251684	Wire-wound 2WL 100(K) (L type)	1
15-R3, 4	ER315944	Carbon RD1/4 3.3(J)	2
15-R5	ER212883	Carbon RD1/4 4.7k(J)	1
15-R6	ER304402	Carbon RD1/4 470(J)	1
15-R7	ER455848	Solid RC1/2W 27(J)	1
15-R8	ER347038	Carbon RD1/4 270(J)	1
15-R9	ER211667	Carbon RD1/4 100(J)	1
15-R10	ER361642	Carbon RD1/4 47(J)	1

COM DETECTOR P.C. BOARD (RD-A514) BLOCK

Symbol No.	Parts No.	Description	Q'ty
16-1x	BA482523	COM Detector P.C. Board Comp. (RD-A514)	1
16-TR201	ET380834	Transistor 2SC711(E)	1
16-TR202,3,4	ET371935	Transistor 2SC711(D)	3
16-TR205, 6	ET380834	Transistor 2SC711(E)	2
16-TR207	ET383466	Transistor CDC9000-1(B)	1
16-TR208	ET380834	Transistor 2SC711(E)	1
16-TR209	ET383466	Transistor CDC9000-1(B)	1
16-TR210, 1	ET371935	Transistor 2SC711(D)	2
16-TR212	ET380834	Transistor 2SC711(E)	1
16-TR213	ET383466	Transistor CDC9000-1(B)	1
16-TR214	ET380834	Transistor 2SC711(E)	1
16-D201	ED321243	Zener Diode 1N759A	1
16-D202 to 8	ED219464	Germanium Diode 1N34A	7
16-VR201	EV221837	Semi-fixed Volume V10K-5 100k B	1
16-2	ZW201971	Screw, binding head 3x12	1
16-3x	EZ348647	Micro Switch Collar C	1
16-4x	EZ473477	COM P.C. Board Mt. Part	1
16-5x	ZW273756	M3 Nut	1
		Capacitor, Vertical Type	
16-C201	EC220151	Elect. 100μF 25WV	1
16-C202	EC313108	Elect. 1μF 50WV	1
16-C203	EC220364	Elect. 100μF 6.3WV	1
16-C204	EC450281	Elect. 0.47μF 50WV	1

Symbol No.	Parts No.	Description	Q'ty
16-C205	EC350706	Elect. 4.7μF 16WV	1
16-C206	EC220127	Elect. 100μF 16WV	1
		Resistor, Stopper Type	
16-R201	ER363644	Carbon RD1/4 560(J)	1
16-R202	ER346601	Carbon RD1/4 47k(J)	1
16-R203	ER212174	Carbon RD1/4 180k(J)	1
16-R204	ER346601	Carbon RD1/4 47k(J)	1
16-R205	ER306887	Carbon RD1/4 15k(J)	1
16-R206	ER363644	Carbon RD1/4 560(J)	1
16-R207	ER361642	Carbon RD1/4 47(J)	1
16-R208	ER346601	Carbon RD1/4 47k(J)	1
16-R209	ER357456	Carbon RD1/4 2.2k(J)	1
16-R210	ER336442	Carbon RD1/4 10k(J)	1
16-R211	ER357456	Carbon RD1/4 2.2k(J)	1
16-R212	ER212264	Carbon RD1/4 22k(J)	1
16-R213	ER336442	Carbon RD1/4 10k(J)	1
16-R214	ER361642	Carbon RD1/4 47(J)	1
16-R215	ER212264	Carbon RD1/4 22k(J)	1
16-R216	ER336442	Carbon RD1/4 10k(J)	1
16-R217, 8	ER213030	Carbon RD1/4 5.6k(J)	2
16-R219	ER212264	Carbon RD1/4 22k(J)	1
16-R220	ER361642	Carbon RD1/4 47(J)	1
16-R221	ER336442	Carbon RD1/4 10k(J)	1
16-R222	ER212883	Carbon RD1/4 4.7k(J)	1
16-R223, 4	ER371946	Carbon RD1/4 2k(J)	2
16-R225	ER212883	Carbon RD1/4 4.7k(J)	1
16-R226	ER336442	Carbon RD1/4 10k(J)	1
16-R227	ER212264	Carbon RD1/4 22k(J)	1
16-R228	ER380913	Carbon RD1/4 33(J)	1
16-R229, 30	ER213030	Carbon RD1/4 5.6k(J)	2
16-R231	ER212264	Carbon RD1/4 22k(J)	1
16-R232	ER336442	Carbon RD1/4 10k(J)	1
16-R233	ER213030	Carbon RD1/4 5.6k(J)	1
16-R234	ER212264	Carbon RD1/4 22k(J)	1
16-R235	ER361642	Carbon RD1/4 47(J)	1
16-R236	ER336442	Carbon RD1/4 10k(J)	1
16-R237	ER361642	Carbon RD1/4 47(J)	1
16-R238	ER213030	Carbon RD1/4 5.6k(J)	1
16-R239	ER212264	Carbon RD1/4 22k(J)	1
16-R240	ER336442	Carbon RD1/4 10k(J)	1
16-R241	ER212883	Carbon RD1/4 4.7k(J)	1
16-R242, 3	ER371946	Carbon RD1/4 2k(J)	2
16-R244	ER212883	Carbon RD1/4 4.7k(J)	1
16-R245	ER362441	Carbon RD1/4 1.8k(J)	1
16-R246	ER349942	Carbon RD1/4 8.2k(J)	1
16-R247	ER357456	Carbon RD1/4 2.2k(J)	1

FIG. 17 PHOTO OF TRACK SELECTOR P.C. BOARD (KH-5011)



TRACK SELECTOR P.C. BOARD (KH-5011) BLOCK

Symbol No.	Parts No.	Description	Q'ty
17-1x	BA482477	Track Selector P.C. Board Comp. (KH-5011)	1
17-D1	ED224526	Silicon Diode 10D1	1
17-L1	EO495527	Ferri Inductor FL9H 330μH( )	1
17-L2, 3	EO424888	Ferri Inductor FL5H 5.6MH( )	2
17-L4	EO495527	Ferri Inductor FL9H 330μH( )	1
17-RL1	EP383321	Relay TECK-36 DC22V 1000	1
17-SW1	ES411805	Push Switch UM21620C	1
17-C1, 2	EC337487	Hi-Q Capacitor 470PF(J) 50WV	2

FIG. 18 PHOTO OF MONITOR SWITCH P.C. BOARD (KH-5012)

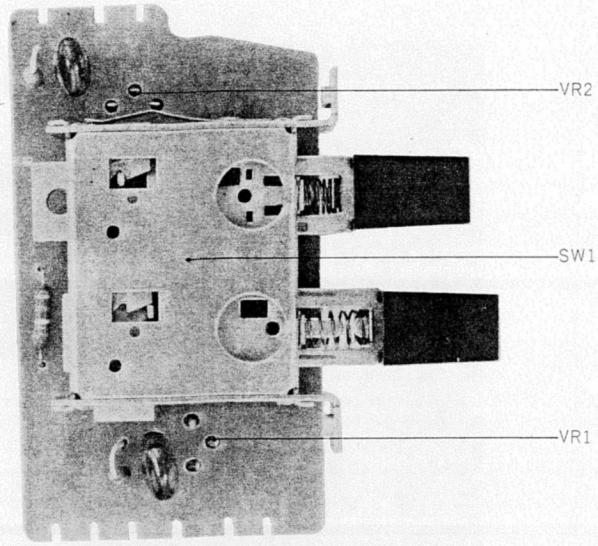
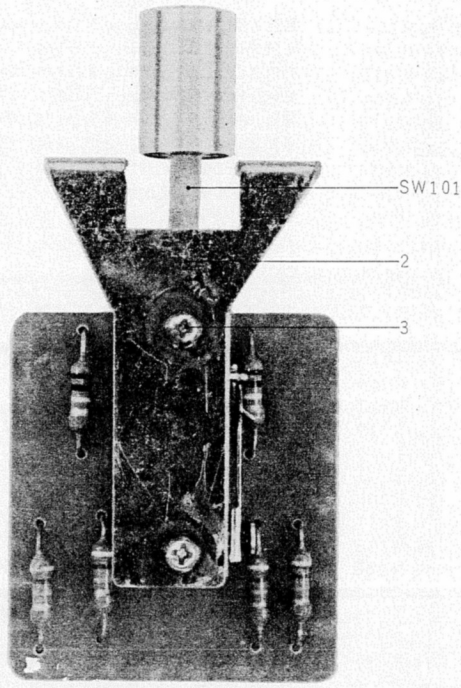


FIG. 19 PHOTO OF COM SWITCH P.C. BOARD (RD-525)



MONITOR SWITCH P.C. BOARD (KH-5012) BLOCK

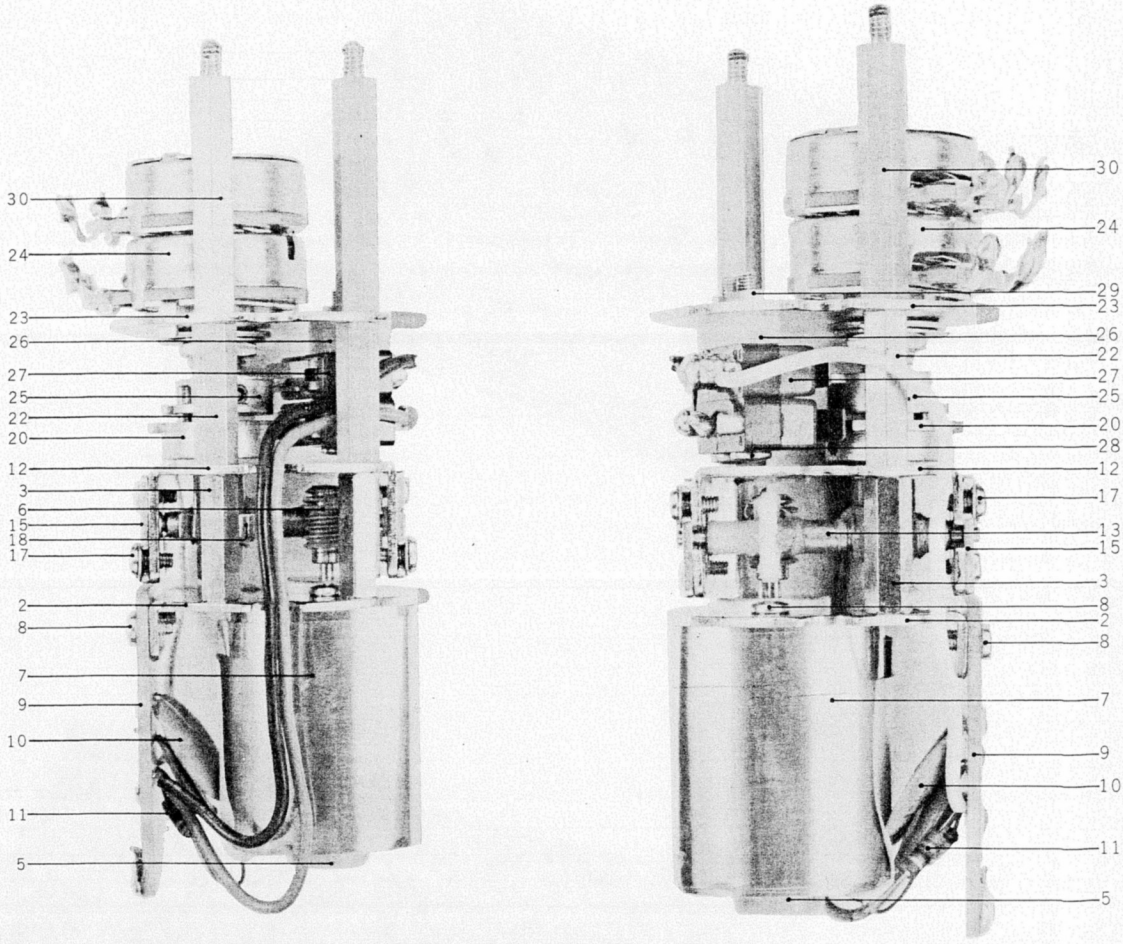
Symbol No.	Parts No.	Description	Q'ty
18-1x	BA482488	Monitor Switch P.C. Board Comp. (KH-5012)	1
18-VR1, 2	EV482962	Semi-fixed Volume V-10K5-2-4 5k B, w/knob	2
18-SW1	ES245103	Push Switch UM21220J	1
18-C1, 2	EC389496	Mylar 0.068μF(J) 50WV (Vert. type)	2
		Resistor, Stopper Type	
18-R1	ER212264	Carbon RD1/4 22k(J)	1
18-R2	ER364994	Carbon RD1/4 39k(J) (Insu. type)	1
18-R3	ER212264	Carbon RD1/4 22k(J)	1

COM SWITCH P.C. BOARD (RD-525) BLOCK

Symbol No.	Parts No.	Description	Q'ty
19-1x	BA482455	COM Switch P.C. Board Comp. (RD-525)	1
19-SW1	ES482872	Push Switch UEG62BP, without knob	1
19-2	EZ472490	COM Switch Mt. Part	1
19-3	ZW202331	Screw, round head 2.6x4	2
		Resistor, Insulator Type	
19-R101 to 104	ER329308	Carbon RD1/4 47k(J)	4
19-R105, 6	ER213715	Carbon RD1/4 100k(J)	2

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

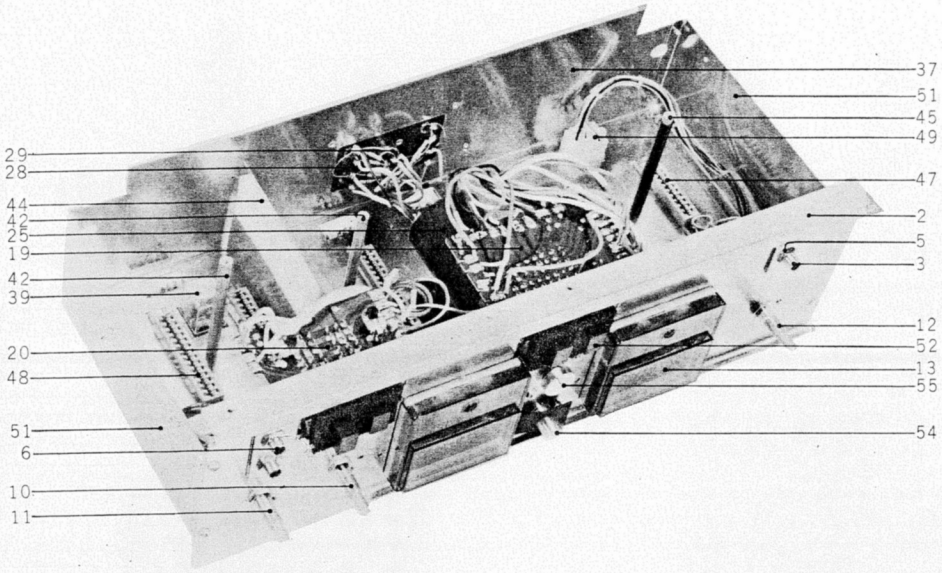
FIG. 20 PHOTO OF COM MECHANISM BLOCK

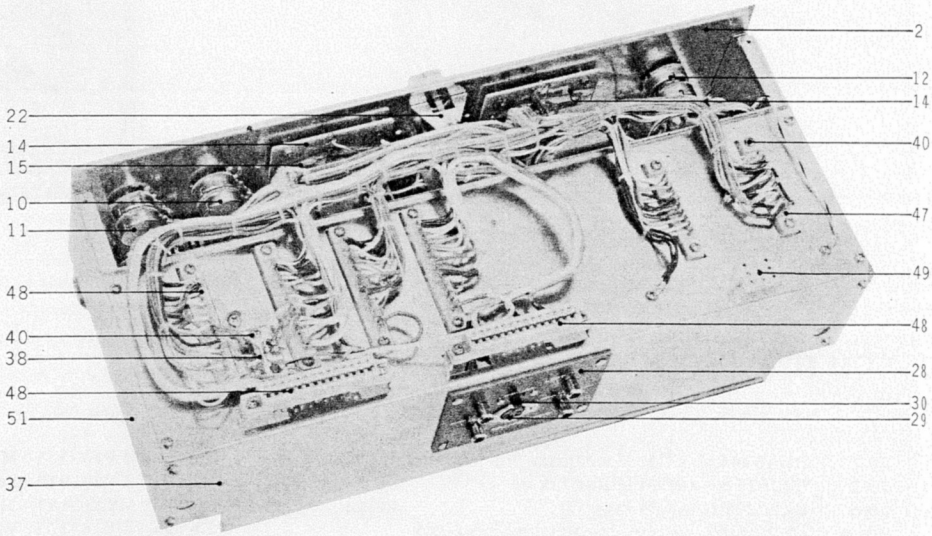


COM MECHANISM BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
20-1x	BM482466	COM Mechanism Block Comp.	KH.RDG	1
20-2	EZ262181	COM Motor Frame	RD-591	1
20-3	EZ262091	COM Prop C	RD-590	3
20-4x	ZW200362	Screw, countersunk head 3x5 D=5		3
20-5	BM250514	Micro Motor FM-36K 108700	53-1-1	1
20-6	EZ262023	COM Worm-Gear B	RD-597	1
20-7	EZ262067	COM Shield	RD-593	1
20-8	ZW201914	Screw, binding head 2.3x5		4
20-9	EA383128	Terminal P.C. Board	RD-A512	1
20-10	EC228745	Ceramic/C. YZ 0.1 μF(Z) 50WV	24-5-30	3
20-11	ER230185	Solid/R. RC1/4W 33(K)	35-5-1	2
20-12	EZ218147	Gear Frame	RD-582	1
20-13	MS222693	Sub Gear Shaft, w/gear	RD-584	1
20-14x	ZW259334	Washer (Polyslider) D2.05x3.5x0.25t		2
20-15	EZ228857	Center Plate	RD-583	2
20-16x	ZW269785	M2.3 Toothed Lock Washer		6
20-17	ZW201914	Screw, binding head 2.3x5		4
20-18	MS252887	Main Gear Shaft, w/gear	RD-585	1
20-19x	ZW383332	Washer (PBP)D3.1x5x0.1t		2
20-20	EZ383130	Clutch A, w/pin	RD-A509	1
20-21x	ZW313470	Set Screw 3x6.5(cup)		2
20-22	EZ262080	COM Prop B	RD-578	3
20-23	EZ262102	COM Switch Base	RD-577	1
20-24	EV326160	Dual-axial 2-throw/Vol. V24L5G(SP) N12.5R-100kx	36-1-5	1
20-25	EZ383141	Clutch B	RD-A510	1
20-26	ZW383152	Switch Insulator Washer	RD-A511	1
20-27	ES250020	Micro Switch S-1AL	25-1-9	2
20-28	ZW383343	Screw, binding head 2.3x22		2
20-29	ZW273690	M2.3 Nut		2
20-30	MH473488	COM Mt. Prop	KH-5005	3
20-31x	EZ262056	COM Rubber Shield	RD-595	1

FIG. 21 PHOTO OF AMP. ASSEMBLY BLOCK





AMP. ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
		AMP. FRAME BLOCK		
21-1x	BZ482444	Amp. Frame Block Comp.	KH	1
21-2	EZ472577	Amp. Chassis A	KH-5001	1
21-3	EJ442078	Mic. Jack 3PMJ4	31-2-36	1
21-4x	ZW482927	Washer (SPC)D9.2x14x0.5t		1
21-5	ZW375153	E Jack Nut		3
21-6	EJ433844	Mic. Jack 2PMJ4	31-2-35	2
21-7x	EZ225180	Nylon Collar, Jack	LD-520	2
21-8x	ZW492884	Washer (Fiber)D9.2x14x0.5t		2
21-9x	ER213647	Carbon/R. RD1/4 10k(J) (Insu. type)	35-9-5	2
21-10	EV472588	Dual-axial Double/Vol. D24N 50k Ax2 (Line)	36-3-38	1
21-11	EV472590	Dual-axial Double/Vol. D24N 100k Ax2 (Mic)	36-3-39	1
21-12	EV403661	Double/Vol. (Frictional) DJ20A 10k Ax2 (Line out)	36-3-27	1
21-13	EM472612	VU Meter KL-250B-13	46-1-56	2
21-14	EA472601	Meter P.C. Board	KH-5007	2
21-15	EL295312	No. 2 Lamp 8V 0.2A	28-2-8	4
21-16x	ZG317968	Angle Spring	MR-14	6
21-17x	ZW424495	Washer (SPC)D3.1x8x1t		2
21-18x	ZW348107	M3 Iso Nut		6
21-19	BA482477	Track Selector P.C. Board Comp. (KH-5011)		1
21-20	BA482488	Monitor Switch P.C. Board Comp. (KH-5012)		1
21-21x	ZW371856	Iso Screw, binding head 3x5		2
21-22	BA482455	COM Switch P.C. Board Comp. (RD-525)		1
21-23x	ZW323728	Screw, binding head 3x5		2
21-24x	SZ510197	COM Insulator Plate	KH-5029	1
21-25	BM482466	COM Mechanism Block Comp.	KH.RDG	1
21-26x	ZW273756	M3 Nut		3
		JACK PLATE BLOCK		
21-27x	BZ482534	Jack Plate Block Comp.	KH	1
21-28	EJ452046	RDG Line Jack Plate	31-5-43	1
21-29	EJ378990	5P Din-Jack S-I 8123	31-1-1	1
21-30	ES379045	6P Slide Switch SJ-0282	25-3-36	1
21-31x	ZW410231	Screw, pan head 2.6x5		2
21-32x	ZW273778	M3 Earth Lug		1
21-33x	ER324685	Carbon/R. RD1/4 33k(J) (Insu. type)	35-9-5	2
21-34x	ER213873	Carbon/R. RD1/4 150k(J) (Insu. type)	35-9-5	2
21-35x	ER345712	Carbon/R. RD1/4 22k(J) (Insu. type)	35-9-5	2
21-36x	ER213647	Carbon/R. RD1/4 10k(J) (Insu. type)	35-9-5	2
		AMP. ASSEMBLY BLOCK		
21-37	UM472522	Amp. Chassis B	KH-5002	1
21-38	EA472533	Rec. Relay P.C. Board	KH-5009	1
21-39	EP383321	Relay TECK-36 DC22V 1000	47-2-20	1
21-40	ZW447772	Tapping Screw 3x6(BR)		23
21-41x	ZW273778	M3 Earth Lug		4
21-42	MH472544	P.C. Board Retaining Prop	KH-5008	2
21-43x	ZW417150	Screw, pan head 4x6		2
21-44	EZ472555	Rec. Amp. Shield	KH-5017	1
21-45	MH472566	OSC. Retaining Prop	KH-5022	1
21-46x	ZW413155	Screw, binding head 3x6		1
21-47	EJ482793	10P Multi-Jack 3250-010-001	31-4-21	2
21-48	EJ368785	14P Multi-Jack 3250-014-001	31-4-14	6
21-49	EJ300508	9P Mate-N-Lock Plug Housing 1-480274-0	52-1-7	1
21-50x	EJ373634	Socket Contact 61115-1	52-1-1	7
21-51	EZ473771	Side Frame	KH-5003	2
21-52	SK474107	Push Knob	KH-5020	4
21-53x	EZ473782	Card Retainer A	KH-5018	1
21-54	SK436252	Knob B	KF-2019	1
21-55	SK493018	COM Knob	KH-5028	1

FIG. 22 PHOTO OF FINAL ASSEMBLY BLOCK



FINAL ASSEMBLY BLOCK

Ref. No.	Parts No.	Description	Schematic No.	Q'ty
		MECH. PANEL BLOCK		
22-1x	BZ482264	Mech. Panel Block Comp.	KH	1
22-2	SP473556	Mech. Panel	KH-6001	1
22-3	SE486088	Counter Escutcheon B	KD-6008	1
22-4	SZ473567	Reel Protector	KH-6003	2
22-5x	ZW417137	Screw, binding head 3x4		12
22-6	SC473578	Head Cover Base	KH-6004	1
22-7	SM473591	Pause Name Plate	KH-6009	1
22-8	SZ409320	Illumination Escutcheon (orange)	61-5023	1
22-9x	SZ473580	Head Cover Rotation Base	KH-6005	1
22-10x	ZW413741	Screw, binding head 3x8		2
22-11x	SZ492030	Ball Case	KH-6034	1
22-12x	MV269965	Steel Ball D4		1
22-13x	ZG249107	Ball Retaining Spring	RD-632	1
22-14x	ZW383883	Set Screw 5x4(flat)		1
22-15	EZ426780	Illumination Escutcheon (red)	61-5023	1
22-16	SC473602	Head Cover	KH-6008	1
22-17	SM473613	Head Cover Plate	KH-6024	1
22-18x	MS473624	Head Cover Shaft	KH-6007	1
22-19x	SZ473635	Rolling Sleeve	KH-6006	1
22-20x	ZW434160	Set Screw, hexagon socket 3x3(cup)		2
22-21x	ZW482657	Set Screw, hexagon socket 4x3(cup)		1
22-22x	SZ487877	Stopper Rubber	KH-6033	2
22-23x	SZ473646	Stopper Rubber	KH-1020	2
		AMP. PANEL BLOCK		
22-24x	BZ482253	Amp. Panel Block Comp.	KH	1
22-25	SP473804	Amp. Panel	KH-6018	1
22-26	SC473815	VU Meter Cover	KH-6020	2
22-27x	ZW487866	Screw, round head 2.6x6		6
22-28	EZ397890	Rec. Button Escutcheon	KD-5003	1
22-29	SZ492941	COM Guide	KH-6036	1
22-30	SZ436151	Lamp Escutcheon (red)	DF-6025	1
		CASE BLOCK		
22-31	BC482242	Case Block Comp.	KH	1
22-32x	SZ439694	Case Corner Angle	KD-6031	2
22-33x	ZW447963	Tapping Screw #1 3x10(truss)		8
22-34x	SZ382230	Ventilator (upper)	RD-A404	1
22-35x	ZW439661	Screw, truss head 3x14 (without groove)		4
22-36x	ZW273756	M3 Nut		4
22-37x	SZ382241	Ventilator Retaining Plate	RD-A405	1
22-38x	ZW200610	Tapping Screw #1 4x12(truss)		1
22-39	SZ377190	LM Rubber Foot	LM-404	4
22-40x	ZW419646	Washer (SPC)D4.5x9.8x0.5t		4
22-41x	ZW403571	Wood Screw, round head 4.5x20		4
		FINAL ASSEMBLY BLOCK		
22-42	SP473703	Sash A (right)	KH-6023A	1
22-43	SP473714	Sash B (left)	KH-6023B	1
22-44x	ZW200384	Screw, countersunk head 3x6		2
22-45	ZW408418	Panel Washer	KD-6029	2
22-46	ZW203084	Screw, oval countersunk head 3x8		2
22-47x	ZW201150	Screw, truss head 3x6 (black)		2
22-48	SZ483737	Panel Washer B (black)	KD-6029	2
22-49	ZW482815	Screw, oval countersunk head 3x8		2
22-50x	ZW259806	Washer (SPC)D4.5x12.8x1t		6
22-51x	ZW487833	Tapping Screw #1 4x50(truss)		4
22-52x	SZ377190	LM Rubber Foot	LM-404	4
22-53x	ZW419646	Washer (SPC)D4.5x9.8x0.5t		4
22-54x	ZW434283	Tapping Screw #1 4x30(truss)		4
22-55x	ZW200621	Tapping Screw #1 4x25(truss)		2
22-56	SK425158	Pinch Roller Cap	MS-6020	1
22-57	MP424023	Pinch Roller (KD)	KD-6084	1
22-58	SK474063	Volume Knob B	KH-6011	3
22-59x	ZW487844	Set Screw, hexagon socket 3x7(cup)		3
22-60	SK474074	Volume Knob A	KH-6012	3
22-61x	ZW433001	Set Screw, hexagon socket 3x5(cup)		3
22-62x	EZ436217	Collar, Jack	MC-6006	3
22-63x	SZ473501	Ventilator Panel (back)	KH-6025	1
22-64x	ZW324448	Tapping Screw #1 3x10(truss)		4
22-65x	EF444183	Fuse 1.5A 250V	39-1-4	1
22-66x	EF277413	Fuse ST-2 2A	39-1-2	1
22-67x	EF338387	Fuse ST-2 1.5A	39-1-2	1

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

INDEX

Parts No.	Ref. No. & Symbol No.
BA482332	11-1x
BA482365	12-1x
BA482387	6-19x
BA482387	9-1x
BA482398	6-3x
BA482398	6-25x
BA482455	19-1x
BA482455	21-22
BA482477	17-1x
BA482477	21-19
BA482488	18-1x
BA482488	21-20
BA482490	13-1x
BA482501	14-1x
BA482512	15-1x
BA482523	16-1x
BA482578	7-14
BA495808	10-1x
BA515520	12-2x
BC473927	4-5
BC482242	22-31
BH482310	1-1x
BL482422	4-1x
BM250514	20-5
BM314741	3-1
BM482286	2-1x
BM482466	20-1x
BM482466	21-25
BP482343	7-1x
BR482400	3-2x
BR482411	3-3x
BS482308	5-1x
BS482354	8-24x
BT247768	14-T1
BT472702	7-10
BZ398338	8-1x
BZ472656	6-2
BZ482253	22-24x
BZ482264	22-1x
BZ482297	8-9x
BZ482376	6-1x
BZ482444	21-1x
BZ482534	21-27x
EA222096	1-67x
EA383128	20-9
EA396898	6-11
EA463206	1-30x
EA472533	21-38
EA472601	21-14
EA472724	6-26
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EC220994	14-C9
EC220994	14-C17
EC228745	20-10
EC250604	13-C10
EC250661	11-C206
EC250841	14-C8
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EC250885	12-C20
EC250975	9-C5
EC250975	9-C10
EC251087	12-C14
EC251190	11-C202
EC251190	12-C13
EC273464	7-25
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EC273464	12-C6
EC273464	12-C16
EC290564	14-C13
EC290564	14-C15
EC290586	13-C3
EC290586	14-C3
EC302253	13-C19
EC308711	12-C7
EC313108	16-C202
EC316091	7-17
EC320040	13-C18
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EC320051	13-C23
EC320051	14-C19
EC329771	13-C6
EC329771	14-C4
EC329771	14-C6
EC329771	14-C14
EC329848	9-C13
EC329848	9-C15
EC329850	11-C209
EC331705	11-C203
EC331817	11-C254
EC336126	12-C12
EC337487	17-C1,2
EC341842	7-26
EC346746	7-19
EC348704	8-120
EC350684	11-C208
EC350684	11-C255
EC350684	12-C5
EC350684	13-C7
EC350684	15-C1
EC350706	16-C205
EC350875	9-C12
EC350875	9-C14
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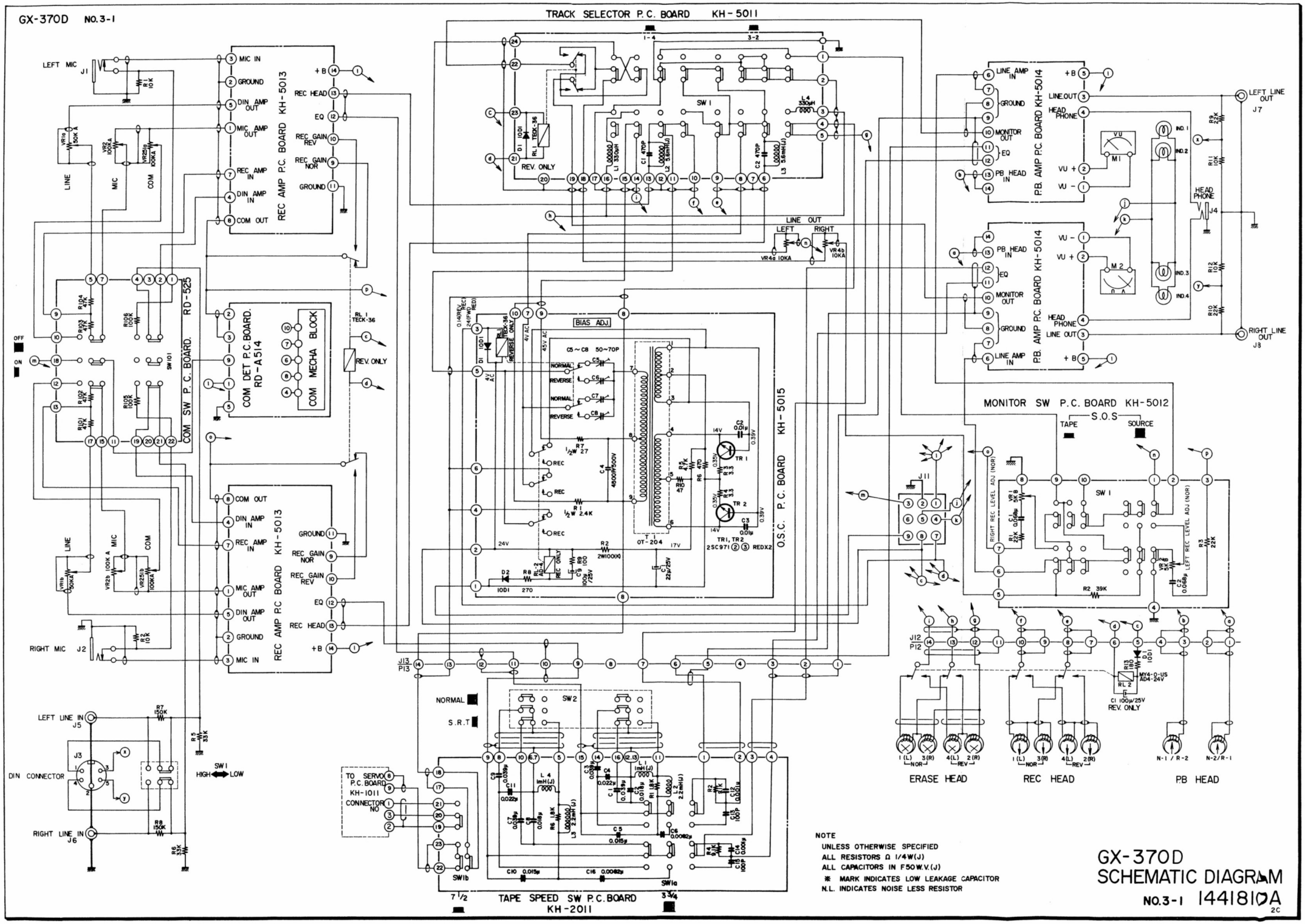
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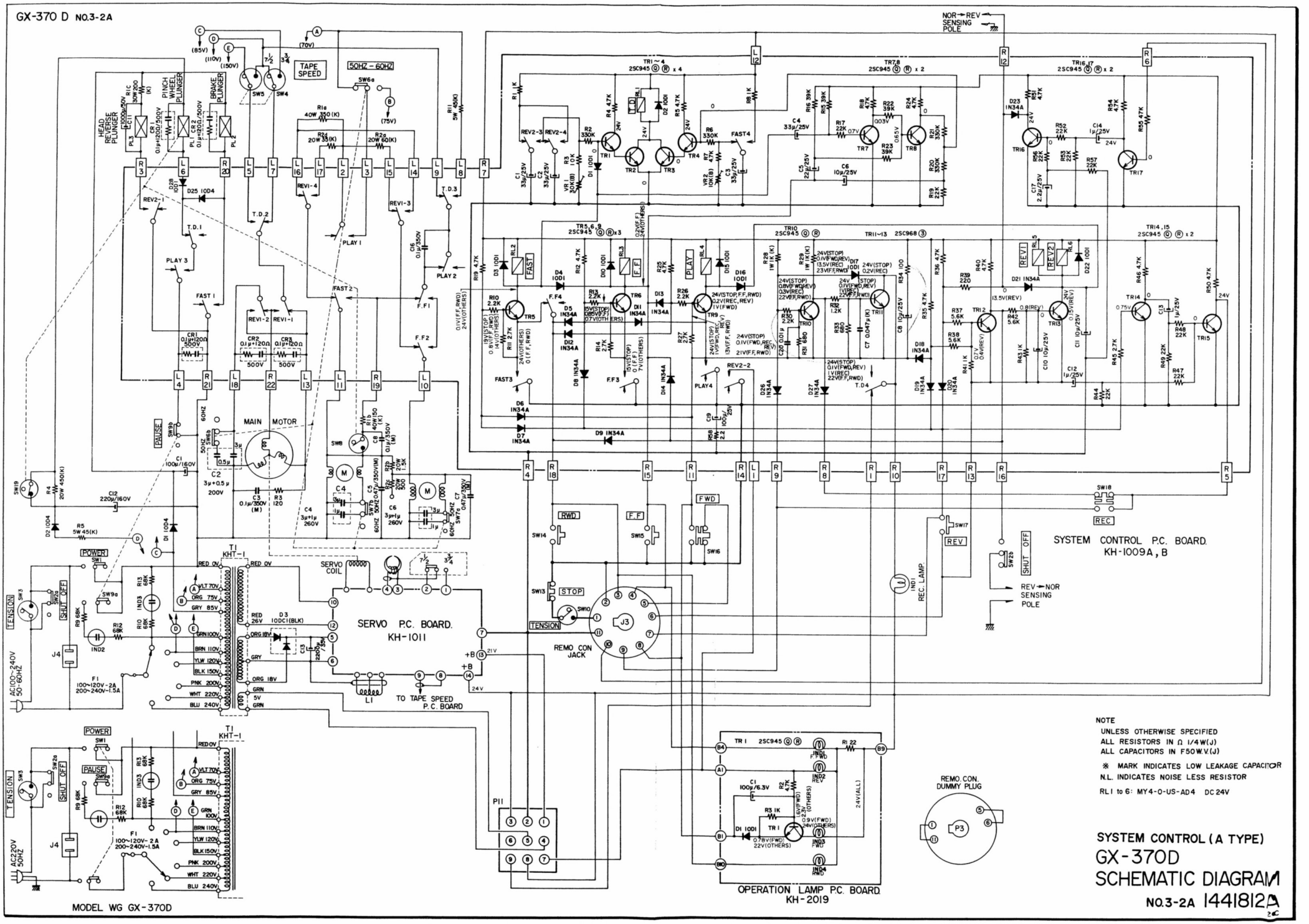
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ZW270101	6-7
ZW270101	8-19x
ZW270101	8-71
ZW270101	8-88x
ZW270134	1-48
ZW273363	8-89
ZW273633	8-142
ZW273690	20-29
ZW273756	1-80
ZW273756	8-39x
ZW273756	11-5
ZW273756	15-4x
ZW273756	16-5x
ZW273756	21-26x
ZW273756	22-36x
ZW273778	1-24
ZW273778	1-73
ZW273778	3-13x
ZW273778	8-47x
ZW273778	8-92
ZW273778	21-32x
ZW273778	21-41x
ZW273802	1-25x
ZW273802	11-9x
ZW273960	8-21
ZW274026	8-34x
ZW290283	3-29
ZW290283	5-9
ZW290283	8-74x
ZW290283	8-145x
ZW290248	8-157x
ZW290250	8-158
ZW292667	4-9
ZW313470	20-21x
ZW317801	1-66x
ZW321592	2-10
ZW321592	4-4
ZW323728	3-28x
ZW323728	5-20
ZW323728	6-4
ZW323728	6-8
ZW323728	6-13
ZW323728	6-40x
ZW323728	6-49
ZW323728	7-22
ZW323728	8-13x
ZW323728	8-49
ZW323728	8-52
ZW323728	8-57
ZW323728	8-67
ZW323728	8-79
ZW323728	8-148
ZW323728	21-23x
ZW324448	22-64x
ZW334653	4-3
ZW345442	8-18
ZW348107	21-18x
ZW356883	2-11
ZW365973	3-18
ZW375153	21-5
ZW371856	5-15
ZW371856	6-20x
ZW371856	7-34x
ZW371856	21-21x
ZW374128	8-130x
ZW375963	1-33
ZW383152	20-26
ZW383332	20-19x
ZW383343	20-28
ZW383883	22-14x
ZW391476	2-7x
ZW392940	11-3
ZW397157	8-91
ZW398125	2-5
ZW398158	2-14
ZW403222	3-20
ZW403525	2-13
ZW403536	2-15
ZW403571	22-41x
ZW408418	22-45
ZW410231	21-31x
ZW413155	1-23
ZW413155	1-60
ZW413155	2-20
ZW413155	8-93
ZW413155	8-102
ZW413155	10-3x
ZW413155	11-7x
ZW413155	11-11x
ZW413155	15-3
ZW413155	21-46x
ZW413188	3-22x
ZW413188	8-37x
ZW413201	4-14
ZW413223	1-41
ZW413223	1-76
ZW413256	1-11
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ZW413256	1-81
ZW413278	8-35x
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ZW413728	1-59
ZW413741	8-45x
ZW413741	8-101
ZW413741	8-153
ZW413741	11-8
ZW413741	22-10x
ZW413785	1-20
ZW413785	1-26
ZW414033	1-6x
ZW414066	8-61
ZW416687	8-42x
ZW417025	1-83
ZW417137	5-10
ZW417137	8-63
ZW417137	8-117
ZW417137	22-5x
ZW417148	1-43
ZW417148	1-85
ZW417148	6-47
ZW417150	7-38
ZW417150	21-43x
ZW419646	22-40x
ZW419646	22-53x
ZW419747	2-3x
ZW419793	1-14
ZW420682	5-7
ZW421806	11-4
ZW422965	8-59
ZW424056	3-19
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ZW424495	21-17x
ZW425733	8-31
ZW425981	3-16x
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ZW432685	1-58
ZW433001	8-99
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ZW434283	22-54x
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ZW461935	1-65
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ZW468112	7-11
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ZW472274	7-5
ZW472983	8-87
ZW477876	1-9
ZW482545	8-70
ZW482635	5-5
ZW482657	22-21x
ZW482736	1-15
ZW482758	1-38
ZW482815	22-49
ZW482927	21-4x
ZW484828	8-143
ZW487833	22-51x
ZW487844	22-59x
ZW487866	22-27x
ZW487912	4-13
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ZW490228	7-20
ZW492063	8-139
ZW492884	21-8x
ZW499443	8-90

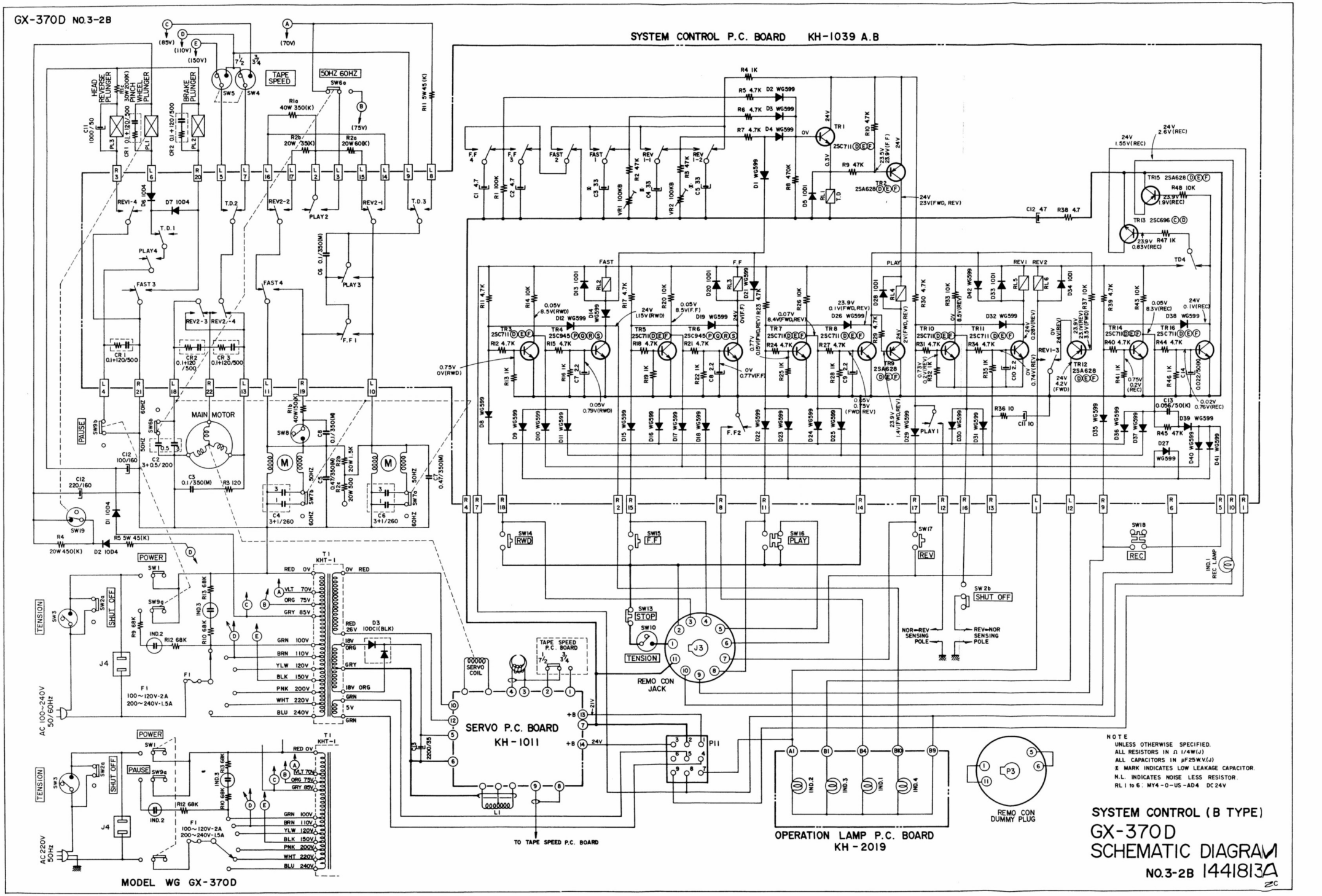
SECTION 3

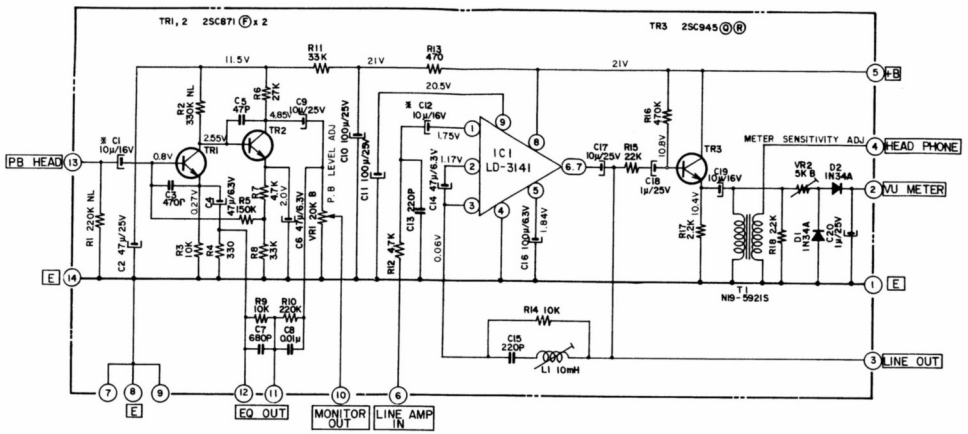
SCHEMATIC DIAGRAM

GX-370D SCHEMATIC DIAGRAM

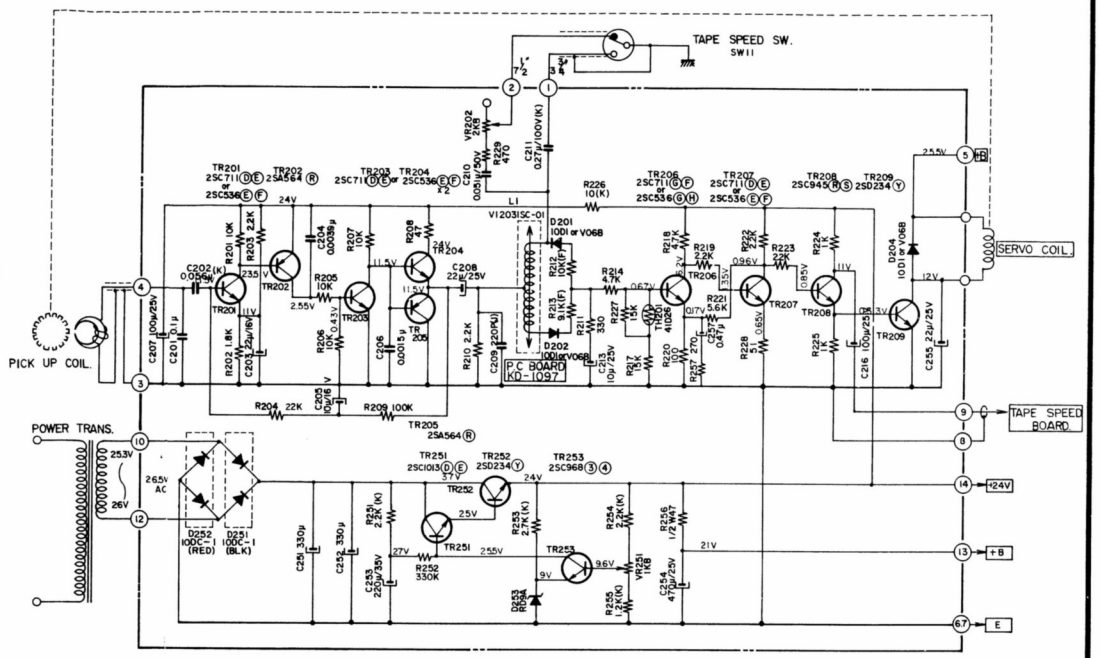

GX-370D NO.3-1
TRACK SELECTOR P.C. BOARD KH-5011
REC AMP P.C. BOARD KH-5013
REC AMP P.C. BOARD KH-5013
COM SW P.C. BOARD. RD-525
COM DET P.C.BOARD. RD-A514
COM MECHA BLOCK
O.S.C. P.C. BOARD KH-5015
BIAS ADJ
P.B. AMP P.C. BOARD KH-5014
P.B. AMP P.C. BOARD KH-5014
MONITOR SW P.C. BOARD KH-5012
S.O.S
TAPE
SOURCE
TAPE SPEED SW P.C. BOARD KH-2011
LEFT MIC J1
RIGHT MIC J2
LEFT LINE IN J5
RIGHT LINE IN J6
DIN CONNECTOR J3
LEFT LINE OUT J7
RIGHT LINE OUT J8
HEAD PHONE J4
REV. ONLY
LINE OUT
LEFT
RIGHT
NORMAL
S.R.T
SW1 HIGH LOW
TO SERVO P.C. BOARD KH-1011 CONNECTOR NO
ERASE HEAD
REC HEAD
PB HEAD
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
GX-370D
SCHEMATIC DIAGRAM
NO.3-1 1441810A
2C


GX-370 D NO.3-2A
TAPE SPEED
50HZ - 60HZ
HEAD REVERSE PLUNGER
PINCH WHEEL PLUNGER
BRAKE PLUNGER
MAIN MOTOR
SERVO P.C. BOARD. KH-1011
SERVO COIL
TO TAPE SPEED P.C. BOARD
REMO CON JACK
SYSTEM CONTROL P.C. BOARD. KH-1009A, B
REC. LAMP
NOR→REV SENSING POLE
REV→NOR SENSING POLE
OPERATION LAMP P.C. BOARD KH-2019
REMO. CON. DUMMY PLUG
AC100~240V 50-60HZ
AC220V 50HZ
100~120V-2A 200~240V-1.5A
MODEL WG GX-370D
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR
RL1 to 6: MY4-O-US-AD4 DC 24V
SYSTEM CONTROL (A TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2A 1441812A

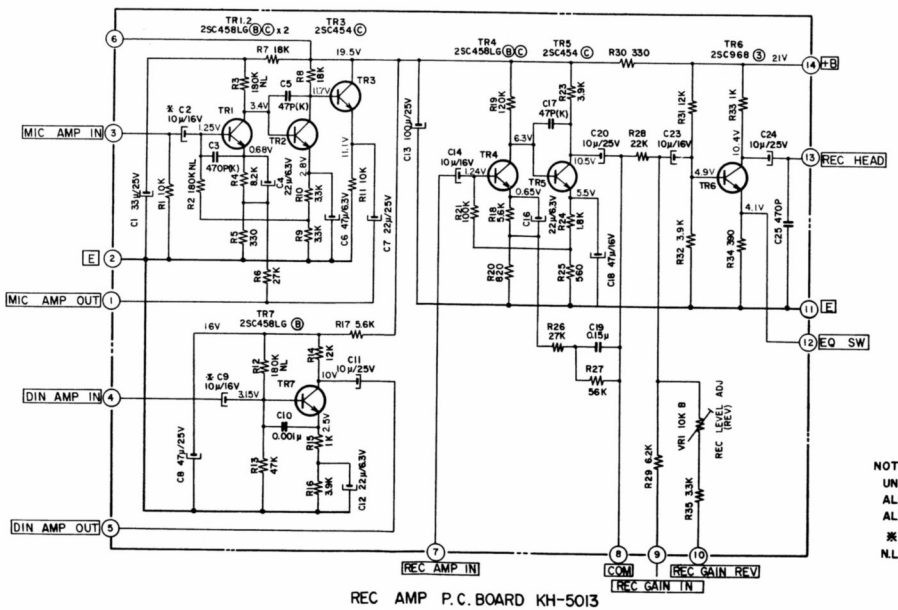

GX-370D NO.3-2B
SYSTEM CONTROL P.C. BOARD KH-1039 A.B
MAIN MOTOR
SERVO P.C. BOARD KH-1011
TAPE SPEED P.C. BOARD
REMO CON JACK
REMO CON DUMMY PLUG
OPERATION LAMP P.C. BOARD KH-2019
TO TAPE SPEED P.C. BOARD
MODEL WG GX-370D
SYSTEM CONTROL (B TYPE)
GX-370D
SCHEMATIC DIAGRAM
NO.3-2B 1441813A



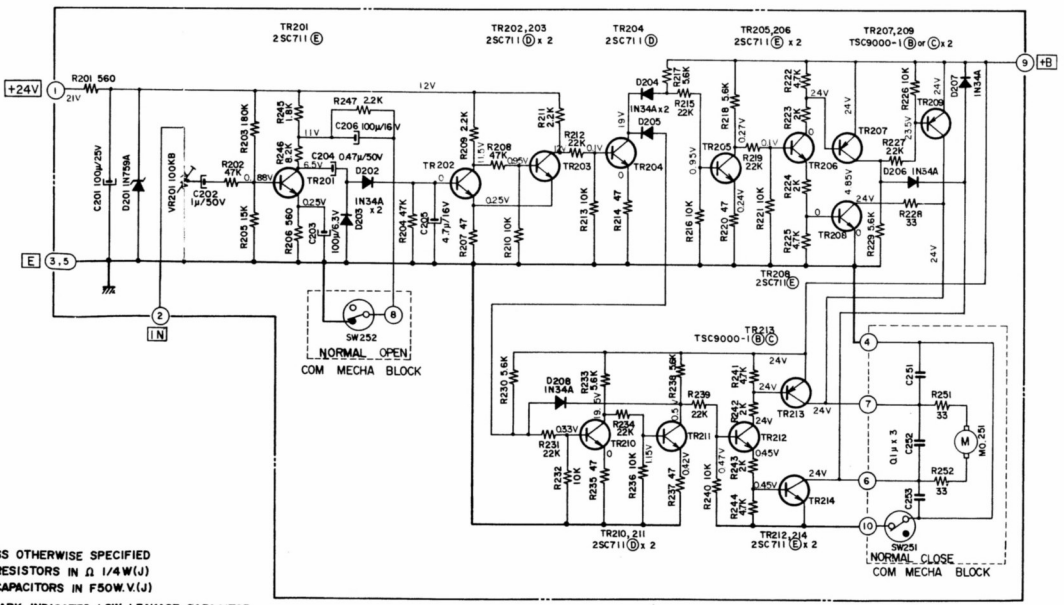
P.B. AMP P.C. BORAD KH-5014



SERVO P.C. BOARD KH-1011



REC AMP P.C. BOARD KH-5013



COM DET P.C. BOARD RD-A514

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN Ω 1/4W(J)
ALL CAPACITORS IN F50W.V.(J)
※ MARK INDICATES LOW LEAKAGE CAPACITOR
N.L. INDICATES NOISE LESS RESISTOR

GX-370D SCHEMATIC DIAGRAM

NO.3-3 1441811A 2C

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