Supplementary

ORDER NO. ARD-7002013

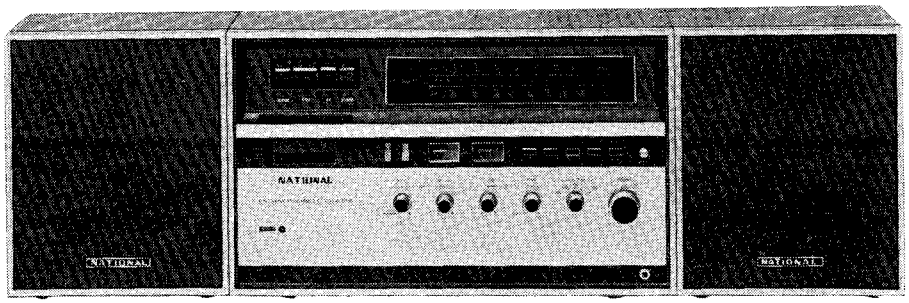
National

NATIONAL

Service Manual

AC MAINS CASSETTE STEREO WITH FM/AM/FM (MPX) TUNER

MODEL RS-280S



NEW MECHANISM

SPECIFICATIONS

Power Source:	AC: 100, 115, 125, 200, 230, 250 Volts 50/60 Hz
Power Consumption:	Approx. 35 W
Operation System:	Slide-in automatic operation system
Motor:	DC electronic govenor motor
Music Power:	20 W max. (10 W each)
Transistors:	MK10(1) 2SC469(4) 2SB185(1) 2SC184(1) 2SA101(2) 2SB175(10) 2SC183(1) 2SB178(1) 2SB346(4) 2SB473(4) 2SB324(2) 2SB172(1) 2SB348(2)
Diodes & Rectifiers:	SC 15(1) 1S 1211(2) OA 70(11)
Recording System:	AC bias 36.5 KHz
Erasing System:	AC erase
Track System:	4 track system
Tape Speed:	1-7/8 ips
Fast Forward Time:	Approx. 90 seconds with cassette tape RT-60
Rewind Time:	Approx. 90 seconds with cassette tape RT-60
Level Indicators:	2 VU meter
Frequency Response:	30~12,000 Hz at 1-7/8 ips
Inputs:	"2 MIC" input 200Ω "2 AUX" input 100 KΩ "2 PHONO" input 50 KΩ (1 mV)
Outputs:	"2 LINE" output 10 KΩ "2 EXT SP" output 8Ω "STEREO HEADHONE" 8Ω
DIN Connection Socket:	REC/PLAYBACK integrated connect
— RADIO SECTION —	
Frequency Range:	AM: 525~1,605 KHz FM: 87~108 MHz
Intermediate Frequency:	AM: 455 KHz FM: 10.7 MHz
Sensitivity:	AM: 60μV/m/50 mW FM: 2μV/50 mW
Dimensions: (main body)	19-1/4″(W)×11-1/2″(H)×5-1/2″(D)
(each speaker box)	9-1/2″(W)×11-1/2″(H)×5-1/2″(D)
Weight: (main body)	Approx. 20 lbs
(each speaker box)	4-3/8 lbs

<EXPORT DIVISION>
MATSUSHITA ELECTRIC TRADING CO., LTD.
P.O. Box 288 Central, Osaka, Japan

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
AUDIO TAPE RECORDING DEPT.

CHANGE OF MECHANISM AND USE OF MAGNETIC PHONO AMPLIFIER, RS-280S

For the popular RS-280S with FM/AM Radio and Automatic Pop-Up Slide-In Mechanism, we intend to modify the Mechanism Assembly and use a Magnetic Phono Amplifier as part of our continuous product improvement program.

Detailed technological information will be described in the Service Manual to be forwarded to you later.

Time for the changeover, etc. are shown below.

Change of Mechanism Assembly

Description:

We employed a mechanism that shows performance and function of the same level as for RS-208S.

The conventional Cabinet is inapplicable because the Cassette Inlet and Counter Position have been somewhat changed.

Simultaneously with the mechanical change, the Cabinet and Panel have also been changed.

Time of Changeover:

Production of Oct., 1969 onward

Serial No. 4981 onward

Use of Magnetic Phono Amplifier

Description:

When one records from a Magnetic Cartridge Record Player, the Aux Input Terminal is inapplicable.

Therfore, an Input Terminal for Magnetic Phono is provided and an Equalizer Phono Amplifier has been added.

Time of Changeover:

Production of Jan., 1970 onward

Serial No. 5500 onward

BEFORE USE

Be sure to loosen the screw (blue) on the back of the set before operation. This screw is only for protection during transportatiсn.

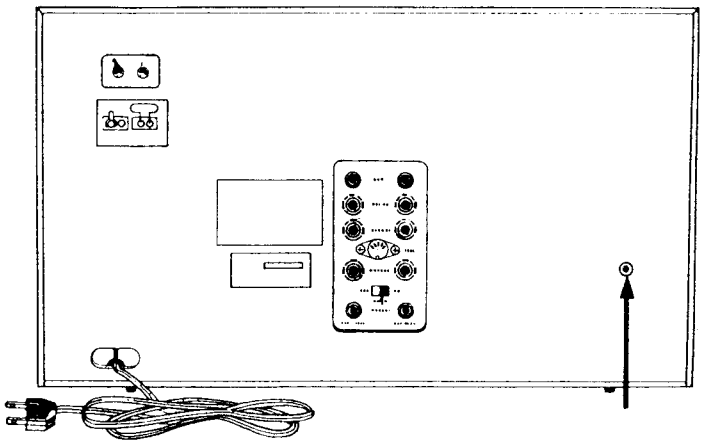


Fig. 1

LOCATION OF PARTS

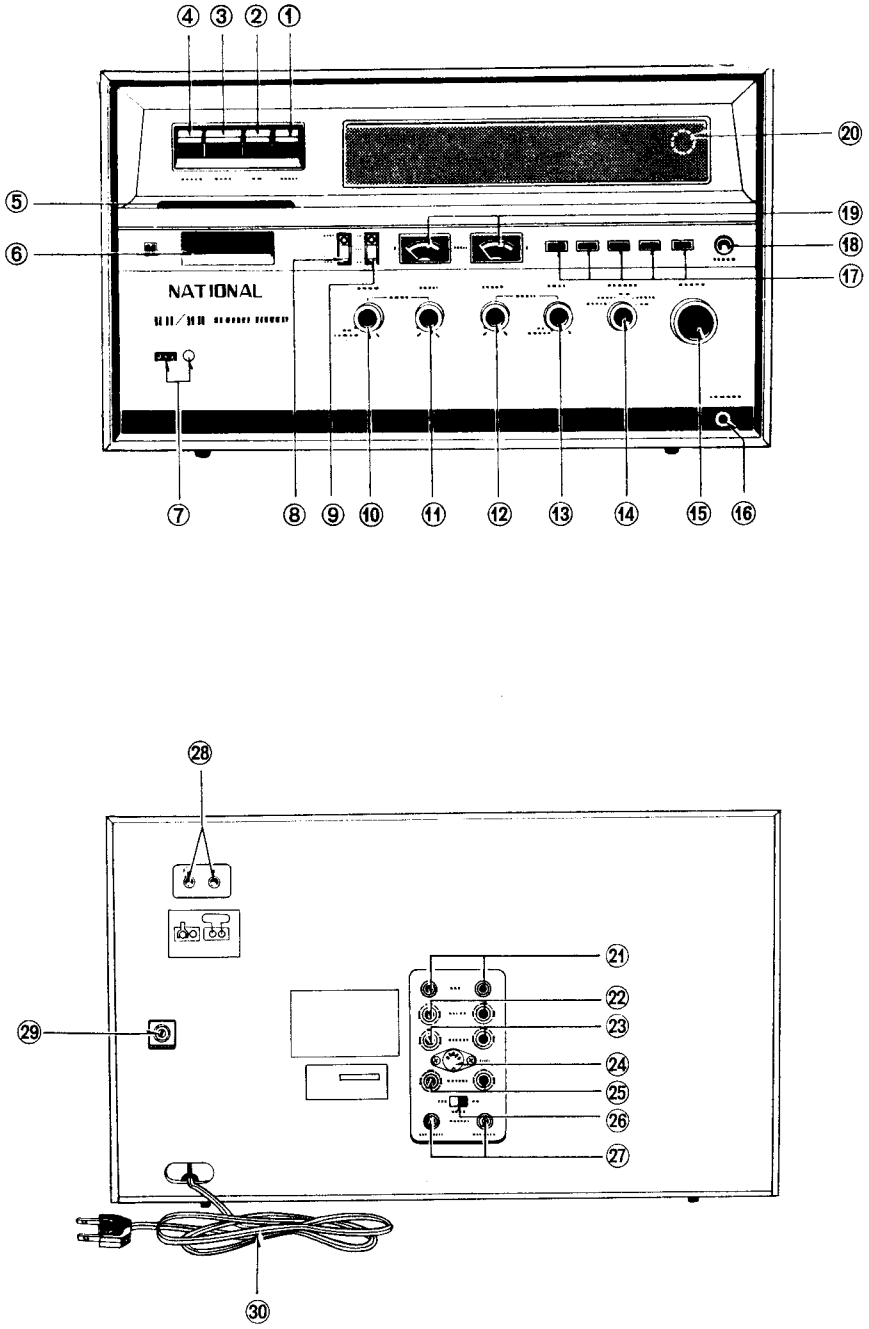


Fig. 2

① Record Button
② Fast Forward Button
③ Stop Button
④ Rewind Button
⑤ Cassette Slot
⑥ Cassette Window
⑦ Tape Counter & Reset Button
⑧ Mixing Switch
⑨ AFC Switch
⑩ Left Tone Control Knob & Monitor Switch
⑪ Left Volume Control Knob
⑫ Right Volume Control Knob
⑬ Right Tone Control Knob & Monitor Switch
⑭ Program Selector Knob
⑮ Station Tuning Knob
⑯ Headphone Jack
⑰ Program Indicator Lamps
⑱ Power Source Switch
⑲ VU Meters
⑳ FM Stereo Eye
㉑ Microphone Jacks
㉒ Auxiliary Input Jacks
㉓ Phono Jacks
㉔ DIN (REC/PLAY) Socket
㉕ Line Output Jacks
㉖ Speaker Switch
㉗ External Speaker Jacks
㉘ FM Antenna Terminal
㉙ Voltage Selector Switch
㉚ Power Cord

DISASSEMBLY INSTRUCTIONS

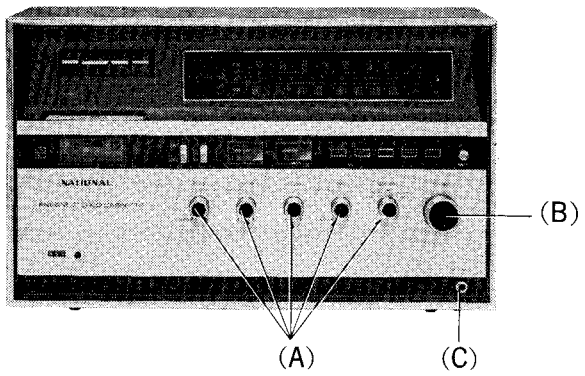


Fig. 3

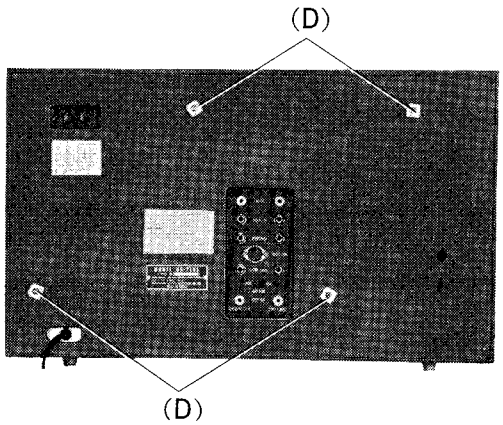


Fig. 4

HOW TO REMOVE BODY CASE

1. Remove 5 knobs (A) and tuning knob (B) on the panel.
2. Remove the Headphone jack holding nut (C).
3. Remove 4 chassis holding screws (D) on the back side of the body case.

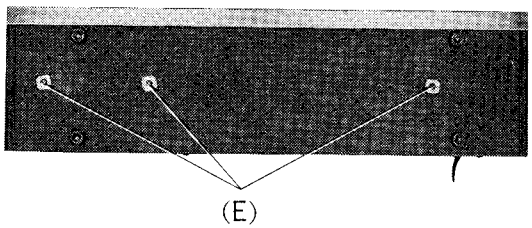


Fig. 5

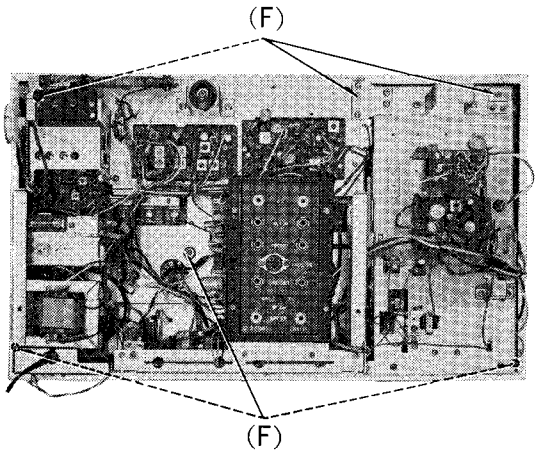


Fig. 6

4. Remove 3 chassis holding screws (E) on the bottom of the body case.

HOW TO REMOVE PANEL

Remove 6 panel holding screws (F).

MECHANICAL ADJUSTMENTS

PRESSURE ROLLER ADJUSTMENT

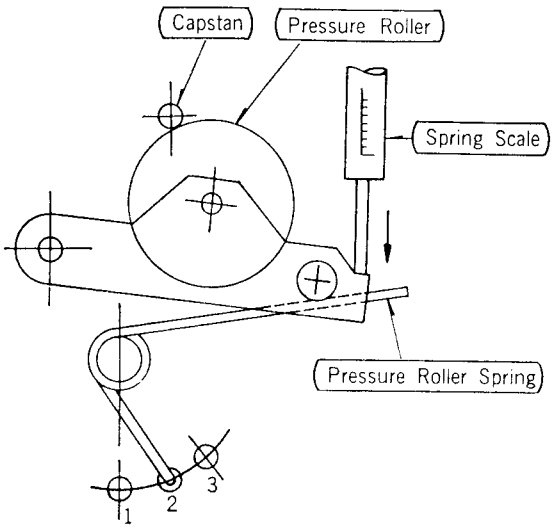


Fig. 7

1. Place the set into the PLAYBACK mode.
2. Hook a spring balance as shown in the figure and pull it in the arrow direction.
3. Measure the value at the moment when the Pressure Roller comes off from the Capstan.
4. The standard pressure of the Pressure Roller is 7.7 ~10 oz (250±30 gr).
5. If the measured value is outside the standard, change the position of the Pressure Roller Hooking Hole, viz., to the Hole (3) position in order to increase pressure or to the Hole (1) position in order to reduce pressure.

TAKEUP TORQUE ADJUSTMENT

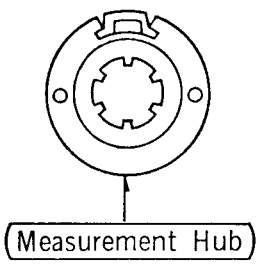


Fig. 8

Instruments Required: Torque Meter (having a range of 20~100 gr-cm)
Measurement Hub (Take out the Hub part of the Cassette Tape, perforate 2 holes vertically to the frame, and fix it to the Torque Meter by using a wire.)

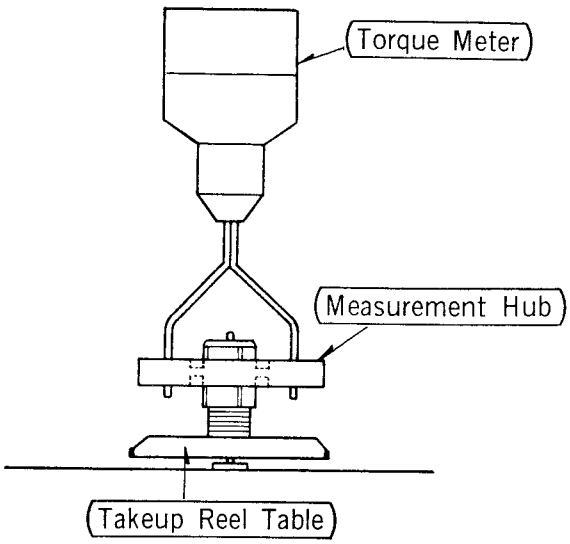


Fig. 9

1. Place the set in the PLAYBACK mode, and put the Measurement Hub with the Torque Meter into the Takeup Reel Table.
2. The standard Takeup Tension of the Takeup Reel Table is 30 to 50 gr-cm.
3. In case that the Takeup Tension is beyond the limits, check the following parts and clean them.

* Clean up the stained oil and dust stuck to the Takeup Belt and Motor Belt.
* Clean up the stained oil and dust stuck to the Takeup Reel Table and the Belt Pressure Pulley.

R/P HEAD ANGLE ADJUSTMENT

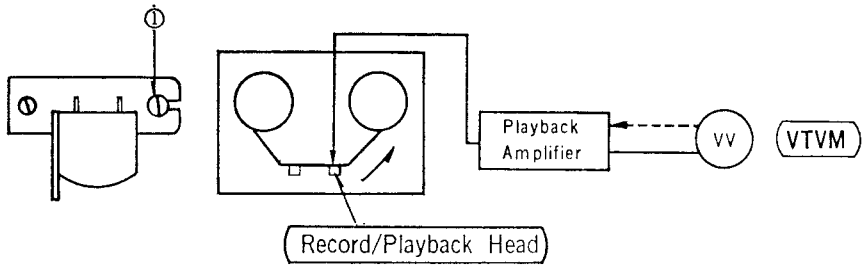


Fig. 10

Instruments Required: VTVM, Standard Tape for 3 KHz (at 1-7/8 ips) Angle Adjustment (or Tape on which recording is made by a reliable tape recorder).

Connect wires as shown in Fig. 10, thread the Tape and place the tape recorder into the playback mode. Turn either of the Angle Adjustment Screws ① in Fig. 10 by a 1/4 turn, and make the adjustment so that the reading on the VTVM connected to the Line Out becomes maximum.

AMPLIFIER ADJUSTMENTS

ERASE CURRENT

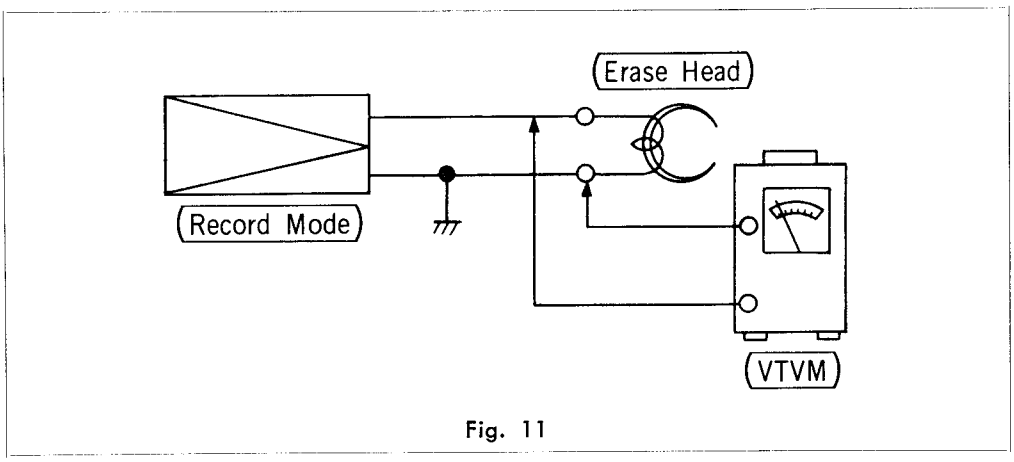


Fig. 11

1. Connect VTVM to Erase Head and measure the voltage value.
2. Standard Erase Voltage = 9 V ± 1 V.
3. Adjustment
   * Adjust L16 for max Erase Voltage.
   * Adjust VR9 for Standard Voltage.

RECORD BIAS CURRENT ADJUSTMENT

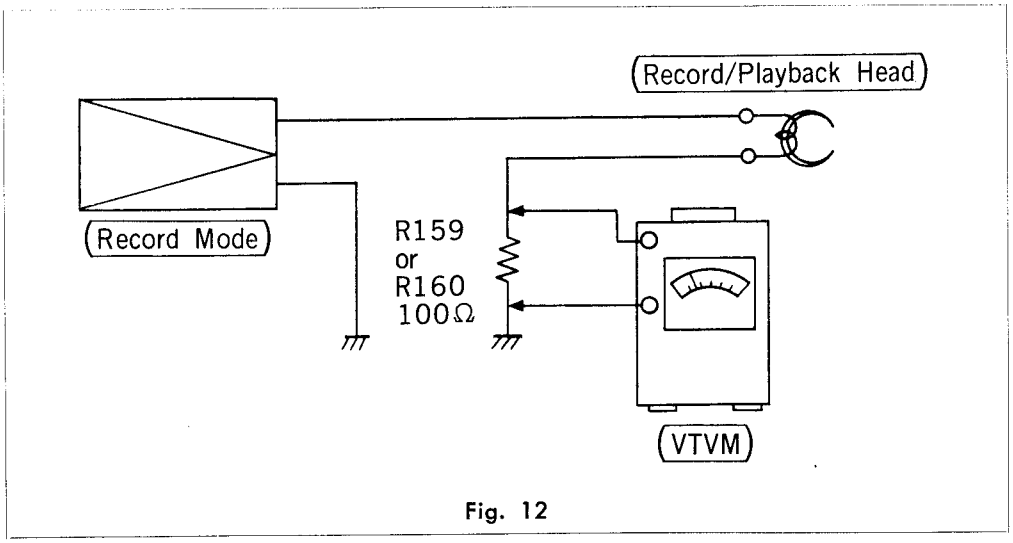


Fig. 12

Instruments Required: VTVM, AF OSC, ATT.

Measuring Circuit: Refer to Fig. 12.

Measuring Method:

1. Connect the ground side Terminal of the Recording Head to the input terminal of VTVM.
2. Place the set into the RECORD mode, and measure the Bias Current supplied to the Record Head by using the VTVM.

   At this time, keep the Record Level Control at the minimum.
3. The standard Bias Current is 0.6 ± 0.2 mA. If the Current Value is beyond the limits, the value can be kept in the range by change the C133, C134.

RECORDING LEVEL

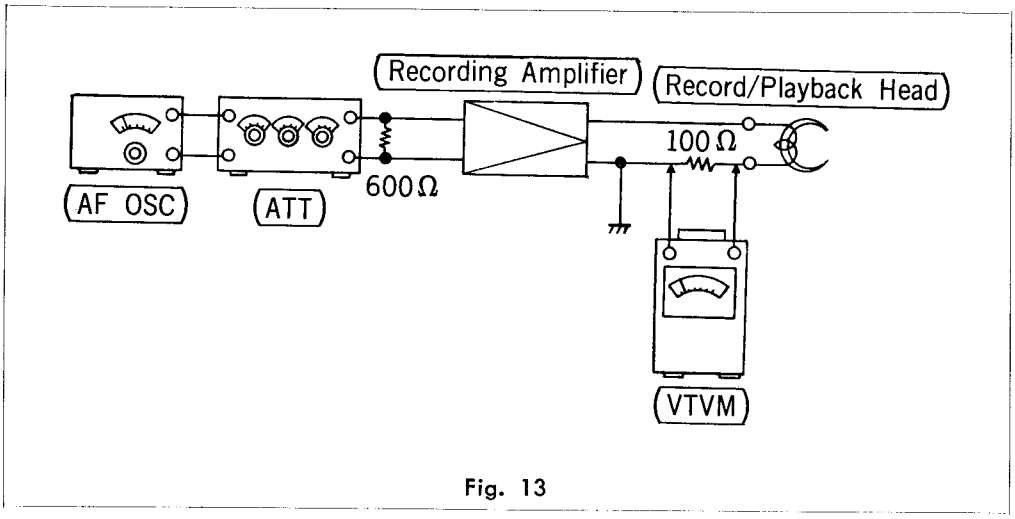


Fig. 13

Instruments Required: AF Oscillator; Attenuator; VTVM; 600Ω and 100Ω resistors.

Measuring Circuit: Refer to Fig. 13.

Set the Tape Recorder in Record mode. Measure the recording level necessary to feed 0.05 mA to the Record Head from the input jack. Connect a 100Ω Resistor to the ground side of the Record Head, and adjust the attenuator so that the voltage across the resistor is maintained at 0.005 V, and confirm if its value is shown as followings.

MIC input jack: −84~−76 db.
AUX input jack: −32~−22 db.

PLAYBACK GAIN ADJUSTMENT

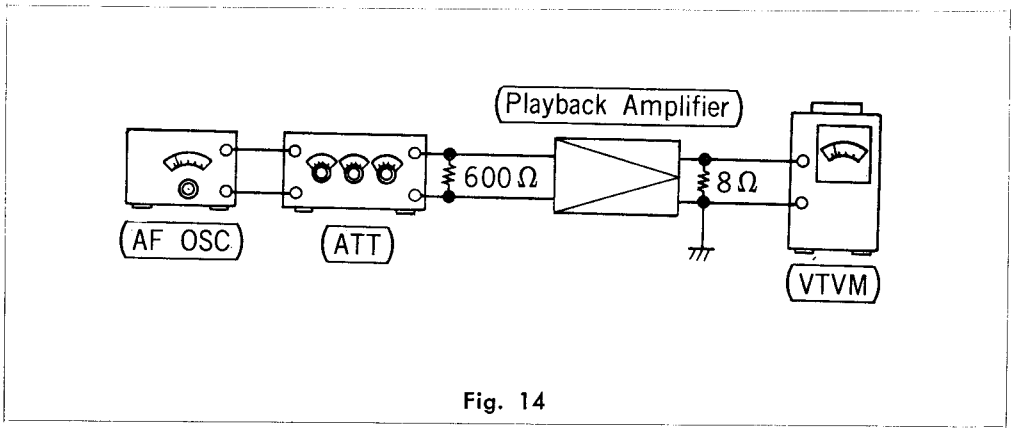


Fig. 14

Instruments Required: VTVM, AF OSC, ATT.

Measuring Circuit: Refer to Fig. 14.

Measuring Method:

1. Supply the input signal of 1 KHz −88~−82 db to the Terminal of the Playback Head.
2. Place the set into the PLAYBACK mode, and keep the Playback Volume Control at the maximum.
3. By using VTVM, measure both ends of 8Ω Dummy Resistor connected to the Speaker Terminal.
4. The standard voltage value is 3 V.

ALIGNMENT INSTRUCTIONS OF RADIO

FREQUENCY & DISTANCE ON DIAL SCALE

To accurately align the proper frequencies to the dial scale, refer to Table and mark the edge of the dial scale plate accordingly using the "Start Point" mark on the dial scale as a reference point.

TABLE

Band	Frequency	Distance from "Start Point"	
AM	550KHz	15.4mm	19/32″
	1500KHz	139.2mm	5-1/2″
FM	90MHz	33.6mm	1-5/16″
	106MHz	123.2mm	4-27/32″

AM, FM IF & RF ALIGNMENT

AM IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum. Set tone control to treble.
Maintain line voltage at 117 volts. Set band selector switch to AM.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KHz (400~ Mod.)	Point of non-interference. (on/about 600KHz)	Output meter across EXT Speaker Jack (L).	T_4 (1st IFT) T_6 (2nd IFT) T_9 (3rd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550KHz (400~ Mod.)	550KHz	Output meter across EXT Speaker Jack (L).	L_6 (OSC Coil) L_5 (ANT Coil)	Adjust for maximum output by sliding coil (L_5) along ferrite core.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500KHz (400~ Mod.)	1500KHz	Output meter across EXT Speaker Jack (L).	C_{32} (OSC Trimmer) C_{26} (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).

Notes: 1. Cement antenna bobbin with wax after completing alignment.
2. Remove line cord antenna from FM external antenna terminal when aligning.
3. Make certain that speaker system is connected to the tuner when aligning.

FM IF & DETECTOR ALIGNMENT WITH OSCILLOSCOPE

EQUIPMENT REQUIRED

Signal generator that provides 10.7MHz marker.
Sweep generator that provides 10.7MHz center frequency and 400KHz sweep width.

OSCILLOSCOPE

Set sweep selector of oscilloscope to "External Sweep". Apply 60~ sweep signal from sweep generator to horizontal input terminals of oscilloscope.
Set band selector switch to FM.
Set volume controls to minimum.
Set tone control to treble.
Set AFC switch to "OFF".
Maintain line voltage at 117 volts.

Note: Unsolder lead between test point **TP_3** and Point Ⓐ before alignment and resolder it after alignment.

	SWEEP GENERATOR COUPLING	SIGNAL GENERATOR COUPLING	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	High side thru. .001 mfd to point **TP_2**. Common to chassis.	High side thru. .001 mfd to point **TP_2**. Common to chassis.	Point of non-interference (on/about 90MHz).	Connect vert. Amp. of scope to point **TP_3**. Common to chassis.	T_1 (FM 1st IFT) (P) T_2 (FM 1st IFT) (S) T_3 (FM 2nd IFT) T_5 (FM 3rd IFT) T_7 (FM 4th IFT) (P)	Adjust for maximum amplitude and proper linearity between ±100KHz markers. (Refer to Fig. 15)
2	High side thru. .001 mfd to point **TP_2**. Common to chassis.	High side thru. .001 mfd to point **TP_2**. Common to chassis.	Point of non-interference (on/about 90MHz).	Connect vert. Amp. of scope to point **TP_4**. Common to chassis.	T_8 (FM 4th IFT) (S)	Adjust T_8 so that 10.7MHz marker is at the center. (Refer to Fig. 16)

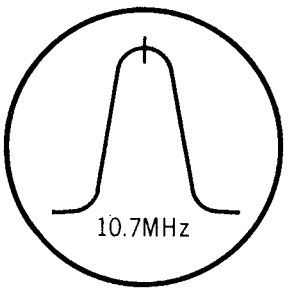


Fig. 15

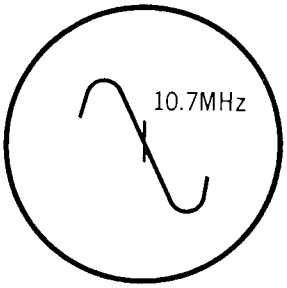


Fig. 16

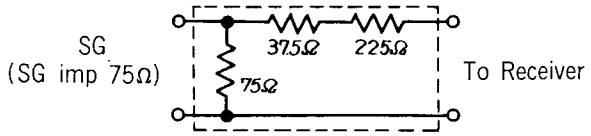


Fig. 17. FM DUMMY ANTENNA

FM RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum. Set tone control to treble.
Set band selector switch to FM. Set AFC switch to "OFF".
Maintain line voltage at 117 volts.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
3	Connect to EXT FM Antenna terminal through FM Dummy antenna. Common to chassis. (Refer to Fig. 17)	90 MHz (400~ Mod.)	90 MHz	Output meter across. EXT Speaker Jack (L).	L_4 (FM OSC Coil) L_1 (FM ANT Coil) L_2 (FM Collector Coil)	Adjust for maximum output.
4	Connect to EXT FM Antenna terminal through FM Dummy antenna. Common to chassis. (Refer to Fig. 17)	106 MHz (400~ Mod.)	106 MHz	Output meter across. EXT Speaker Jack (L).	C_{17} (FM OSC Trimmer) C_1 (FM ANT Trimmer) C_8 (FM Collector Trimmer)	Adjust for maximum output. Repeat steps (3) and (4).

Note: As three output responses will be present, proper tuning is the center frequency.

FM-STEREO ALIGNMENT

MULTIPLEX COIL ALIGNMENT

EQUIPMENT REQUIRED

Stereo Modulator ..... Connect Stereo Modulator output to EXT Mod. terminal of signal generator.
Signal Generator ..... Modulation Rate of 19 KHz Pilot Signal ..... 8~10%
Output Level ..... 60 dB
Frequency ..... Approximately 89 MHz
Oscilloscope
Dummy Antenna
VTVM

PROCEDURE

Tuner ..... Selector switch to "FM STEREO", Dial setting to approximately 89 MHz, AFC switch to "OFF", Tone control to "TREBLE", Volume controls to audible level of speaker sound.

Notes: 1. When aligning, remove line cord antenna attached to External FM Antenna terminal.
2. When aligning step 1, short test point **TP_6** (R49 4.7KΩ) to ground, and open the shorted **TP_6** after completing alignment.

	ALIGNMENT CIRCUIT	EQUIPMENT CONNECTION	ADJUSTMENT	REMARKS
1	38KHz LOCKED OSC	Refer to Fig. 18	L_{11} (38KHz OSC Coil)	Wave forms (A~E in Fig. 19) may appear while turning L_{11} upwards. Adjust L_{11} to obtain wave form (C). (Refer to Note 1)
2	19KHz AMP	Refer to Fig. 18	L_7 (19KHz Pick-up Coil) L_{10} (19KHz Doubler Coil)	Adjust L_7 and L_{10} for maximum oscilloscope pattern. (Refer to Note 2)
3	19KHz AMP	Refer to Fig. 18	L_7 (19KHz Pick-up Coil)	Adjust L_7 for maximum oscilloscope pattern and VTVM indication. (Refer to Note 2)

Notes: 1. Since wave forms B and D are similar to that of C, make sure to align to correct wave form of C which appears between B and D.
2. As three peak output will be present, when adjusting L_7, the center peak output is the correct position.

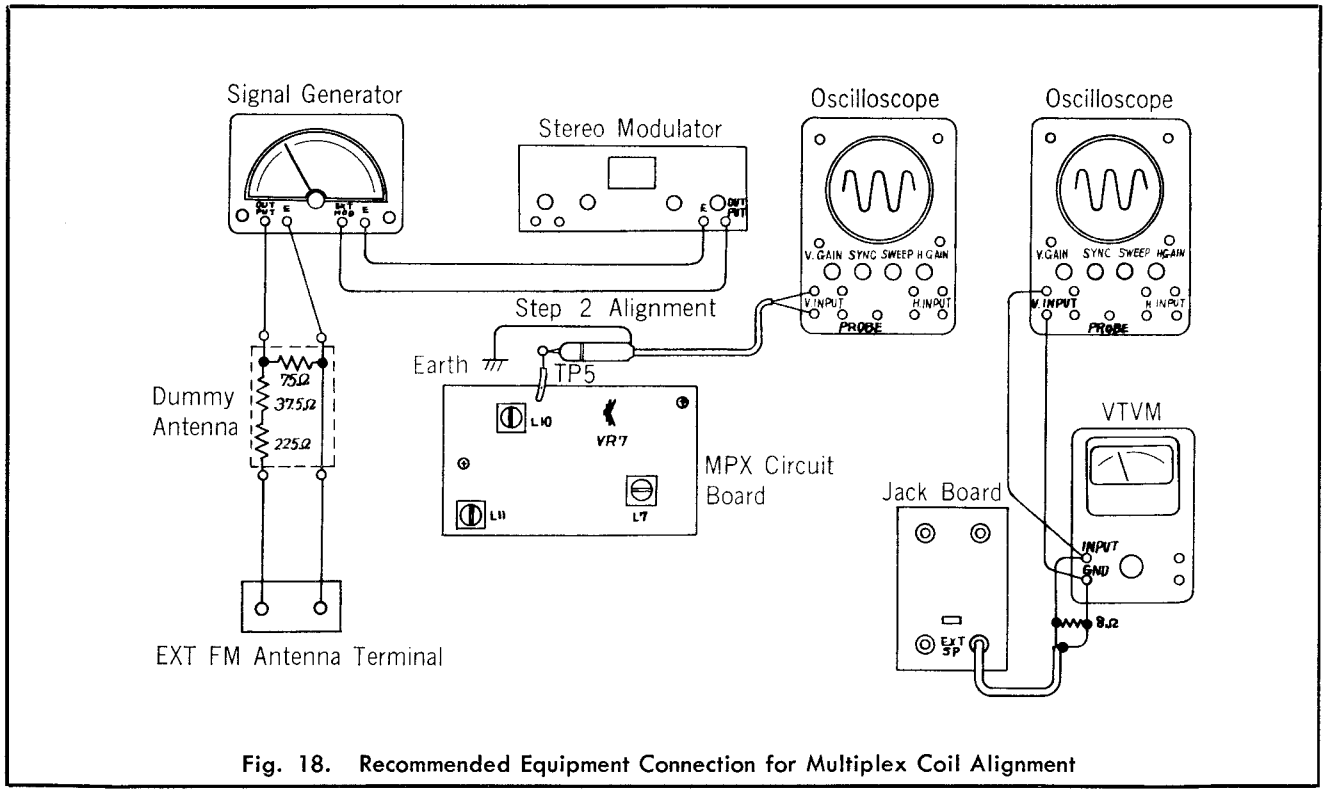


Fig. 18. Recommended Equipment Connection for Multiplex Coil Alignment

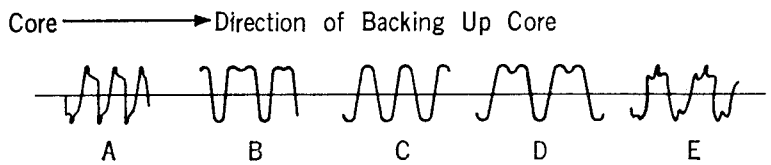


Fig. 19

SEPARATION ALIGNMENT

EQUIPMENT REQUIRED

Stereo Modulator ..... Connect Stereo Modulator output to EXT Mod. terminal of signal generator.
Signal Generator ..... Modulation Rate by 19 KHz Pilot Signal ..... 8~10%
Modulation Rate by Left Signal 27%
Output Level ..... 60 dB
Oscilloscope
Dummy Antenna
VTVM
Low Pass Filter

PROCEDURE

Tuner ..... Selector switch to "FM STEREO", Dial setting to approximately 89 MHz.
AFC switch to "OFF", Tone control to "TREBLE".
Adjust volume controls so that output levels from both units become equal.

	ALIGNMENT CIRCUIT	EQUIPMENT CONNECTION	ADJUSTMENT	REMARKS
4	SEPARATION	Refer to Fig. 20	VR_7 (Separation Control)	Adjust VR_7 for the minimum indication on VTVM from the left side output when the right side of stereo modulator is modulated. Adjust VR_7 in the same way for the right side.

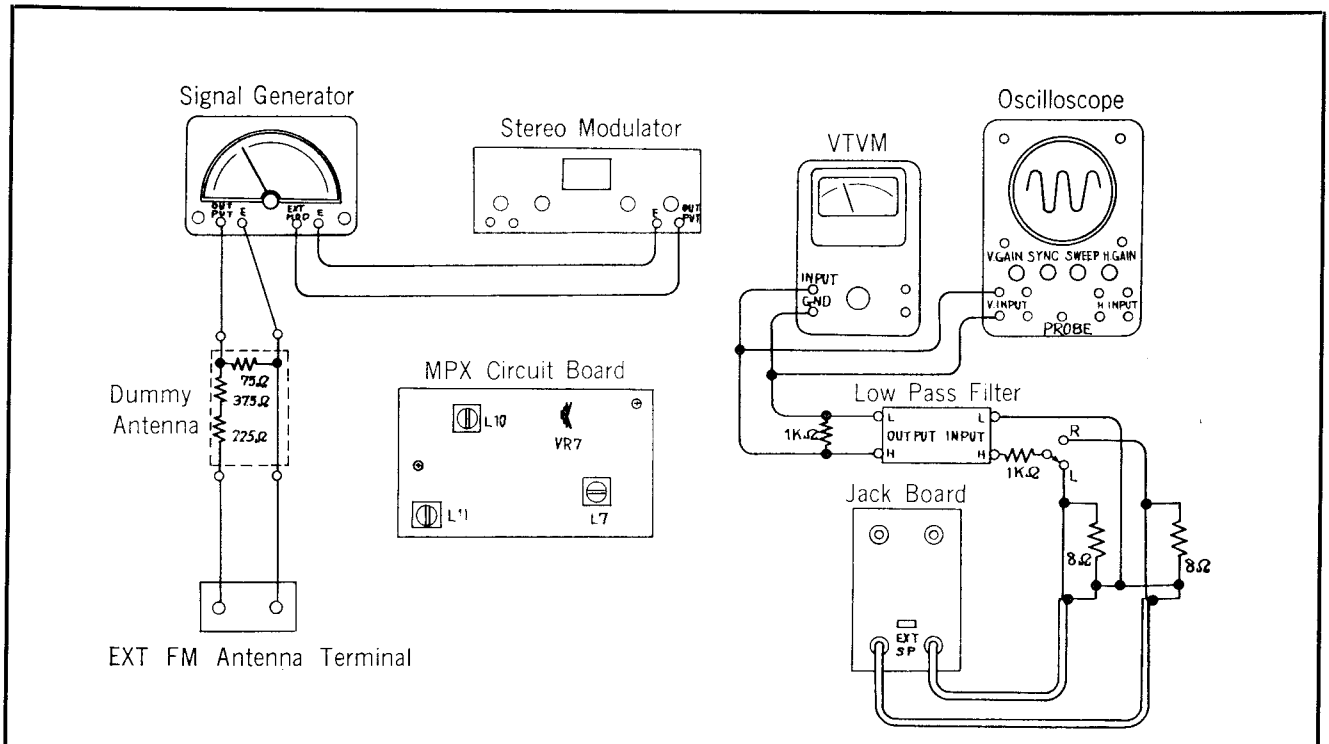


Fig. 20. Recommended Equipment Connection for Separation Alignment

REPLACEMENT PARTS LIST

Before you give us an order for parts, please read the following instructions without fail.

1. Parts written in gothic in this Replacement Parts List are always kept in stock in our department, and can therefore be shipped earlier than other parts.
2. Parts written in slender letters are not kept in stock, and will therefore be shipped later. So place an order for them separately.
3. Disassembled parts of Sub Assembly are respectively given a suffix to the Ref. No.
4. Parts other than the above are not available from us.

LISTA DE PIEZAS DE RBPUESTO

Antes de hacernos un peaido de piezas, dígnese leer sin falta las instrucciones siguientes:

1. De las piezas cuyos nombres aparecen escritos con letras góticas en esta Lista de Piezas de Repuesto, tenemos surtido en nuestro departamento, y por lo tanto, podemos enviarlas antes que otras.
2. De las escritas con letras más finas, no tenemos surtido, por lo que su envío se retardará. Por eso, haga el favor de hacer por separado los pedidos.
3. Las piezas demontadas del Sub Assembly llevan respectivamente un sufijo a la Referencia No.
4. No podemos proveer de piezas no mencionadas arriba.

LISTE DES PIÈCES DE RECHANGE

Avant de nous commander des pièces, veuillez lire sans faute les instructions suivantes:

1. Les pièces écrites en grosses lettres dans cette Liste de rechange sont toujours en magasin dans notre section, et pourront donc s'expédier plus vite que les autres pièces.
2. Les pièces écrites en minces lettres ne sont pas en magasin, et s'expédieront plus tard. Passez-nous donc séparément votre commande pour elles.
3. Les pièces désassemblées du Sub Assembly ont chacune un suffixe au Ref. No.
4. D'autres pièces que celles montrées ci-dessus ne sont pas disponibles chez nous.

ERSATZTEILELISTE

Bitte lesen Sie die folgende Anweisung sorgfältig, bevor Sie die Bestellung auf unsere Ersatzteile geben.

1. Die Ersatzteile, die in dieser Liste mit der fetten Schrift geschrieben sind, sind immer in unserer Abtailung als Vorrat befindlich, und sind daher schneller zu liefern als andere Taile.
2. Die Ersatzteile in der dünnen Schrift sind nicht vorrätig und brauchen deshalb einiger Zeit bis zur Lieferung. Bitte geben Sie daher die Bestellung separat für solche Teile.
3. Demontierte Teile der Uterbaugruppe sind je mit Nachsilbe nach dem Referenznummer versehen.
4. Andere Ersatzteile als die obigen sind nicht von uns zu lifefern.

替 換 零 件 名 單

承蒙訂購零件之前、敬請閱読下列各項.

1. 本名單中用粗字體填記的零件、經常儲存於本公司事業部、因此能比他品更快地發貨。
2. 用細字體記載的零件、沒有存庫、所以發貨時期較慢。敬請另行訂購.
3. 局部裝配組析卸的各零件、則在查詢號碼之後附有接尾字。
4. 本名單沒有記載的零件、則不能供應。

RESISTORS

Ref. No.	Description			Part No.
R1, 13	Carbon Resistor	220 KΩ	1/4 W	ERD14VJ224
R2, 94, 99, 100	Carbon Resistor	2.7 KΩ	1/4 W	ERD14VJ272
R3, 8, 36	Carbon Resistor	390Ω	1/4 W	ERD14VJ391
R4, 54, 67, 68, 101, 102 ...	Carbon Resistor	18 KΩ	1/4 W	ERD14VJ183
R5, 42, 81, 82	Carbon Resistor	3.9 KΩ	1/4 W	ERD14VJ392
R6, 11, 22, 109, 110, 149, 150, 181...	Carbon Resistor	3.3 KΩ	1/4 W	ERD14VJ332
R7, 12, 17, 21, 24, 157, 158	Carbon Resistor	220Ω	1/4 W	ERD14VJ221
R9, 30, 79, 80	Carbon Resistor	100 KΩ	1/4 W	ERD14VJ104
R10	Carbon Resistor	47Ω	1/4 W	ERD14VJ470
R14, 180... ...	Carbon Resistor	820Ω	1/4 W	ERD14VJ821
R15	Carbon Resistor	470 KΩ	1/4 W	ERD14TJ474
R18, 57, 58, 60, 61, 71, 72, 77, 78,85, 86 ...	Carbon Resistor	2.2 KΩ	1/4 W	ERD14VJ222
R19, 26, 28, 51, 113, 114, 161, 162	Carbon Resistor	4.7 KΩ	1/4 W	ERD14VJ472
R20	Carbon Resistor	680Ω	1/4 W	ERD14TJ681
R23, 227, 228	Carbon Resistor	470Ω	1/4 W	ERD14TJ471
R25, 27, 32, 39, 43, 46, 59, 62, 97, 98, 107, 108, 179 ...	Carbon Resistor	1 KΩ	1/4 W	ERD14VJ102
R29, 45, 169 ...	Carbon Resistor	8.2 KΩ	1/4 W	ERD14VJ822
R31, 40, 69, 70, 125, 126, 163, 164, 170 ...	Carbon Resistor	100Ω	1/4 W	ERD14VJ101
R33, 123, 124	Carbon Resistor	68Ω	1/4 W	ERD14VJ680
R34, 38	Carbon Resistor	22 KΩ	1/4 W	ERD14VJ223
R35	Carbon Resistor	12 KΩ	1/4 W	ERD14VJ123
R37	Carbon Resistor	56 KΩ	1/4 W	ERD14VJ563
R41, 166, 167	Conarb Resistor	15 KΩ	1/4 W	ERD14VJ153
R44, 117, 118, 184	Carbon Resistor	10 KΩ	1/4 W	ERD14VJ103
R47, 105, 106	Carbon Resistor	150Ω	1/4 W	ERD14VJ151

Ref. No.	Description			Part No.
R48	Solid Resistor	680Ω	1/2 W	ERC12GM681
R49	Carbon Resistor	4.7 KΩ	1/4 W	ERD14TJ472
R50	Solid Resistor	68Ω	1 W	ERC1GM680
R52, 53, 55, 56	Carbon Resistor	2.2 KΩ	1/4 W	ERD14VJ222
R63, 64	Carbon Resistor	820 KΩ	1/4 W	ERD14TJ824
R65, 66	Carbon Resistor	3.3 KΩ	1/4 W	ERD14TJ332
R73, 74, 152, 185, 186	Carbon Resistor	10 KΩ	1/4 W	ERD14TJ103
R75, 76	Carbon Resistor	33 KΩ	1/4 W	ERD14VJ333
R83, 84, 168	Carbon Resistor	1.5 KΩ	1/4 W	ERD14VJ152
R87, 88	Carbon Resistor	1 KΩ	1/4 W	ERD14TJ102
R89, 90, 177, 178	Carbon Resistor	47 KΩ	1/4 W	ERD14VJ473
R91, 92	Carbon Resistor	180 KΩ	1/4 W	ERD14VJ184
R95, 96	Carbon Resistor	82Ω	1/4 W	ERD14VJ820
R103, 104	Carbon Resistor	82 KΩ	1/4 W	ERD14VJ823
R111, 112, 139, 140, 175, 176	Carbon Resistor	270Ω	1/4 W	ERD14VJ271
R115, 116	Carbon Resistor	5.6 KΩ	1/4 W	ERD14VJ562
R119, 120	Carbon Resistor	33Ω	1/4 W	ERD14VJ330
R121, 122	Carbon Resistor	330Ω	1/4 W	ERD14VJ331
R127, 128, 131, 132	Carbon Resistor	56Ω	1/4 W	ERD14VJ560
R129, 130, 133, 134, 155	Carbon Resistor	1.2 KΩ	1/4 W	ERD14VJ122
R135, 136, 137, 138	Wire-wound Resistor	0.47Ω	1/2 W	ERM12PK0R47
R141, 142	Carbon Resistor	27 KΩ	1/4 W	ERD14VJ273
R143, 144, 145, 146	Solid Resistor	10Ω	1 W	ERC1GM100
R147, 148	Carbon Resistor	120Ω	1/4 W	ERD14TJ121
R151	Carbon Resistor	2.2 KΩ	1/4 W	ERD14TJ222
R153	Carbon Resistor	1.8 KΩ	1/4 W	ERD14TJ182
R154, 159, 160, 188	Carbon Resistor	100Ω	1/4 W	ERD14TJ101
R156	Carbon Resistor	15Ω	1/4 W	ERD14VJ150
R165	Carbon Resistor	27Ω	1/4 W	ERD14VJ270
R171	Carbon Resistor	10Ω	1/4 W	ERD14VJ100
R172	Carbon Resistor	120 KΩ	1/4 W	ERD14VJ124

Ref. No.	Description			Part No.
R201, 202	Carbon Resistor	5.6 KΩ	1/4 W	ERD14VJ562
R203, 204, 211, 212	Carbon Resistor	10 KΩ	1/4 W	ERD14VJ103
R205, 206	Carbon Resistor	220Ω	1/4 W	ERD14VJ221
R207, 208	Carbon Resistor	2.2 KΩ	1/4 W	ERD14VJ222
R209, 210	Carbon Resistor	18 KΩ	1/4 W	ERD14VJ183
R213, 214, 219, 220	Carbon Resistor	2.7 KΩ	1/4 W	ERD14VJ272
R215, 216	Carbon Resistor	82 KΩ	1/4 W	ERD14VJ823
R217, 218	Carbon Resistor	4.7 KΩ	1/4 W	ERD14VJ472
R221, 222	Carbon Resistor	560Ω	1/4 W	ERD14VJ561
R223, 224	Carbon Resistor	3.9 KΩ	1/4 W	ERD14TJ392
R225, 226	Carbon Resistor	1 KΩ	1/4 W	ERD14TJ102

VARIABLE RESISTORS

VR1, 2	Volume Control	20 KΩ-A	FVCB0AL30A24
VR3, 4	Tone Control with Monitor Switch (S4)	20 KΩ-A	EVCB0GL30A24
VR5, 6	Semi-fixed Variable Resistor	3 KΩ-B	EVLT0AA00B33
VR7	Semi-fixed Variable Resistor	1 KΩ-B	EVLT0AA00B13
VR9	Semi-fixed Variable Resistor	20 KΩ-B	EVLT0AA00B24

CAPACITORS

C1, 2, 8, 9, 17, 18, 25, 26, 32, 33	Variable Capacitor		ECV5XR27B13S
C3, 10, 23	Ceramic Capacitor	10 pF	ECCD05100K
C4, 7, 24, 28, 36, 39, 40, 43, 47, 162, 167	Ceramic Capacitor	0.022μF	ECKD04223PJ
C5, 6, 15	Ceramic Capacitor	0.001μF	ECKD05102PU
C11	Ceramic Capacitor	4 pF	ECCD0504C
C12, 68	Ceramic Capacitor	180 pF	ECCD05181K
C13, 34	Ceramic Capacitor	7 pF	ECCD05070D

Ref. No.	Description		Part No.
C14	Ceramic Capacitor	15 pF	ECCD05150K
C16, 20,30, 38	Ceramic Capacitor	1 pF	ECCD05010C
C19	Ceramic Capacitor	12 pF	ECCD05120K
C21, 35, 161 ...	Ceramic Capacitor	0.01μF	ECKD05103PJ
C29	Ceramic Capacitor	0.01μF	ECKD05102MY
C31	Styrol Capacitor	260 pF	ECQS1261JZ
C37, 60, 103 ...	Electrolytic Capacitor	10μF	ECEA6V10N
C41	Ceramic Capacitor	2 pF	ECCD05020C
C42	Ceramic Capacitor	47 pF	ECCD05470K
C44, 45	Ceramic Capacitor	0.001μF	ECKD05102MY
C46	Electrolytic Capacitor	4.7μF	ECEB25V4R7N
C48	Electrolytic Capacitor	47μF	ECEA6V47
C49, 70, 137 ...	Styrol Capacitor	2200 pF	ECQS05222KZ
C50	Electrolytic Capacitor	47μF	ECEA10V47
C51, 79, 80, 85, 86, 95, 96, 99, 100, 109, 110, 111, 112, 115, 116, 119, 120, 155, 156 ...	Electrolytic Capacitor	3.3μF	ECEA16V3R3N
C52, 142	Electrolytic Capacitor	470μF	ECEA10V470N
C53, 61	Styrol Capacitor	4700 pF	ECQS05472KZ
C54, 57	Styrol Capacitor	1500 pF	ECQS05152JZ
C55, 67	Mylar Capacitor	0.01μF	ECQM05103MZ
C56	Electrolytic Capacitor	33μF	ECEA6V33N
C58	Styrol Capacitor	820 pF	ECQS05821JZ
C59	Mylar Capacitor	0.022μF	ECQM05223MZ
C62	Styrol Capacitor	1000 pF	ECQS05102KZ
C63, 71, 72, 74, 75	Styrol Capacitor	1800 pF	ECQS05182KZ
C64, 65	Mylar Capacitor	0.015μF	ECQM05153MZ
C66, 168	Electrolytic Capacitor	1μF	ECEA50V1
C69	Aluminum Capacitor	0.47μF	ECEA10V0R47
C73, 76	Styrol Capacitor	3900 pF	ECQS05392KZ
C77	Electrolytic Capacitor	10μF	ECEA16V10N
C81, 82, 157, 158, 159, 160	Mylar Capacitor	0.0056μF	ECQM05562MZ
C83, 84, 87, 88	Electrolytic Capacitor	47μF	ECEA3V47

Ref. No.	Description		Part No.
C89, 90	Mylar Capacitor	0.039μF	ECQM05393MZ
C91, 92	Mylar Capacitor	0.0015μF	ECQM05152MZ
C93, 94	Mylar Capacitor	0.0039μF	ECQM05392MZ
C97, 98, 125, 126	Electrolytic Capacitor	220μF	ECEA10V220
C101, 102, 170, 171	Aluminum Capacitor	0.33μF	ECEAG25E0R33
C105, 106, 113, 114	Electrolytic Capacitor	100μF	ECEA3V100
C107, 108, 147, 148	Electrolytic Capacitor	100μF	ECEA10V100N
C117, 118 ...	Mylar Capacitor	0.056μF	ECQM05563MZ
C123, 124 ...	Electrolytic Capacitor	100μF	ECEA6V100
C127, 128 ...	Electrolytic Capacitor	220μF	ECEA16V220N
C129, 130 ...	Mylar Capacitor	0.0012μF	ECQM05122MZ
C131, 132 ...	Mylar Capacitor	0.0033μF	ECQM05332MZ
C133, 134 ...	Styrol Capacitor	820 pF	ECQS1821KZ
C135, 136, 141	Mylar Capacitor	0.1μF	ECQM05104MZ
C138, 139 ...	Aluminum Capacitor	4.7μF	ECAG16E4R7
C140	Mylar Capacitor	0.15μF	ECQM05054MZ
C143, 164 ...	Electrolytic Capacitor	1000μF	ECEA16V1000
C144	Electrolytic Capacitor	2000μF	ECES15R2000Z
C145	Electrolytic Capacitor	1000μF	ECEB16V1000
C146	Ceramic Capacitor	1000 pF	ECKD14102PU
C151, 152 ...	Electrolytic Capacitor	3.3μF	ECEA50V3R3M
C153, 154 ...	Mylar Capacitor	0.027μF	ECQM05273MZ
C163	Paper Capacitor		ECND6104M
C169	Electrolytic Capacitor	3.3μF	ECEA25V3R3N
C172	Mylar Capacitor	0.068μF	ECQM05683MZ
C173	Electrolytic Capacitor	33μF	ECEA16V33
C201, 202, 205, 206, 217, 218	Electrolytic Capacitor	3.3μF	ECEA16V3R3N
C203, 204 ...	Electrolytic Capacitor	47μF	ECEA6V47N
C207, 208, 209, 210	Electrolytic Capacitor	10μF	ECEA6V10N
C211, 212 ...	Electrolytic Capacitor	470μF	ECEA10V470N
C213, 214 ...	Mylar Capacitor	0.015μF	ECQM05153MZ
C215, 216 ...	Mylar Capacitor	0.039μF	ECQM05393MZ

TRIMMES CAPACITOR

Ref. No.	Description	Part No.
CV1	Ceramic Trimmer Capacitor	ECV1ZW10P12

TRANSISTORS

Tr1	Transistor	MK10
Tr2, 4-2, 5, 6 ...	Transistor	2SC469R
Tr3	Transistor	2SC185A
Tr4-1	Transistor	2SC184R
Tr7	Transistor	2SA101BX
Tr8, 14, 15, 26	Transistor	2SB175 (A)
Tr9	Transistor	2SA101CX
Tr10	Transistor	2SC183KQ
Tr11	Transistor	2SB178
Tr12, 13, 20, 21	Transistor	2SB346
Tr16, 17, 18, 19, 40, 41	Transistor	2SB175 (B)
Tr22, 23, 24, 25	Transistor	2SB473
Tr27, 29	Transistor	2SB324
Tr28	Transistor	2SB172A
Tr38, 39	Transistor	2SB348

DIODES & RECTIFIERS

D1	Diode	SC15
D2, 3	Diode	1S1211
D4, 5, 6, 7, 8, 9, 10, 11, 13 14, 15	Diode	OA70
D16	Selenium Rectifier	25 F
D17	Selenium Rectifier	KC2d22/1a

THERMISTORS

TH1, 2, 3, 4 ...	Thermistor	QVM300A

TRANSISTORS

Ref. No.	Description	Part No.
T1	FM 1st IFT	RLI4B152
T2	FM 1st IFT	RLI4B151
T3, 5	FM 2nd IFT	RLI4C203
T4	AM 1st	RLI2C157
T6	AM 2nd	RLI2C257
T7	FM Det IFT	RLI4C504
T8	FM Det IFT	RLI4C505
T9	AM Det IFT	RLI2C457
T10, 11	Input Transformer	QLA0118
T12	Oscillator Output Transformer	QLP0116
T13	Power Transformer	QLP0447

COILS

L1	FM Antenna Coil	RLA4P6
L2	FM Corrector Coil	ELQ5A54
L3	IF Trap Coil	ELQ5A56
L4	FM Local Oscillator Coil	ELQ5A53
L5	AM Ferrite Antenna	RLF2D48
L6	AM Local Oscillator Coil	ELL10P44
L7	19 KHz Pick-up Coil	ELM10S101
L8, 9, 14, 15 ...	Band Pass Filter Coil	ELQ4C1
L10	19 KHz Doubler Coil	ELM10S102
L11	38 KHz Oscillator Coil	ELM10S104
L12, 13	High Frequency Choke Coil	ELT10S921
L16	Oscillator Coil	QLB0130
L17	Choke Coil	QLP0118

SWITCHES

S1	Selector Switch	ESRE485L30Z
S2	Record/Playback Selector Switch	QSS1054
S3	Speaker Switch	QSS1035
S5	AFC Switch	EST101RC

Ref. No.	Description	Part No.
S6	**Mixing Switch**	**EST101C**
S7	**Oscillation Power Switch**	**QSB0168**
S8	**Stop Switch**	**QSB0154B**
S9	**Power Switch**	**QSW0107S**
S10	**FF/Rewind Switch**	**QSB0167**
S11	**Plunger Switch**	**QSB0145**
S13	**Motor Switch**	**QSM0015**
S14	**AC Voltage Selector Switch**	**ESRE126S20BE**

ELECTRICAL PARTS

E1	**Record/Playback Head**	**WY425Z**
E2	**Erase Head**	**WY223Z**
E3	**VU Meter**	**QSL0048**
E4	**Lamp Holder Rubber**	**QBG1208**
E6	**Compound Part**	**EXAF203Z471**
E7	**Pin Jack Assembly**	**QJA0902**
E8	**Jack M3-B**	**QJA0112**
E9	**Headphone Jack**	**QJA0219**
E10	**5P DIN Socket**	**QJS0723**
E11	**Pilot Lamp Socket**	**QJS101**
E12	**Pilot Lamp**	**RVL101**
E13	**Fuse 1.0A**	**QJF1011**
E14	**1P Fuse Holder**	**QTF1019**
E15	**1P Fuse Holder-B**	**QTF1011**
E16	**Pilot Lamp**	**SVL205**
E17	**Pilot Lamp (Stereo Eye)**	**RVL212**
E18	**Pilot Lamp Cover**	**QTV1023**
E19	**AC Power Cord with Plug**	**QFC1022**
E20	**Cord Bushing**	**QDT1126A**
E21	**Relay**	**QSK0117**
E22	**Lug Board 1-2PH (B)**	**QJT2003**
E23	**Lug Board 1-3PRH (A)**	**QJT3006**
E24	**Lug Board 1-4PH (A)**	**QJT4001**
E25	**2P Terminal Board**	**QJT2008**

Ref. No.	Description	Part No.
E26	**Cord Stop Lug**	**QTD1001**
E27	**Cord Stop Lug-A**	**QTD1002**
E30	**Antenna Terminal**	**RJF4209**
E31	**Arrow Lug**	**QJT0022**
E32	Micro Switch Terminal Board	QJT1004
E33	**Voltage Indication Collar**	**QBJ1152**
E34	Jack Plate	QGJ1106
E36	**Jack Indication Plate**	**QGS2154**
E37	**Heat Sink**	**QTH1039**
E38	**Dial Roap**	**RDZ07**
E39	**Indicator**	**QKT1280A**
E40	**Meter Felt**	**QBF1143**
E41	**Drum**	**QTQ0001**
E42	**Drum Shaft**	**QMS1445S**
E43	**Drum Cover**	**QBK1086**
E44	Gear-A	QDG1012
E45	Gear-B	QDG1013
E46	**Dial Spring**	**QBT1365**
E47	**Gear Spring**	**QBT1321**
E48	Shield Cover	QTS1115
E49	Air Varicon Rubber	QBG1164
E50	Rubber Bushing	QBG1166
E51	**Tuning Shuft Assembly**	**QMS1448**
E52	Slide Paper	QBK7098
E53	**Slide Switch Spring**	**QBP1144**
E54	Printed Circuit Board Assembly	REI0202
E55	Printed Circuit Board Assembly	QEI0165
E56	Printed Circuit Board Assembly	QEM1101
E57	Printed Circuit Board Assembly (Radio)	QJI0173
E58	Printed Circuit Board Assembly (Radio)	QJI0172
E59	Printed Circuit Board Assembly (Radio)	QJI0171
E60	**Heat Sink for Transistor**	**QTH1039S**
E61	AC Power Selector Angle	QTT1591S

MECHANICAL PARTS (NEW MECANISM)

Ref. No.	Description	Part No.
M1	**Tape Counter**	**QDC0033**
M2	Counter Angle-2	QMA1416
M3	Counter Angle-1	QMA1413S
M4	**Spring Washer SW3ϕ**	**XWA3B**
M5	**Screw ⊕3×6**	**XSN3+6S**
M6	**Stop Ring E3ϕ**	**XUC3FK**
M7	**Fiber Washer**	**QBK7126**
M8	Leaf Switch Angle	QMA1437S
M9	**Ball Pressure Spring**	**QBP1192**
M10	**Spring Retainer**	**QMF1313**
M11	**Vinyl Tube**	**QLT030VX07**
M12	**Head Slide Lever**	**QML1685**
M13	**Steel Ball 3ϕ**	**QLD1006**
M14	**Fast Forward Lever Spring**	**QBT1395**
M15	**Screw ⊕2×6**	**XSN2+6**
M16	**Screw ⊕2×8**	**XSN2+8**
M17	**Erase Head Spacer**	**QMF1314**
M18	**Head Adjustment Spring**	**QBC1127**
M19	**Record/Playback Head Spacer**	**QMP1202**
M20	Head Holding Plate	QMF1320
M21	**Stop Ring E1.5ϕ**	**XUC15FK**
M22	**Washer**	**QBJK0015**
M23	**Pressure Roller Lever Assembly**	**QXL0363**
M24	**Stop Ring E2ϕ**	**XUC2FK**
M25	**Fiber Washer 3.2×9×1**	**QBK7126**
M26	**Fiber Washer 3.2×9×0.5**	**QBK7124**
M27	**Pressure Roller Spring**	**QBN1091**
M28	**Tapping Screw ⊕2.6×6**	**XTB26+6**
M29	Spring Hook Plate Assembly	QXH0055
M30	Base Plate Moving Lever Left Assembly	QXL0293
M31	Stop Ring E3ϕ	XUC3FK
M32	Base Plate Fixing Lever	QML1588
M33	**Base Plate Fixing Lever Spring**	**QQN1068**
M34	Base Plate Moving Lever Right Assembly	QXL0294
M35	**Screw ⊕2.6×20**	**XSN26+20**
M36	**Stop Spring**	**QBT1398M**
M37	**Lug Terminal**	**QJT0015**
M38	**Cassette Guide-2**	**QBJ3078**
M39	**Cassette Guide-1**	**QBJ3077**
M40	Stop Ring E1.5ϕ	XUC15FK
M41	**Cassette Lid Spring**	**QBN1096**
M42	Cassette Lid Shaft	QMS1555
M43	**Cassette Lid**	**QML1697**
M44	**Screw ⊕2.6×14**	**XSN26+14**
M45	**Spring Washer SW2.6ϕ**	**XWA26B**
M46	**Flat Washer 3ϕ**	**XWG3**
M47	**Guide Ring-2**	**QMP1207**
M48	**Screw ⊕3×10**	**XSN3+10S**
M49	Spring Washer SW3ϕ	XWA3B
M50	Base Plate-1 Assembly	QMK1207S
M51	**Pipe-3**	**QMP1147**
M52	**Lock Cancel Lever**	**QML1773**
M53	Reinforce Angle	QML1431
M54	**Tapping Screw ⊕3×8**	**XTB3+8**
M55	Stop Ring E3ϕ	XUC3FK
M56	**Fiber Washer 4.2×9×0.5**	**QBK7005**
M57	Rewind Lever-2 Assembly	QXL0290
M58	Stop Ring E3ϕ	XUC3FK
M59	**Fiber Washer 3.2×9×0.5**	**QBK7124**
M60	Fast Forward Cooperation Lever Assembly	QXL0291
M61	Takeup Release Lever	QML1680
M62	**Stop Lever**	**QML1683**
M63	**Rewind Lever Spring-1**	**QBT1376M**
M64	Slide Plate Assembly	QXL0298
M65	Fiber Washer 3.2×9×1	QBK7126
M66	**Rewind Button Lever Assembly**	**QXL0334**

Ref. No.	Description	Part No.
M67	**Stop Button Lever Assembly**	**QXL0332**
M68	**FF Button Lever Assembly**	**QXL0333**
M69	Stop Ring E2ϕ	XUC2FK
M70	**Lock Roller**	**QBJ1404**
M71	Stop Ring E3ϕ	XUC3FT
M72	Fiber Washer 4.2×9×0.5	QBK7005
M73	**Record Lever**	**QML1778**
M74	Record Lock Lever	QML1772
M75	**Push Button Lever Spring**	**QBT1409**
M76	**Play Rewind Lever Spring**	**QBT1351M**
M77	**Record Lock Lever Spring**	**QBT1410**
M78	**FF Operation Lever Assembly**	**QXL0335**
M79	**Stop Operation Lever Assembly**	**QXL0336**
M80	**Rewind Operation Lever Assembly**	**QXL0337**
M81	**Stop Ring**	**XUC4FT**
M82	**Polystyrene Washer 7×0.5**	**QBJ3143**
M83	Lever Keeping Shaft	QNQ1101
M84	**Tapping Screw ⊕4×8**	**XTN4+8**
M85	**Record Button Assembly**	**QXB0066**
M86	**Fast Forward/Rewind Button Assembly**	**QXB0064**
M87	**Stop Button Assembly**	**QXB0065**
M88	**Tape Counter Belt-3**	**QDB0111**
M89	**Tape Counter Belt-2**	**QDB0110**
M90	**Counter Pulley Assembly**	**QXP0275**
M91	Case Fixing Angle	QMA1415S
M92	**Tapping Screw ⊕4×8**	**XTN4+8**
M93	Stop Ring E3ϕ	XUC3FK
M94	Fiber Washer 4.2×9×0.5	QBK7005
M95	**Takeup Lever**	**QBJ3080**
M96	**Takeup Idler Rod Assembly**	**QXM0053**
M96-1	Stop Ring E2ϕ	XUC2FK
M96-2	**Washer-3**	**QBJ3099**
M96-3	**Idler**	**QXI0031**
M97	**Takeup Idler Spring**	**QBT1374**

Ref. No.	Description	Part No.
M98	**Cassette Pressure Pin**	**QYQ0107**
M99	**Cassette Pressure Spring**	**QBC1119**
M100	Lock Lever	QML1696
M101	**Lock Lever Spring**	**QBC1133**
M102	Stop Ring E3ϕ	XUC3FK
M103	Stop Ring E1.5ϕ	XUC15FK
M104	**Plunger**	**QME0119S**
M105	**Motor**	**QDM0936**
M106	**Motor Pulley Assembly**	**QXP0265**
M107	**Tapping Screw ⊕2.6×6**	**XTB26+6**
M108	Flywheel Metal Retainer	QMF1317
M109	**Steel Ball 3ϕ**	**QDK1006**
M110	**Flywheel Metal**	**QBJ3082**
M111	**Flywheel Retainer Assembly**	**QXH0056**
M112	**Capstan Belt**	**QDB0107**
M113	Screw ⊕2.6×6	QHQ1125
M114	**Fiber Washer 4.2×9×0.25**	**QBK7007**
M115	**Flywheel Assembly**	**QXF0053**
M116	**Fast Forward Assembly**	**QXL0295**
M116-1	**Fast Forward Lever Spring**	**QBN1101**
M116-2	**Fast Forward Lever-1**	**QBJ3079**
M116-3	Stop Ring E3ϕ	XUC3FK
M116-4	**Fiber Washer 4.2×12×0.5**	**QBK7004**
M116-5	**Idler Assembly**	**QXI0631**
M116-6	**Fast Forward Assembly-2**	**QMF1316**
M116-7	Stop Ring E2ϕ	XUC2FK
M116-8	Washer-3	QBJ3099
M117	**Washer-2**	**QBJ3098**
M118	**Oil Ceal**	**QBJ3104**
M119	**Screw ⊕3×6**	**XSN3+6S**
M120	Spring Washer-3	XWA3B
M121	Stop Ring E2ϕ	XUC2FK
M122	Washer-2	QBJ3099
M123	**Rewind Pulley**	**QBJ3089**

Ref. No.	Description	Part No.
M124	**Rewind Belt**	**QDB0108**
M125	**Rewind Lever Assembly**	**QXL0290**
M126	**Rewind Roller Spring**	**QBT1391**
M127	Stop Ring E1.5φ	XUC15FK
M128	Washer	QBJK0015
M129	**Supply Reel Table Assembly**	**QXP0263**
M130	**Fiber Washer 2.2×6×0.5**	**QBK7111**
M131	**Tape Counter Belt-1**	**QDB0109**
M132	**Takeup Reel Table Assembly**	**QXP0262**
M133	**Rubber Cushion**	**QBG1147**
M134	Reel Table Base Plate Assembly	QXK1142
M135	**Rotation Switch Assembly**	**QES1089**
M136	Screw ⊕2×8	XSN2+8
M137	Tapping Screw ⊕4×8	XTN4+8
M138	Mechanism Holding Base Plate	QMK1205S
M139-1	**Stop Button**	**QXB0065**
M139-2	**FF/REW Button**	**QXB0064**
M139-3	**REC Button**	**QXB0066**
M140	Base Plate-2 Assembly	QMK1182S

CABINET PARTS

G1	**Body Case Assembly**	**QYJ1146**
G1-1	**Case Foot**	**QKA1050**
G2	**Panel Assembly**	**QYP0208S**
G2-1	**Scale Plate Assembly**	**QYQ0093**
G3	**Knob Assembly**	**QYT0081**
G4	**Tunning Knob Assembly**	**QYT0082**
G5	**Power Button**	**QGO4032**
G6	**Washer**	**QWQ1083**
G7	**Screw M4×16**	**QSM4+16S**
G8	**Speaker Box Assembly**	**QYJ1119S**
G8-1	**Back Board**	**QKS5024**
G9	**Blue Screw**	**XSN3+35BS**

ACCESSORIES

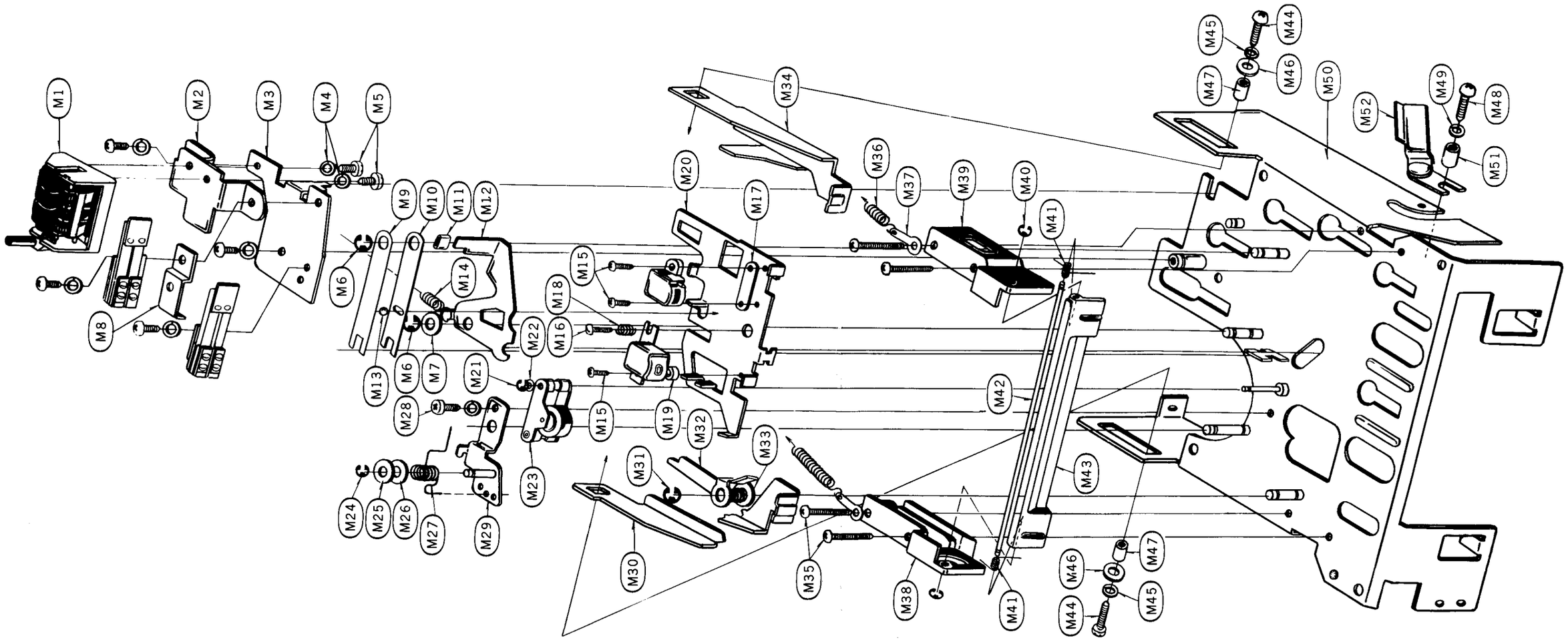
Ref. No.	Description	Part No.
A1	**Microphone**	**WM2201N**
A2	**Microphone Stand**	**WN123N**
A3	**Cassette Tape**	**QFT10SSNR90Z**
A4	**Connection Cord-C**	**QEB14P**
A5	**Plug Adaptor-B**	**QJP0603S**
A6	**Instruction Book**	**QQT1265**

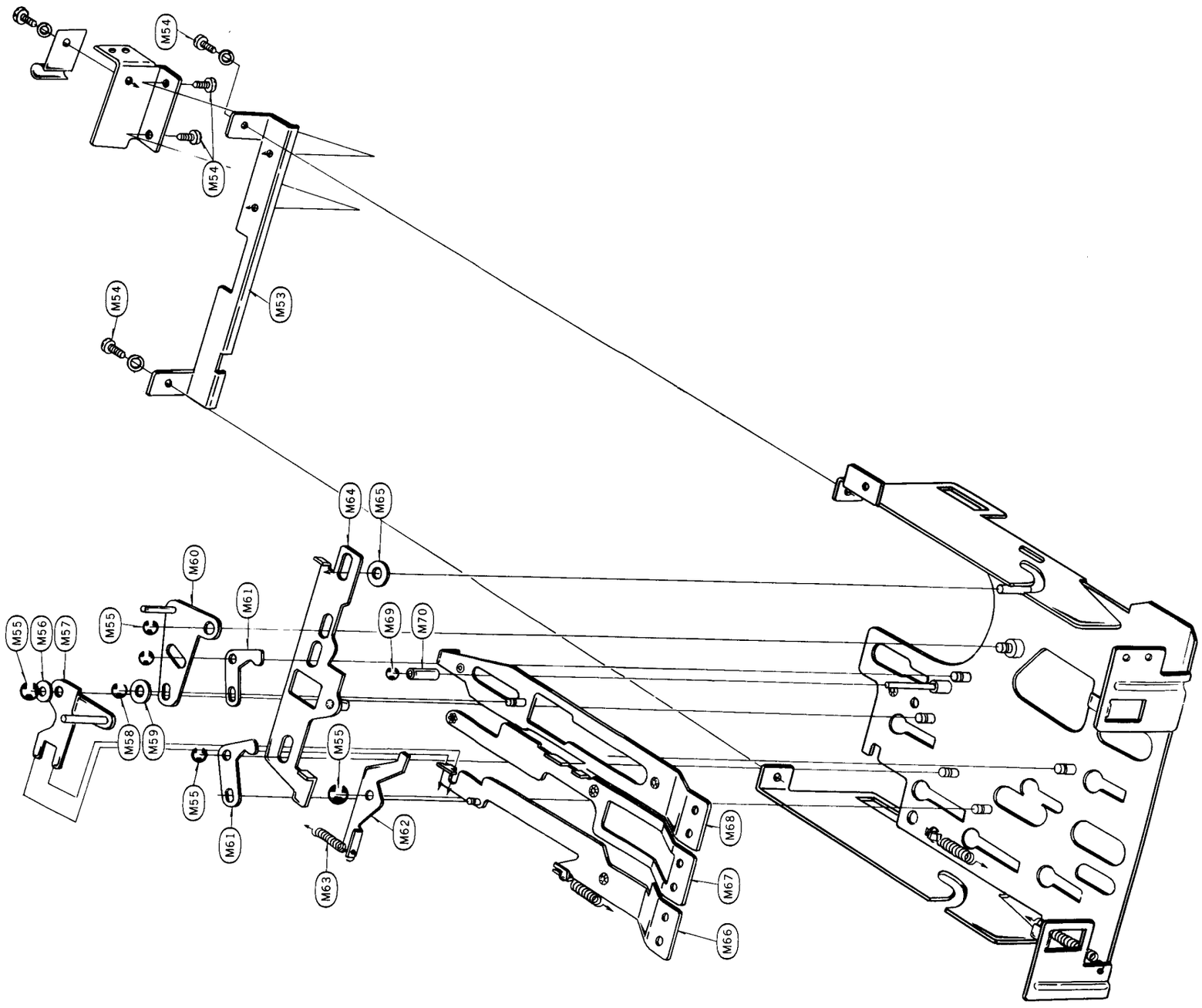
PACKINGS

P1	**Inner Packing**	**QPN1855**
P2	Inner Cushion-A	QPN1810
P3	Inner Cushion-B	QPN1811
P4	Spacer	QPN1812
P5	Accessory Box	QPW1130
P6	Dust Cover (SP Box)	QFD0111
P7	Dust Cover	QFD0110

EXPLODED VIEWS

(NEW MECHANISM)

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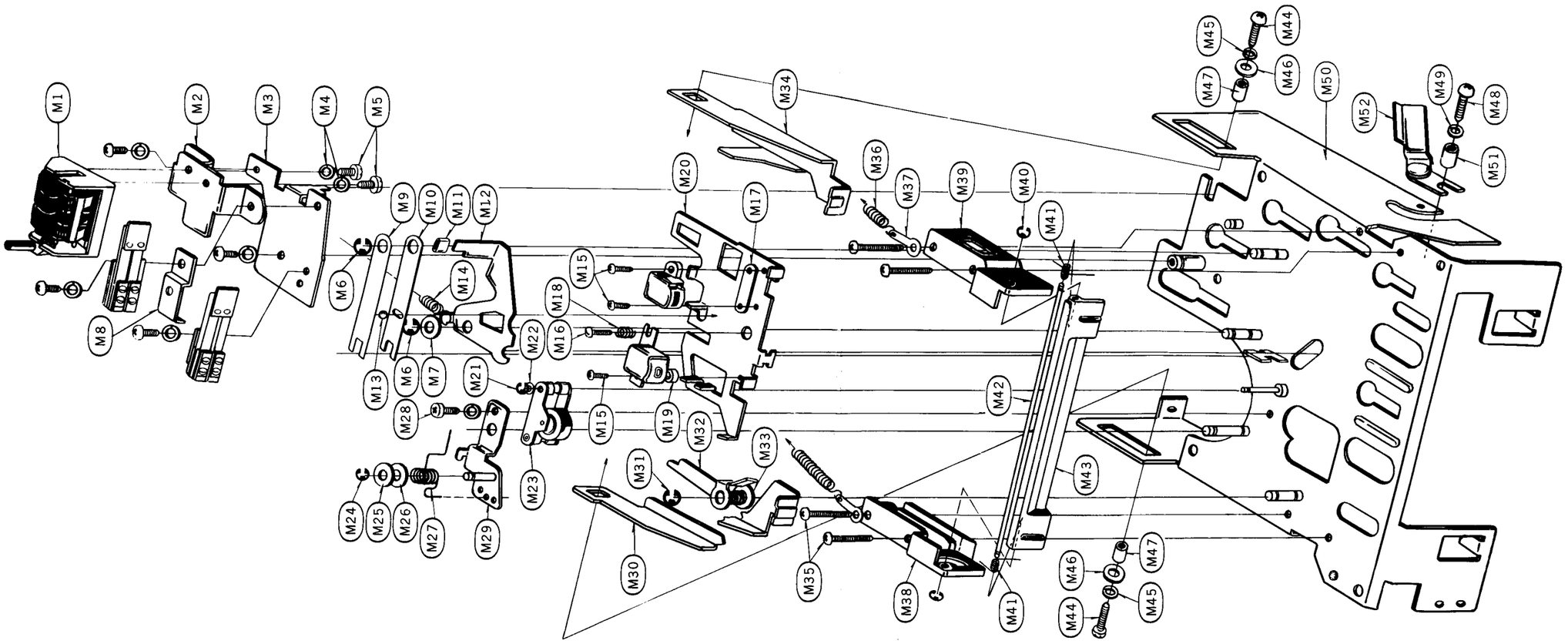
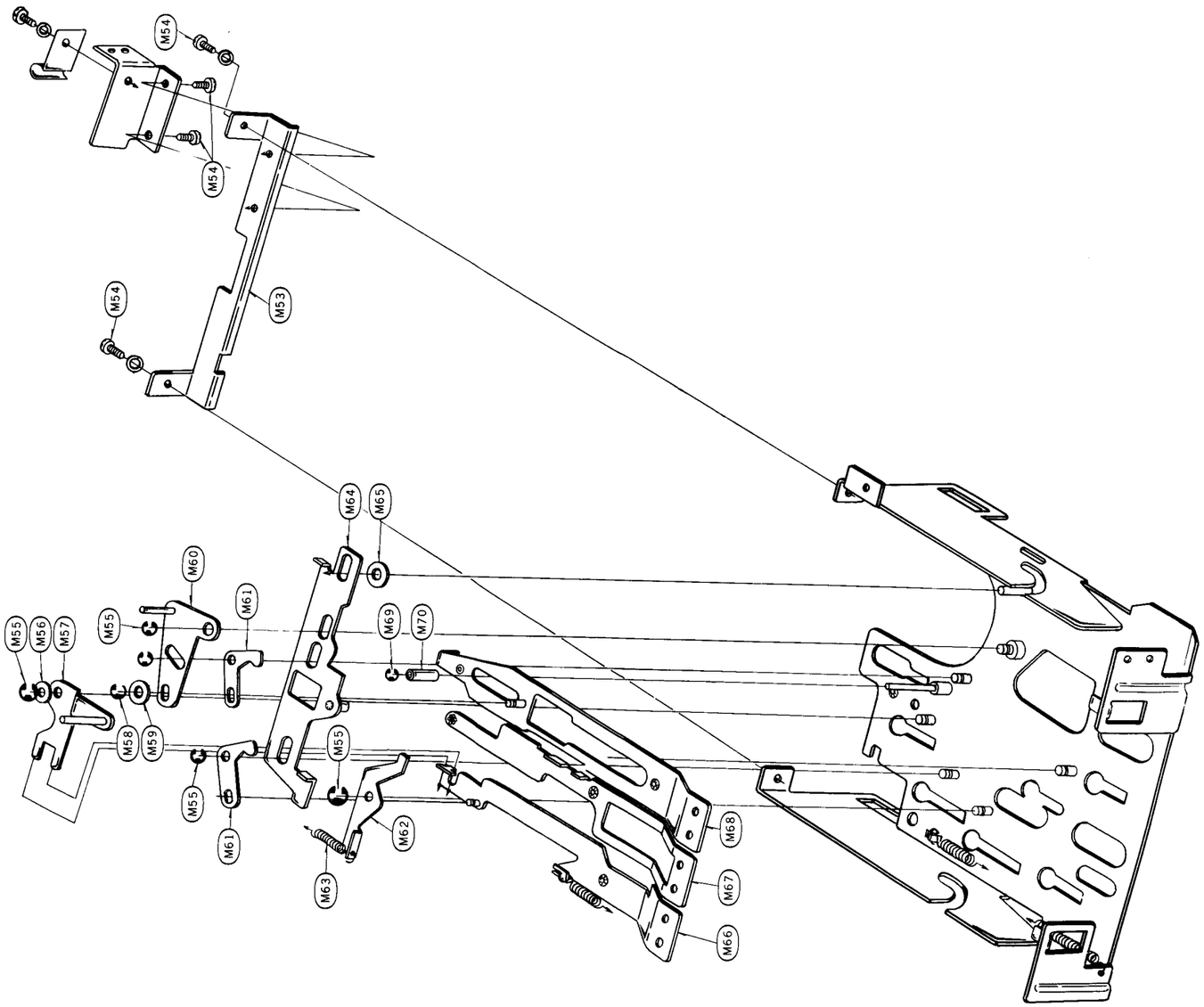
EXPLODED VIEWS

(NEW MECHANISM)

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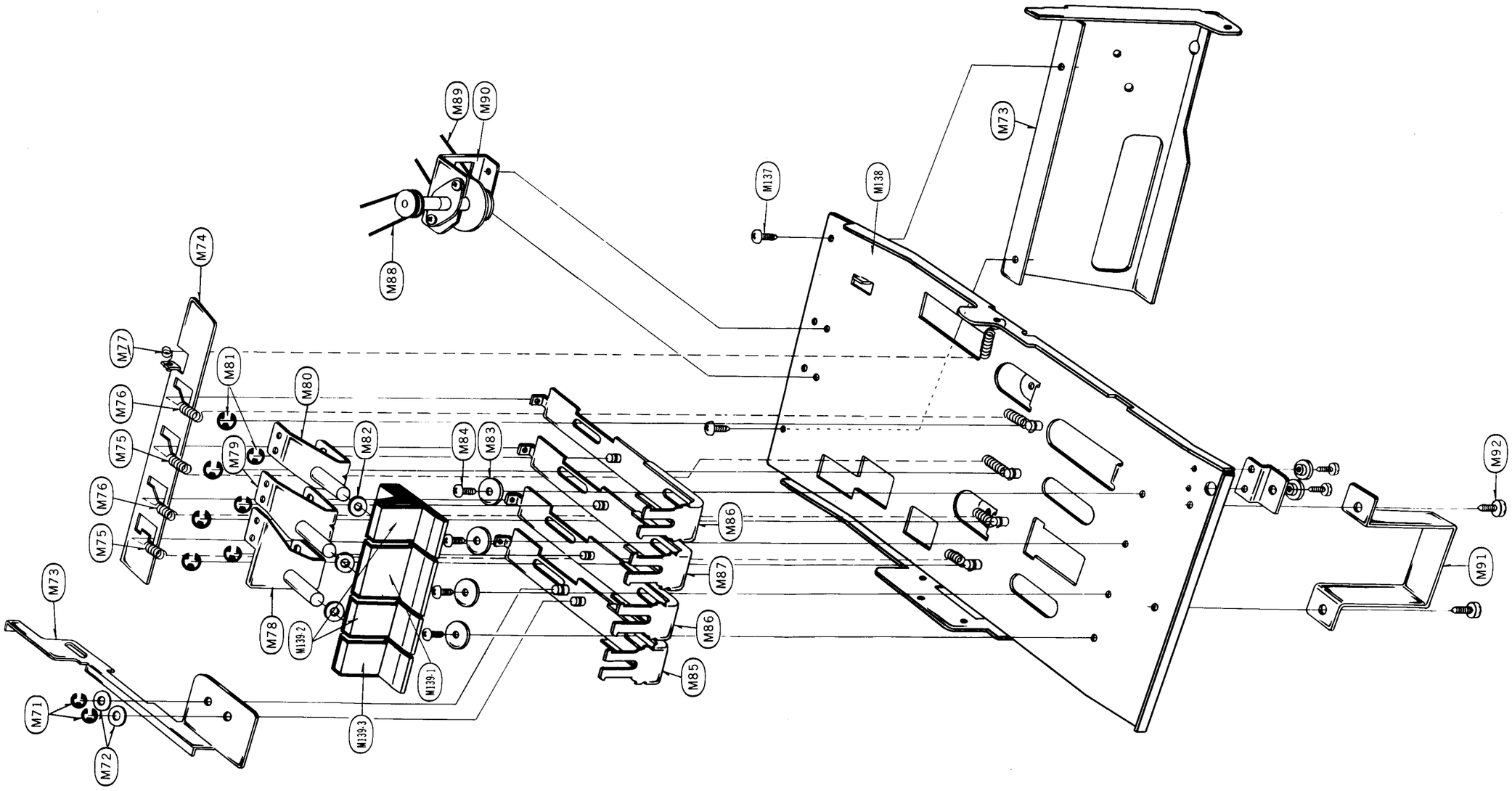
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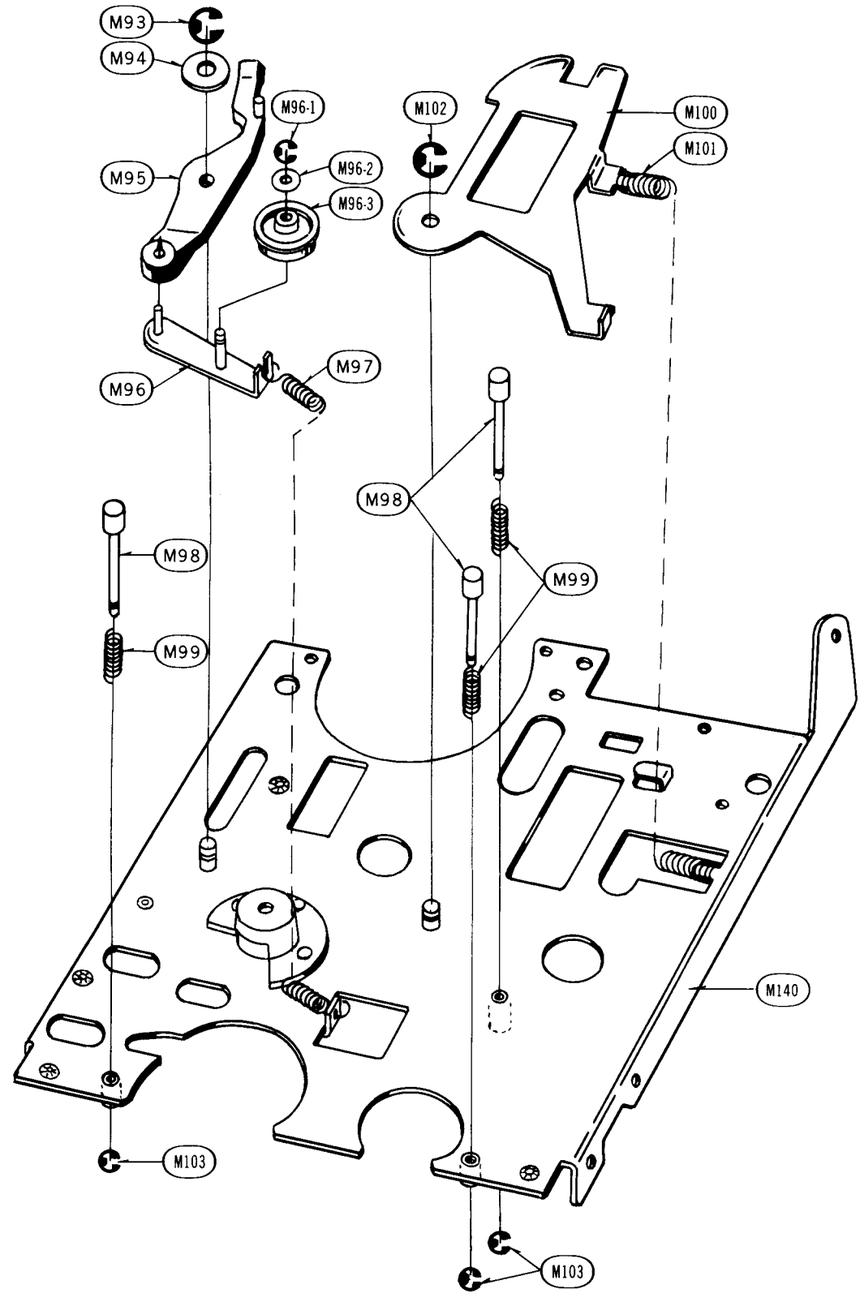
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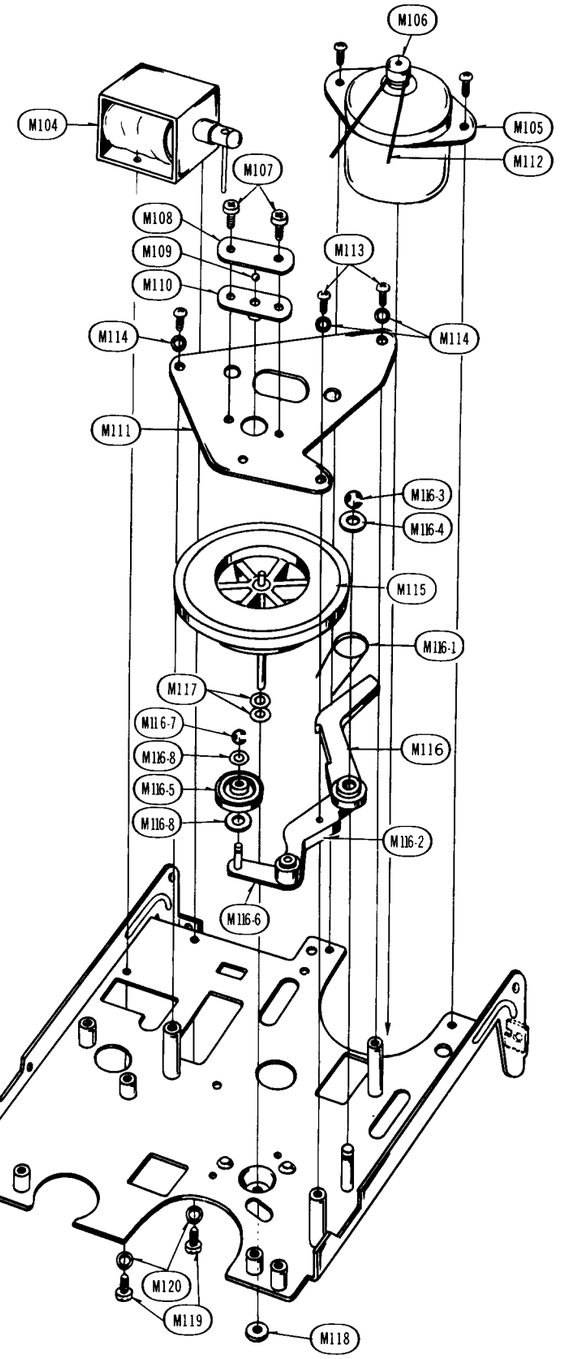
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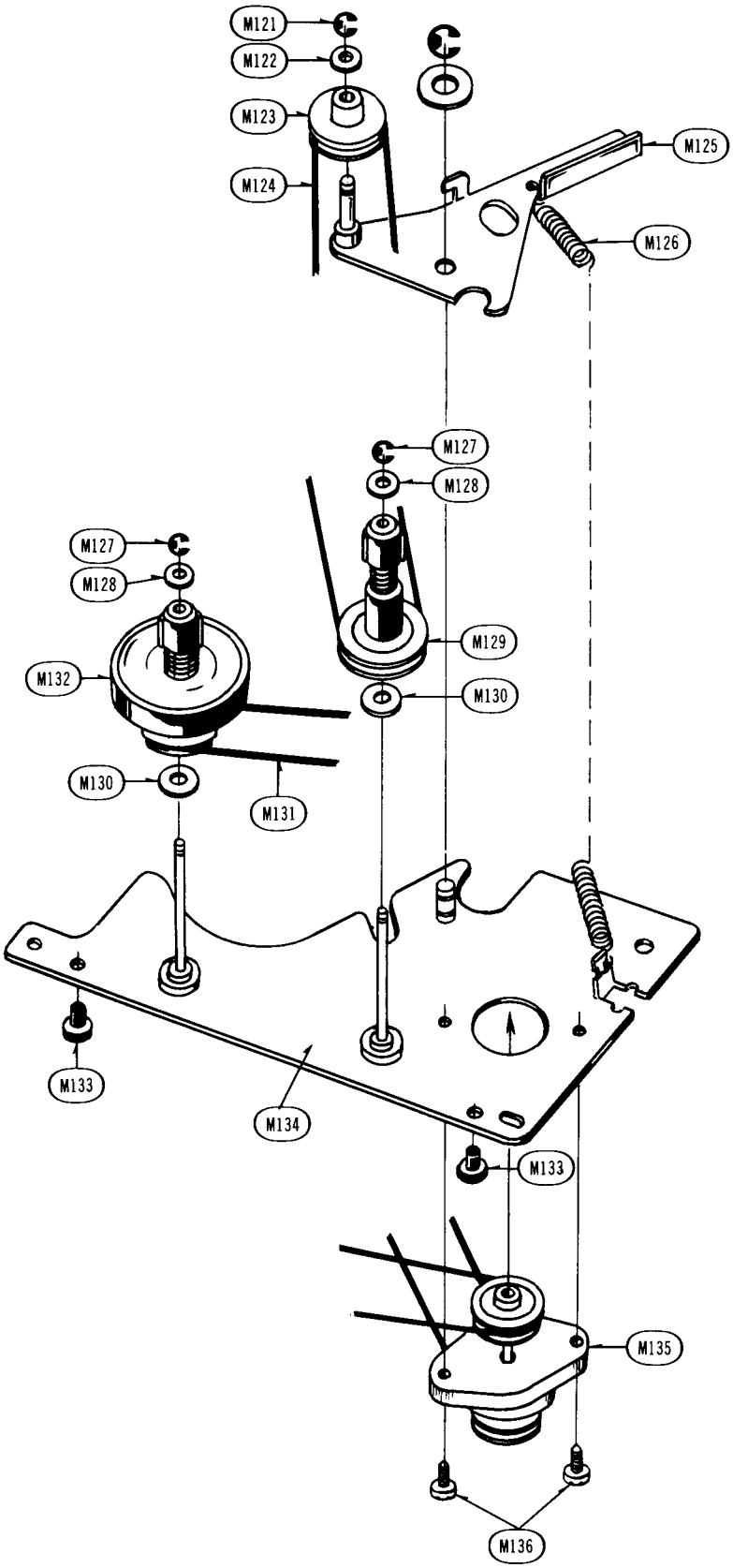
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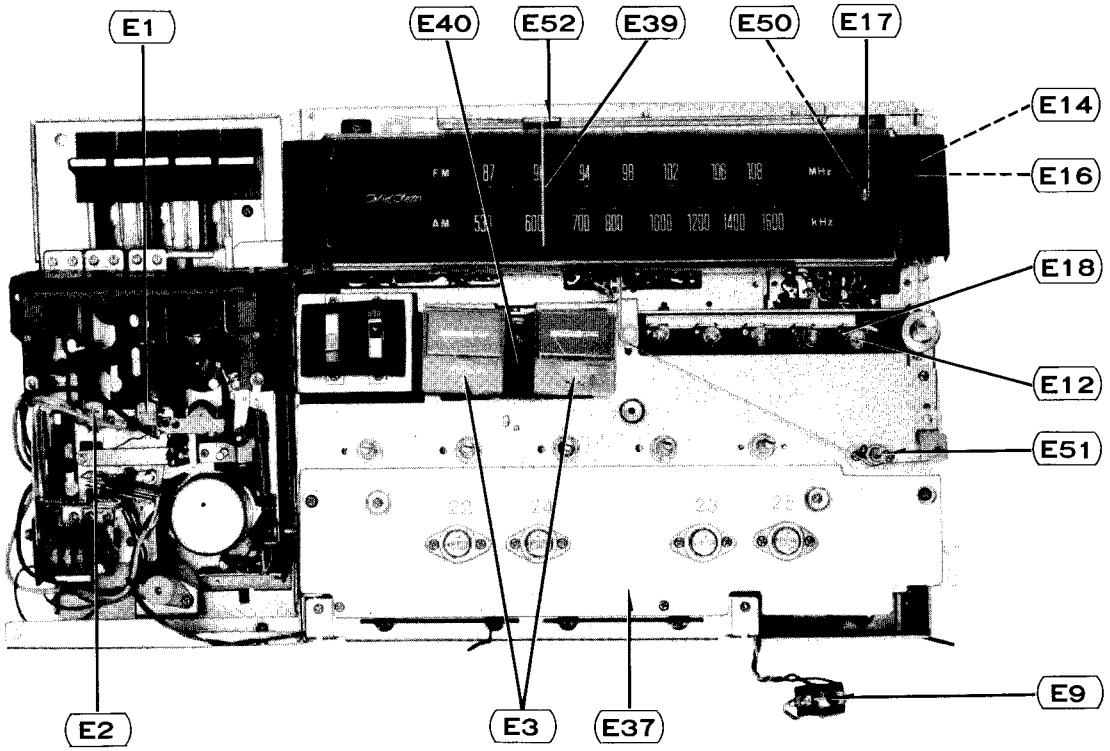
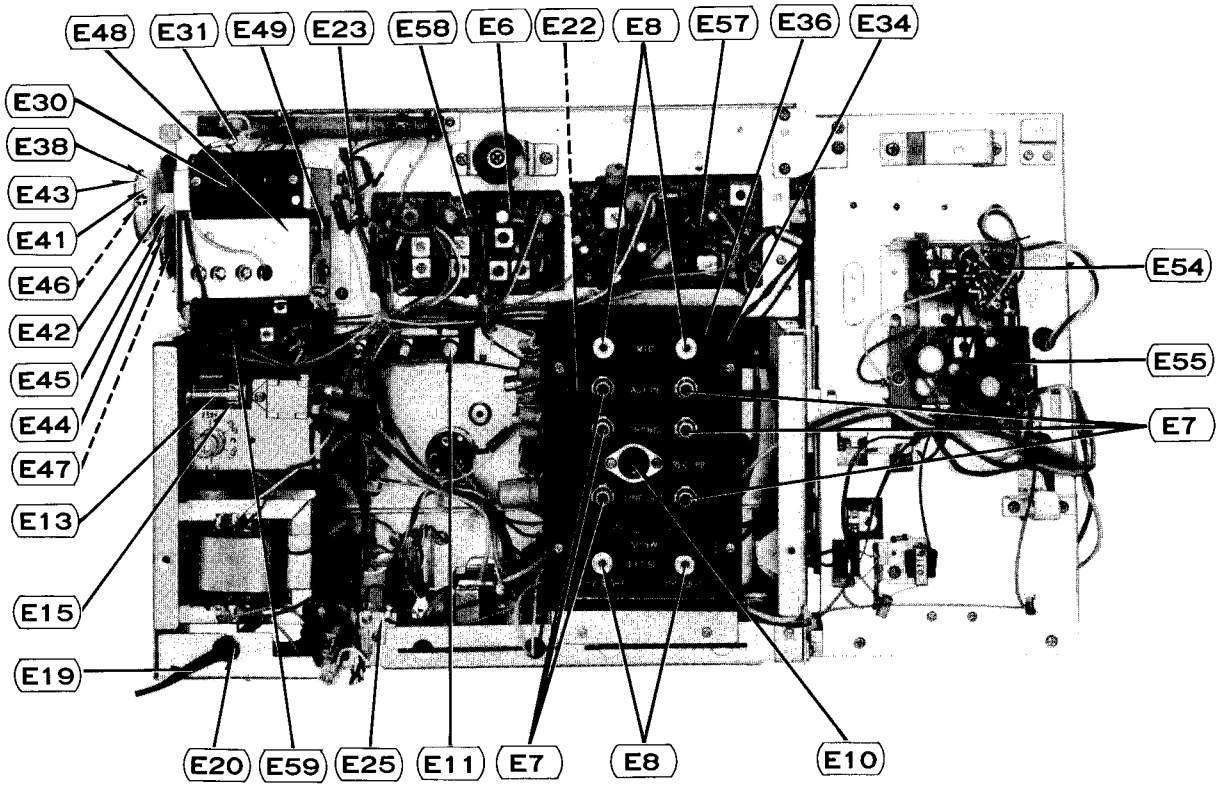
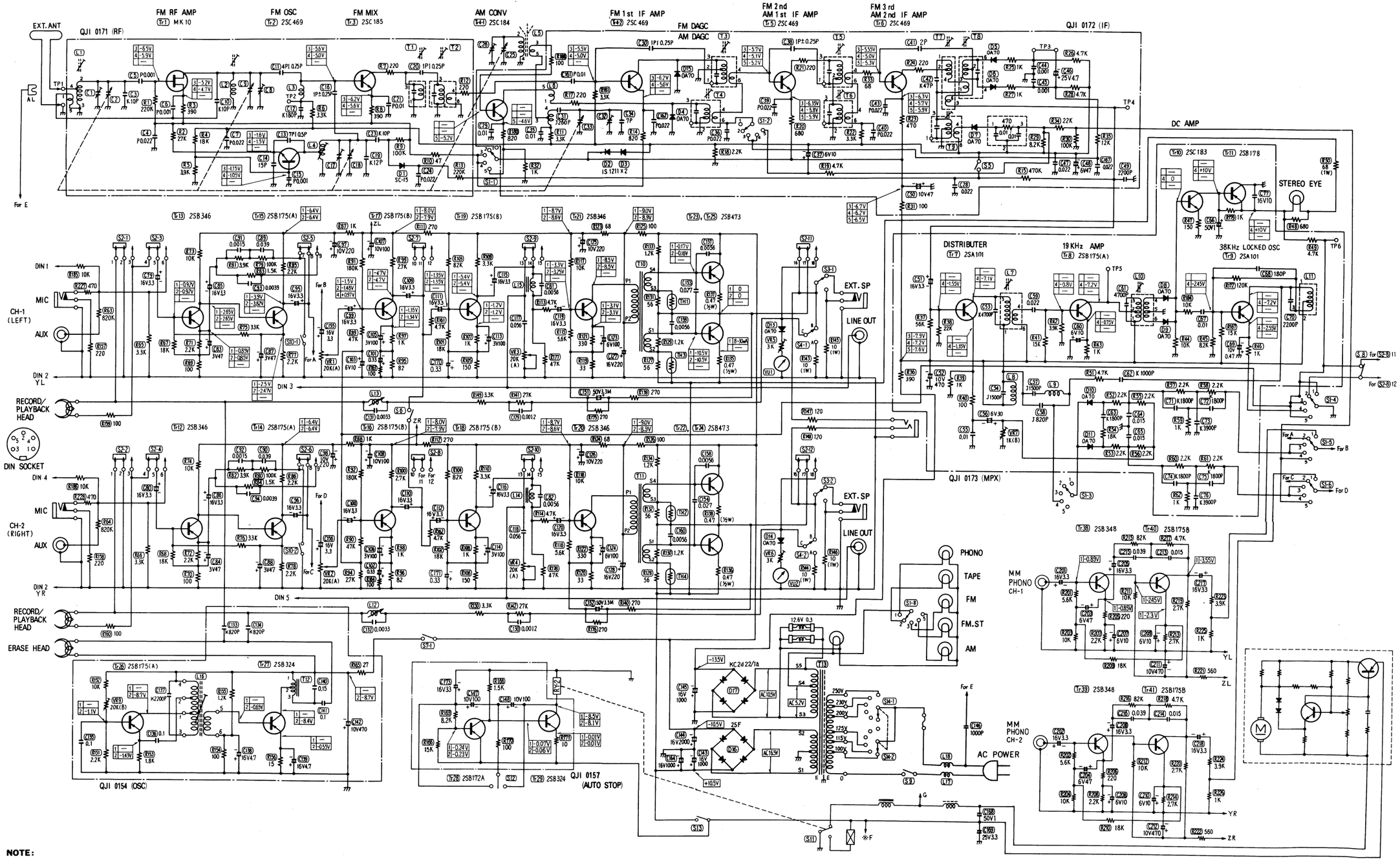
ELECTRICAL PARTS LOCATION





SCHEMATIC DIAGRAM MODEL RS-280S

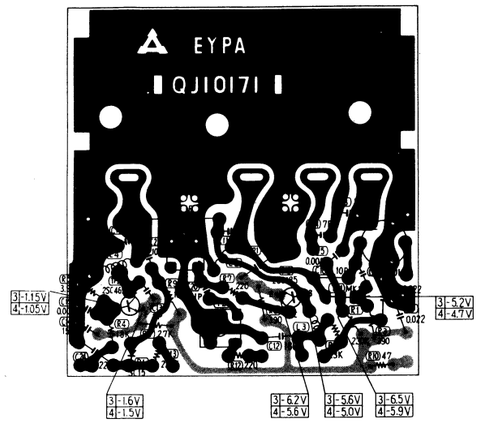


NOTE:

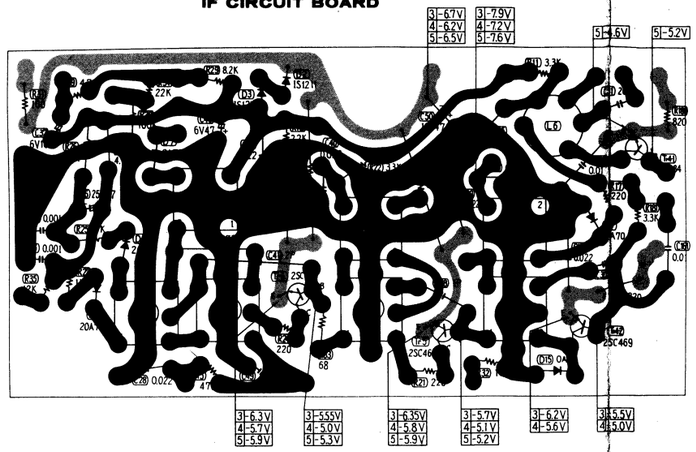
1. S1-1~S1-8 ..... Selector Switch (Shown in Tape position). 1...PHONO, 2...TAPE, 3...FM, 4...FM STEREO, 5...AM.
2. S2-1~S2-12 ..... Record/Playback Selector Switch (Shown in Play position).
3. S3-1, S3-2 ..... Speaker Switch.
4. S4-1, S4-2 ..... Monitor Switch (Coupled with Tone VR).
5. S5 ..... AFC Switch.
6. S6 ..... Mixing Switch.
7. S7 ..... Oscillation Power Switch (ON in Recording).
8. S8 ..... Stop Switch (OFF in Stop).
9. S9 ..... Power Switch.
10. S10-1, S10-2 ... FF/Rewind Switch (OFF in FF/Rewind).
11. S11 ..... Plunger Switch (Relay 2).
12. S12 ..... Rotation Switch.
13. S13 ..... Motor Power Switch (OFF in Stop).
14. S14 ..... AC Voltage Selector Switch.
15. Resistors are 1/4 watt unless specified otherwise. K=1,000Ω, M=1,000,000Ω.
16. Capacitors are microfarad (μF) unless specified otherwise. P=Micro-microfarads.
17. Symbols put at the head of capacity values show deviations. P=−20~+80%, M=±20%, K=±10%, J=±5%.
18. Values indicated in □ are DC voltages between the chassis and electrical parts. Numerals show values of voltage..... 1...PHONO, TAPE PLAY, 2...TAPE REC, 3...FM, 4... FM STEREO and 5...AM, respectively. When no numeral is given the same voltage is applied at 1~5.

CIRCUIT BOARD

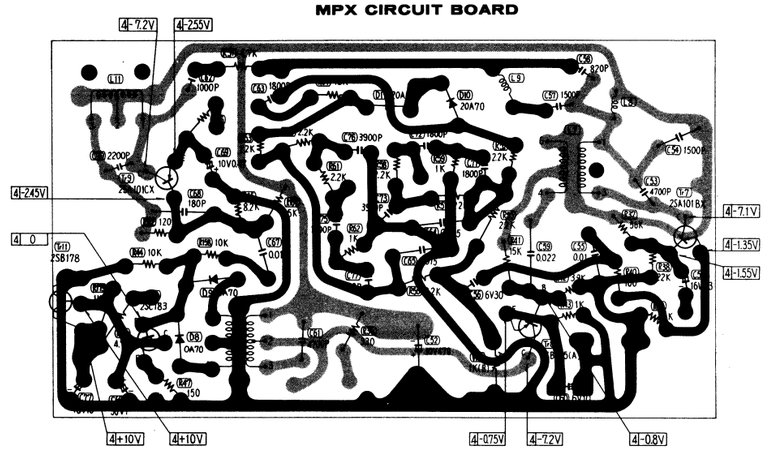
RF CIRCUIT BOARD



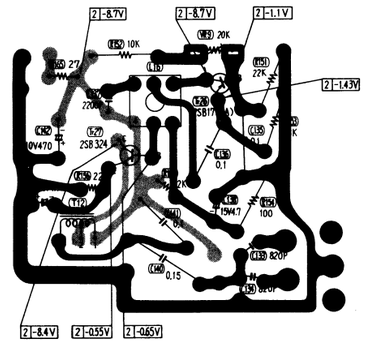
IF CIRCUIT BOARD



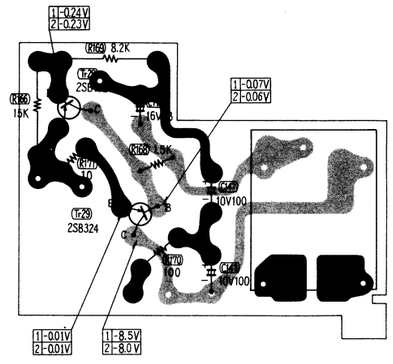
MPX CIRCUIT BOARD



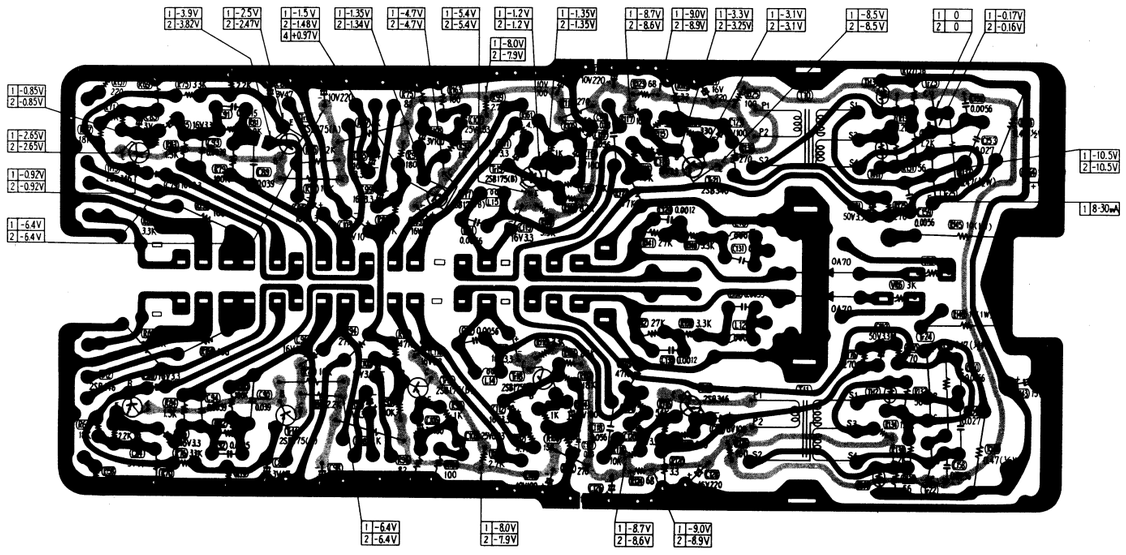
OSC CIRCUIT BOARD



AUTO STOP CIRCUIT BOARD



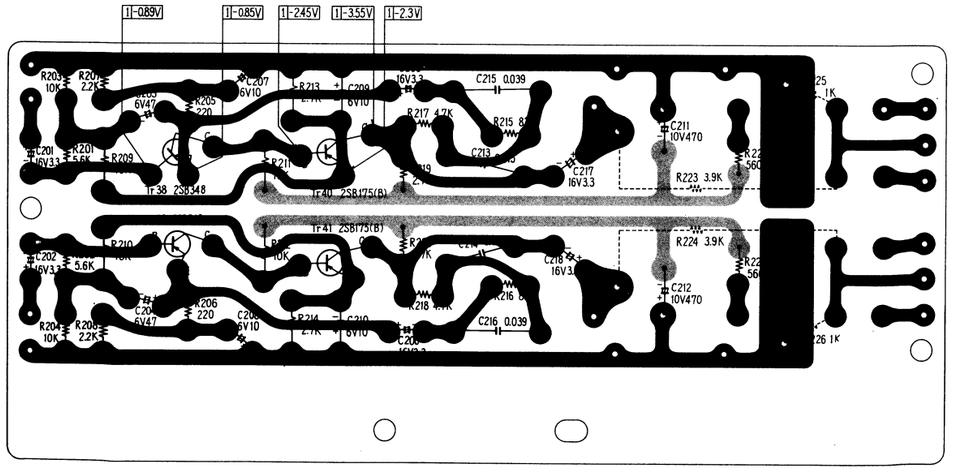
MAIN CIRCUIT BOARD



NOTE:

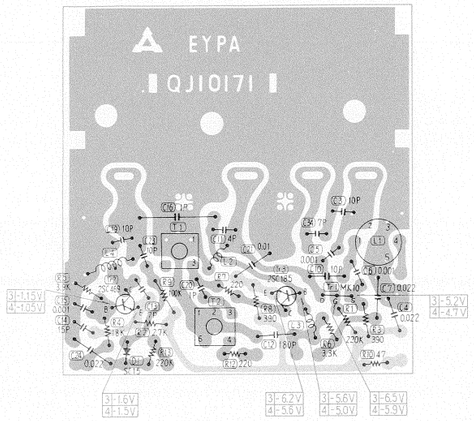
The circuit shown in red on the conductor side is −B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.
Numerals show values of voltage at.....
1...PHONO, TAPE PLAY, 2...TAPE REC, 3...FM, 4...FM STEREO, and
5...AM, respectively.

PHONO AMP CIRCUIT BOARD

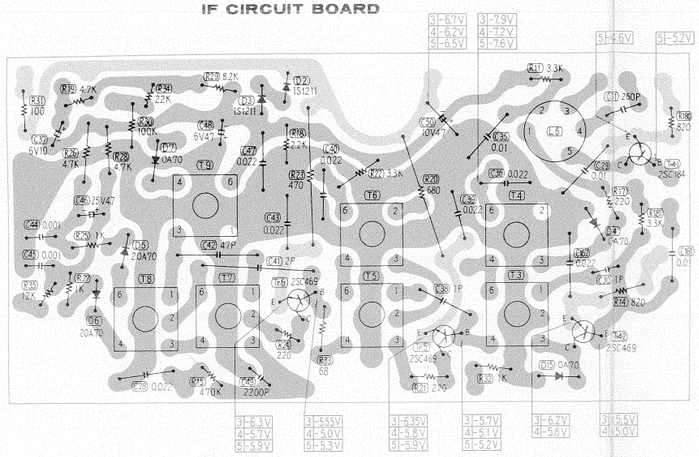


CIRCUIT BOARD

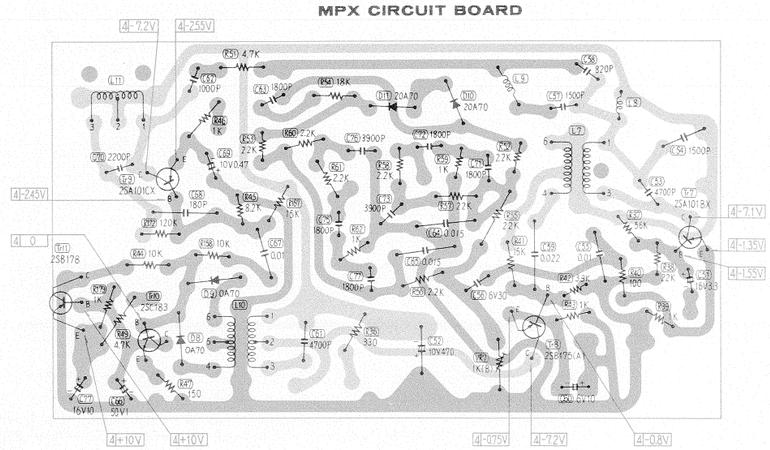
RF CIRCUIT BOARD



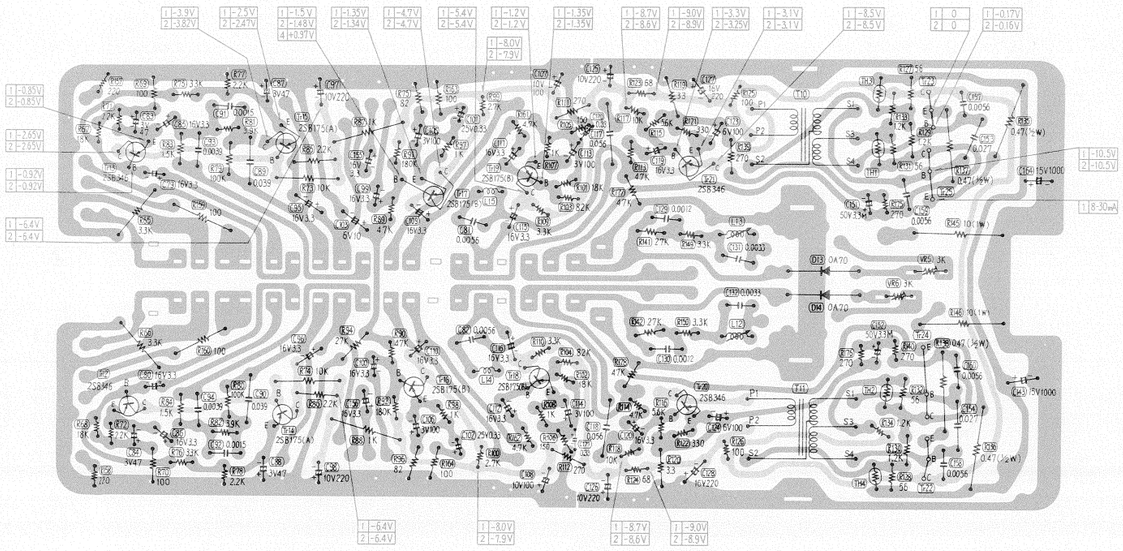
IF CIRCUIT BOARD



MPX CIRCUIT BOARD



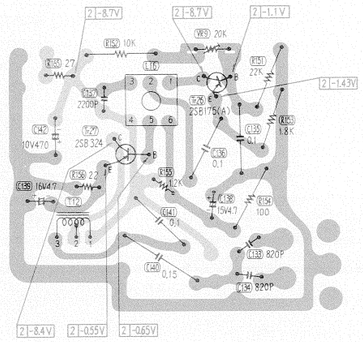
MAIN CIRCUIT BOARD



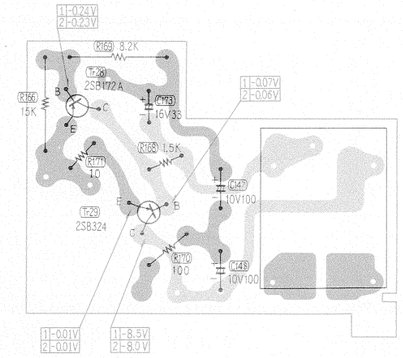
NOTE:

The circuit shown in red on the conductor side is −B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.
Numerals show values of voltage at.....
1...PHONO, TAPE PLAY, 2...TAPE REC, 3...FM, 4...FM STEREO, and
5...AM, respectively.

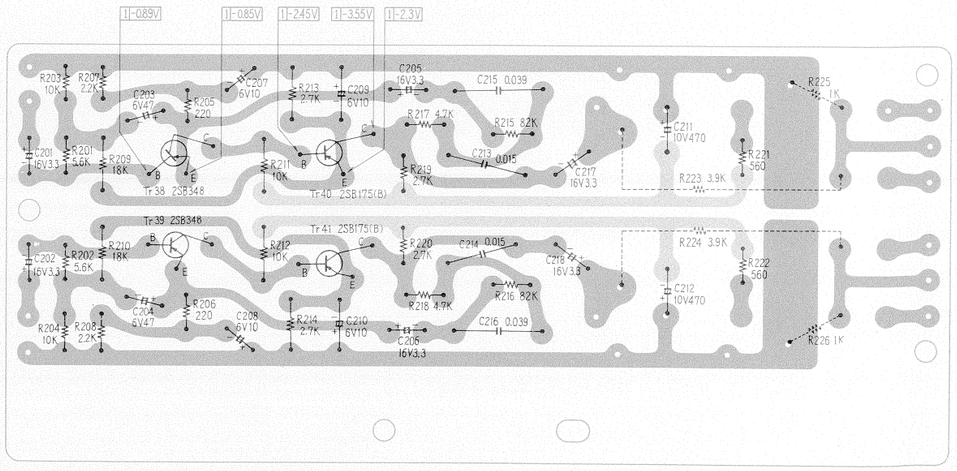
OSC CIRCUIT BOARD



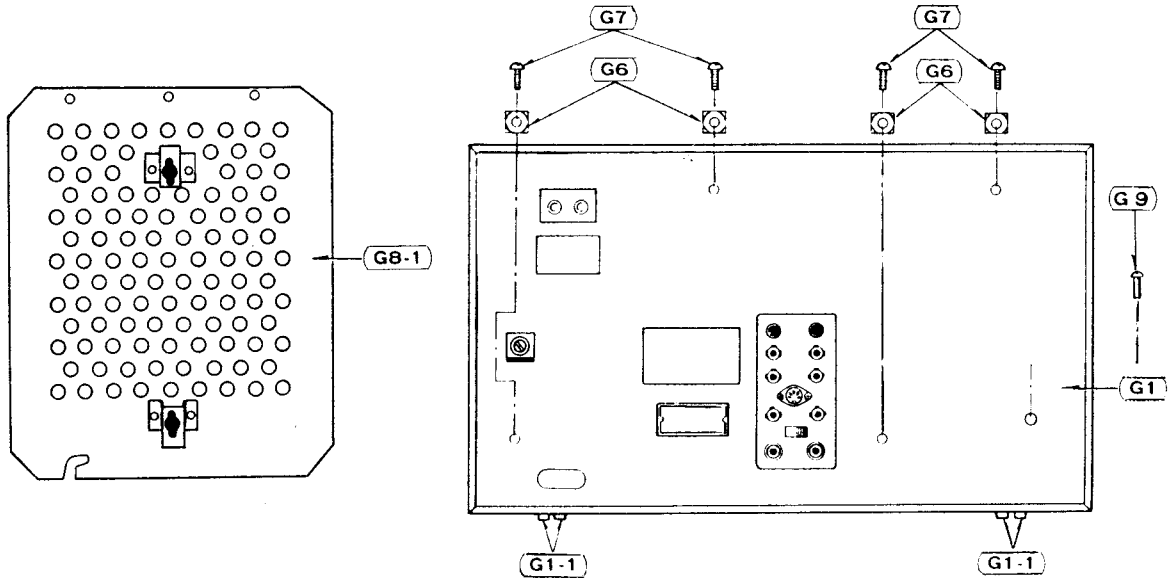
AUTO STOP CIRCUIT BOARD

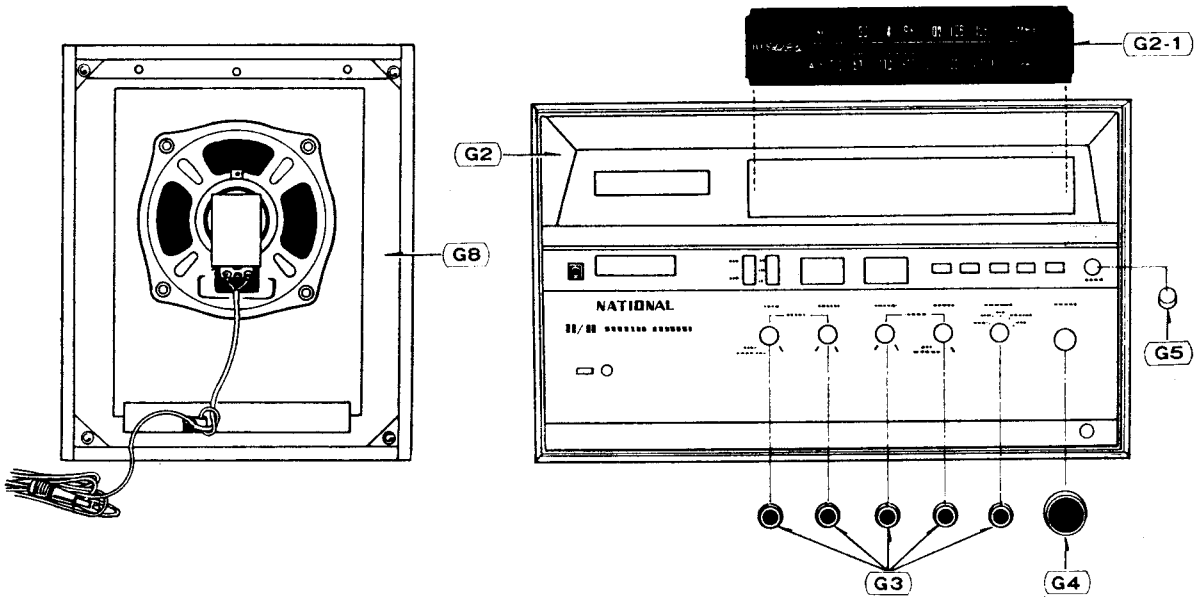


PHONO AMP CIRCUIT BOARD

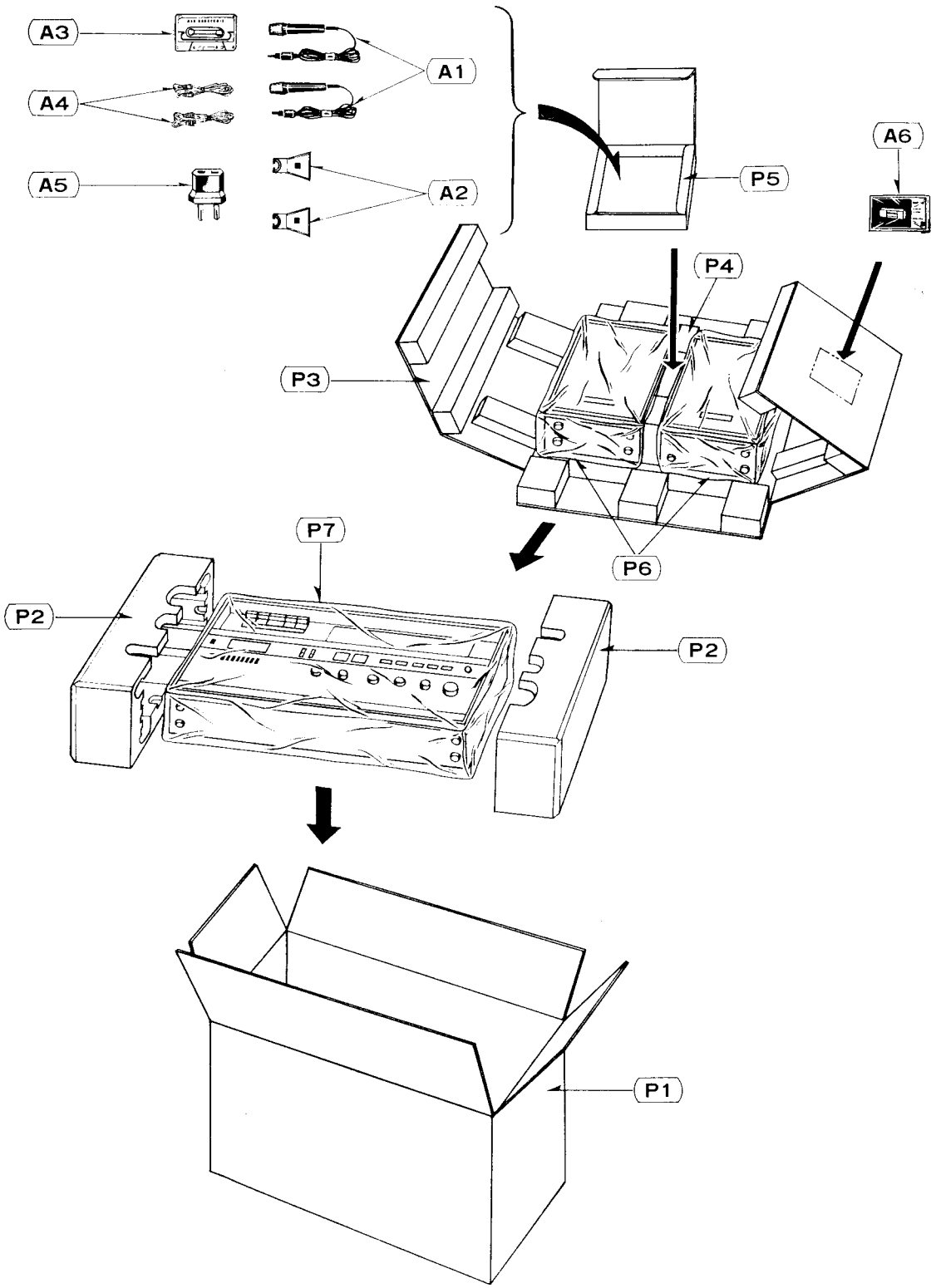


CABINET PARTS





COMPONENT PACKING



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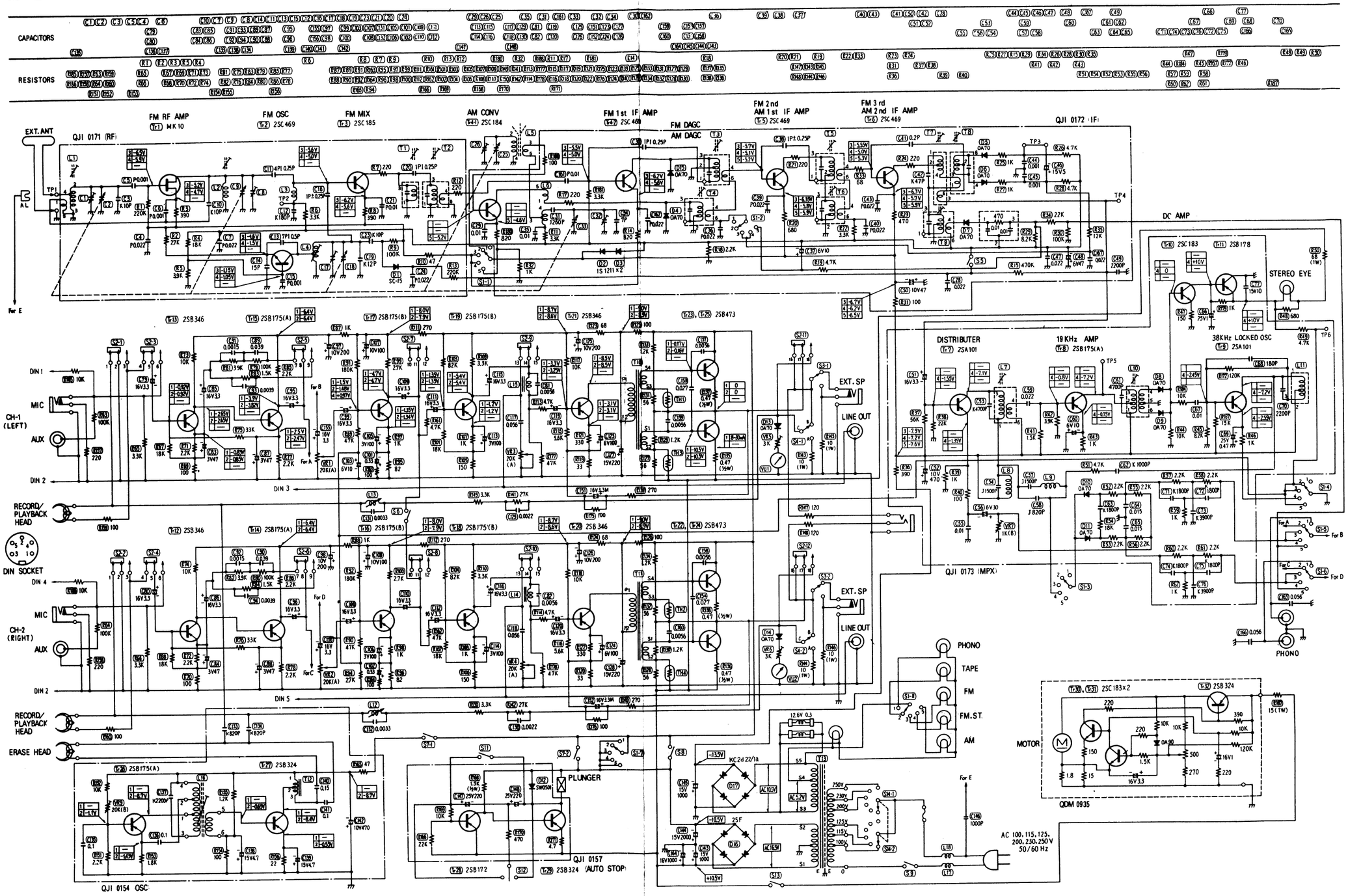
SCHEMATIC DIAGRAM MODEL RS-280S

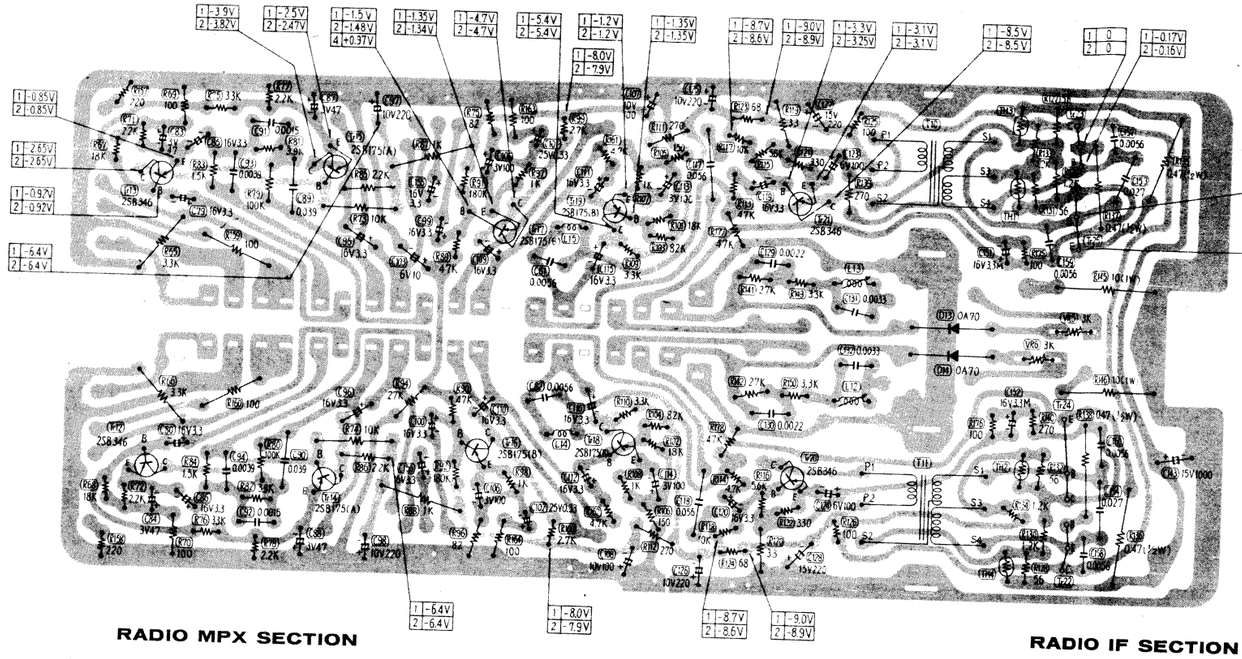


NOTE:

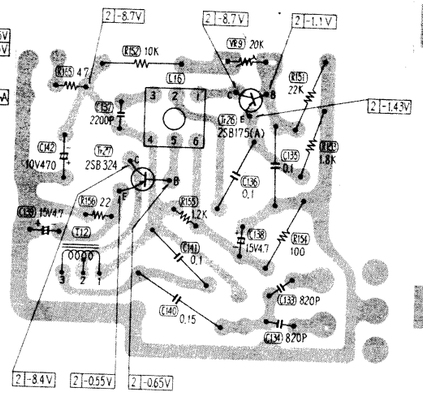
1. S1-1～S1-9..... Selector Switch (Shown in Tape position). 1...PHONO, 2...TAPE, 3...FM, 4...FM STEREO 5...AM.
2. S2-1～S2-12 ... Record/Playback Selector Switch (Shown in Play position).
3. S3-1～S3-2..... Speaker Switch.
4. S4-1～S4-2..... Monitor Switch (Coupled with Tone VR).
5. S5 ..... AFC Switch.
6. S6 ..... Mixing Switch.
7. S7 ..... Oscillation Power Switch (ON in Recording).
8. S8 ..... FF Rewind Switch (OFF in Rewind).
9. S9 ..... Power Switch.
10. S11 ..... Automatic Stop Switch (ON in Stop).
11. S12 ..... Rotation Switch.
12. S13 ..... Motor Power Switch (OFF in Stop).
13. S14 ..... AC Voltage Selector Switch.
14. Resistors are 1/4 watt unless specified otherwise. K=1,000Ω, M=1,000,000Ω.
15. Capacitors are microfarad (μF) unless specified otherwise. P=Micro-microfarads.
16. Symbols put at the head of capacity varews show deviations. P=−20～+80%, M=±20%, K=±10%, J=±5%
17. Values indicated in □ are DC currents between chassis. Numerals show valus of voltage at..... 1...PHONO, TAPE PLAY, 2...TAPE REC, 3...FM, 4...FM STEREO and 5...AM, restectively. When no numeral is given the same voltage is applied at 1～5.

CIRCUITS BOARD

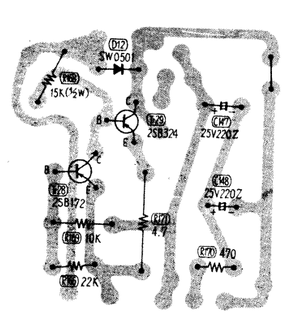
TAPE RECORDER & AUDIO SECTION



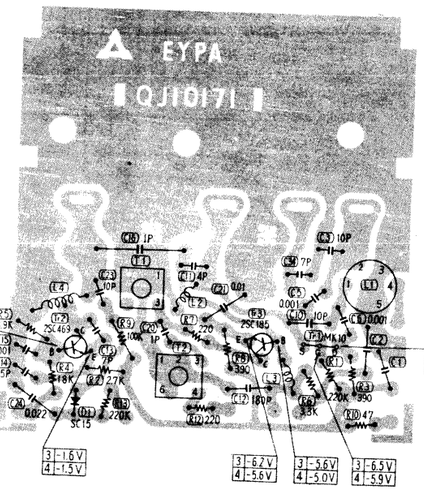
OSCILLATOR SECTION



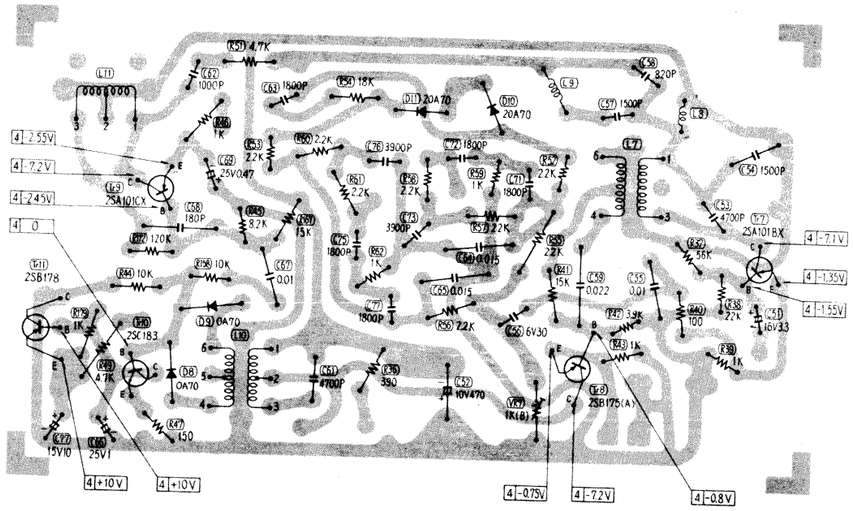
AUTO STOP SECTION



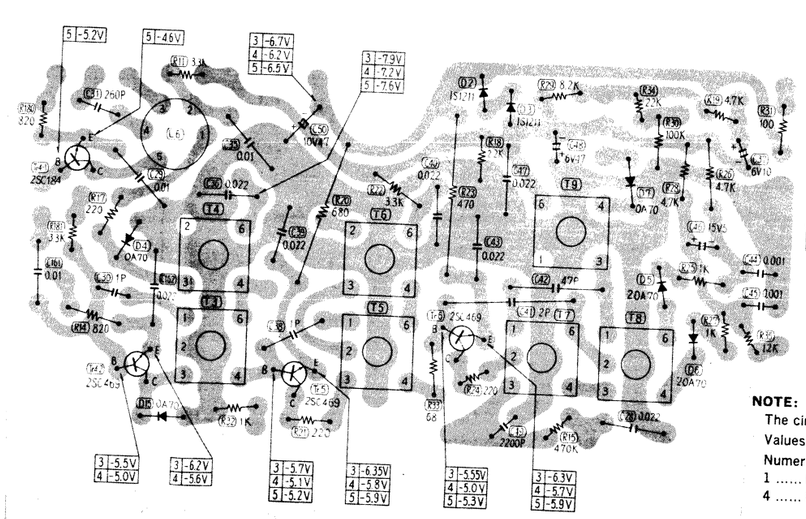
RADIO RF SECTION



RADIO MPX SECTION



RADIO IF SECTION



NOTE:

The circuit shown in red on the conductor side is −B circuit.
Values indicated in ▭ are DC currents between chassis.
Numerals show valus of voltage at .....
1 ..... PHONO, TAPE PLAY, 2 ..... TAPE REC., 3 ..... FM STEREO,
4 ..... FM STEREO, and 5 ..... AM, restectively.