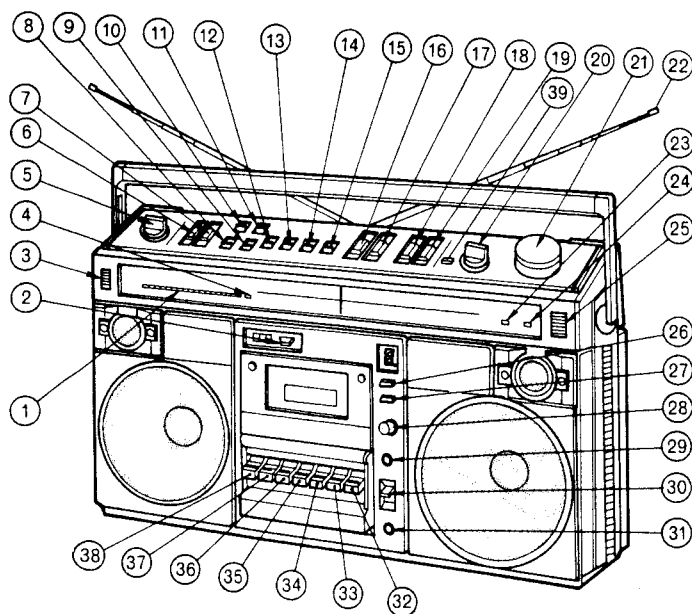




TRK-8190E, E(BS)

SERVICE MANUAL

No. 1328



KEY TO ILLUSTRATIONS

- | | |
|--|-----------------------------------|
| ① LED LEVEL INDICATOR | ②① BAND SELECTOR |
| ② TAPE COUNTER | ②② TUNING CONTROL |
| ③ BUILT-IN MICROPHONE (LEFT) | ②③ TELESCOPIC ANTENNA (AERIAL) |
| ④ DOLBY NR INDICATOR | ②④ FM STEREO INDICATOR |
| ⑤ FUNCTION SELECTOR | ②⑤ OPERATION INDICATOR (For E) |
| ⑥ RECORDING LEVEL CONTROL (LEFT) | ②⑥ AC POWER INDICATOR (For E(BS)) |
| ⑦ RECORDING LEVEL CONTROL (RIGHT) | ②⑦ BUILT-IN MICROPHONE (RIGHT) |
| ⑧ RECORDING MUTE SWITCH | ②⑧ PROGRAM SWITCH |
| ⑨ DOLBY NR SWITCH | ②⑨ PROGRAM RESET SWITCH |
| ⑩ AUTO/MANUAL RECORDING CHANGE-OVER SWITCH | ②⑩ MIXING VOLUME CONTROL |
| ⑪ MODE SWITCH | ②⑪ MIXING SOCKET |
| ⑫ TAPE SELECTOR SWITCH (BIAS) | ②⑫ TIMER STAND BY BUTTON |
| ⑬ TAPE SELECTOR SWITCH (EQUALIZER) | ②⑬ HEADPHONE SOCKET |
| ⑭ LEVEL INDICATOR SELECTOR | ②⑭ PAUSE BUTTON |
| ⑮ RIF/AFC SWITCH | ②⑮ STOP BUTTON |
| ⑯ BASS CONTROL | ②⑯ FAST FORWARD/CUE BUTTON |
| ⑰ TREBLE CONTROL | ②⑰ PLAYBACK BUTTON |
| ⑱ VOLUME CONTROL (LEFT) | ②⑱ REWIND/REVIEW BUTTON |
| ⑲ VOLUME CONTROL (RIGHT) | ③① RECORD BUTTON |
| | ③② EJECT BUTTON |
| | ③③ LOUDNESS SWITCH |

SPECIFICATIONS

GENERAL SECTION

Semi-conductors : IC's: 11
Transistors: 35
Diodes: 28
LED: 18
Varicap: 1
Varistors: 2

Power(Mains) Supply: AC: 220V, 50Hz [For E]
240V, 50Hz [For E (BS)]
DC: 13.5V (IEC R20 x 9)
Car: Use car battery adaptor

Power (Mains)
Consumption: 24W
Dimensions: 540(W) x 304(H) x 166(D) mm
Weight: 7.6 kg (with batteries)
Power output: 8W/CH (Max.), 5W/CH (THD 10%)
Speaker: 16 cm, 3.2 ohms x 2
5 cm, 4 ohms x 2

TUNER SECTION

Circuit System: FM/SW/MW/LW 4-band superheterodyne

Tuning Range: FM: 87.5 to 108 MHz
SW: 6.0 to 18 MHz
MW: 530 to 1605 kHz
LW: 150 to 350 kHz

Sensitivity: FM: 10 dB (pra.) 2dB (max.)
SW: 25 dB (pra.) 20 dB (max.)
MW: 42 dB (pra.) 30 dB (max.)
LW: 52 dB (pra.) 40 dB (max.)

Intermediate

Frequency:

FM: 10.7 MHz

SW/MW/LW: 468 kHz

Antennas (Aerials):

FM/SW: Telescopic antenna or
External antenna
MW/LW: Ferrite-core antenna

TAPE RECORDER

Tape: Cassette tape (C-30, 60, 90)

Tape Speed: 4.75 cm/s

Recording System: AC bias, 57 kHz

Erasing System: AC erasing

Frequency Response: Normal: 50 ~ 12,000 Hz
CrO₂: 50 ~ 14,000 Hz

S/N (Signal to Noise Ratio): 50 dB (Dolby NR OFF)
60 dB (Dolby NR ON)

Cross Talk: 50 dB

Erase Ratio: 65 dB

Input Sensitivity and Impedance: Microphone: 0.4 mV, 500 ohms
Phone: 3 mV, 50 Kohms
Record/Playback(DIN): 6mV, 12 Kohms

Output Level and Impedance: Record/Playback(DIN): 775 mV, 5 Kohms
Ext. speaker: 3.2 ohms

Fast Forward or Rewinding Time: 110 sec (Using C-60)

Distortion: 1.5 %

Motor: DC micromotor

CASSETTE TAPE RECORDER WITH FM/SW/MW/LW RADIO

TRK-8190E, E(BS)

SAFETY PRECAUTION

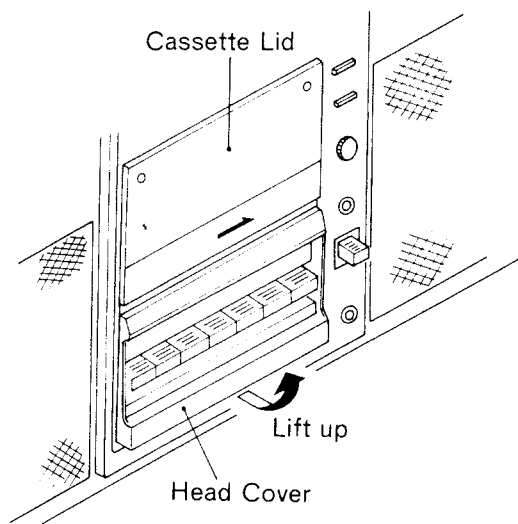
The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makes. Critical parts are marked with Δ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

DISASSEMBLY

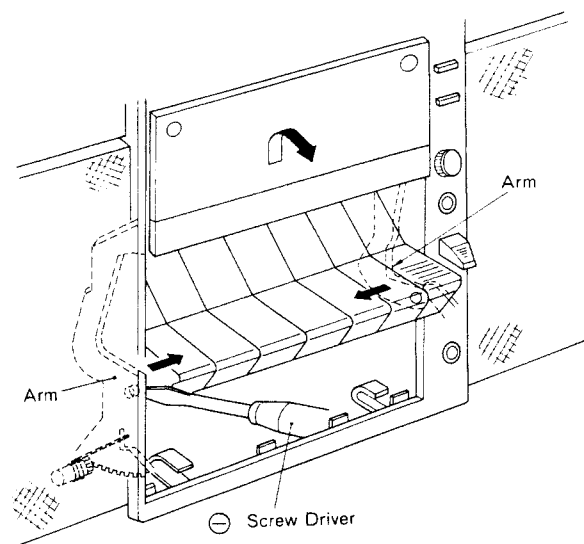
1. Head Cover

Lift up the head cover in the direction of arrow.

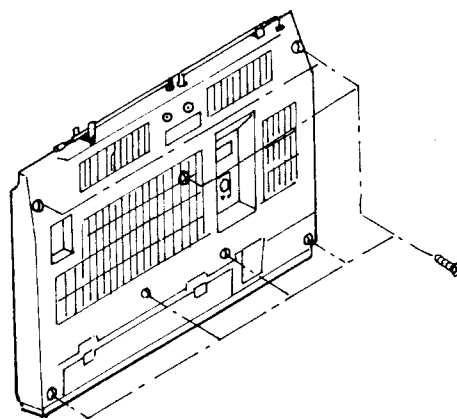


2. Cassette Lid

Press the eject button to release the engagement of the mechanism and cassette lid. Then push the both arms of cassette lid in the direction of arrow.



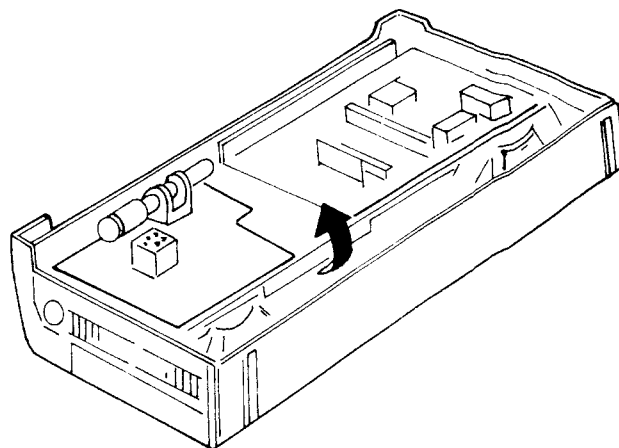
3. Rear Case



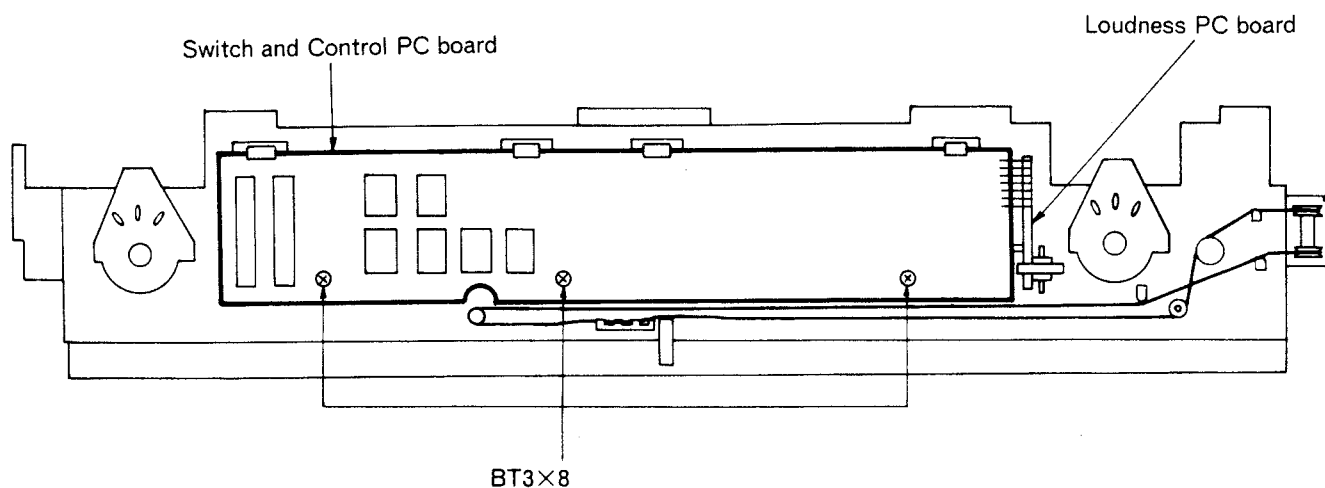
4. Main Chassis

Remove nine knobs (Function, Record level, Bass, Treble, Volume, Band, Tuning).

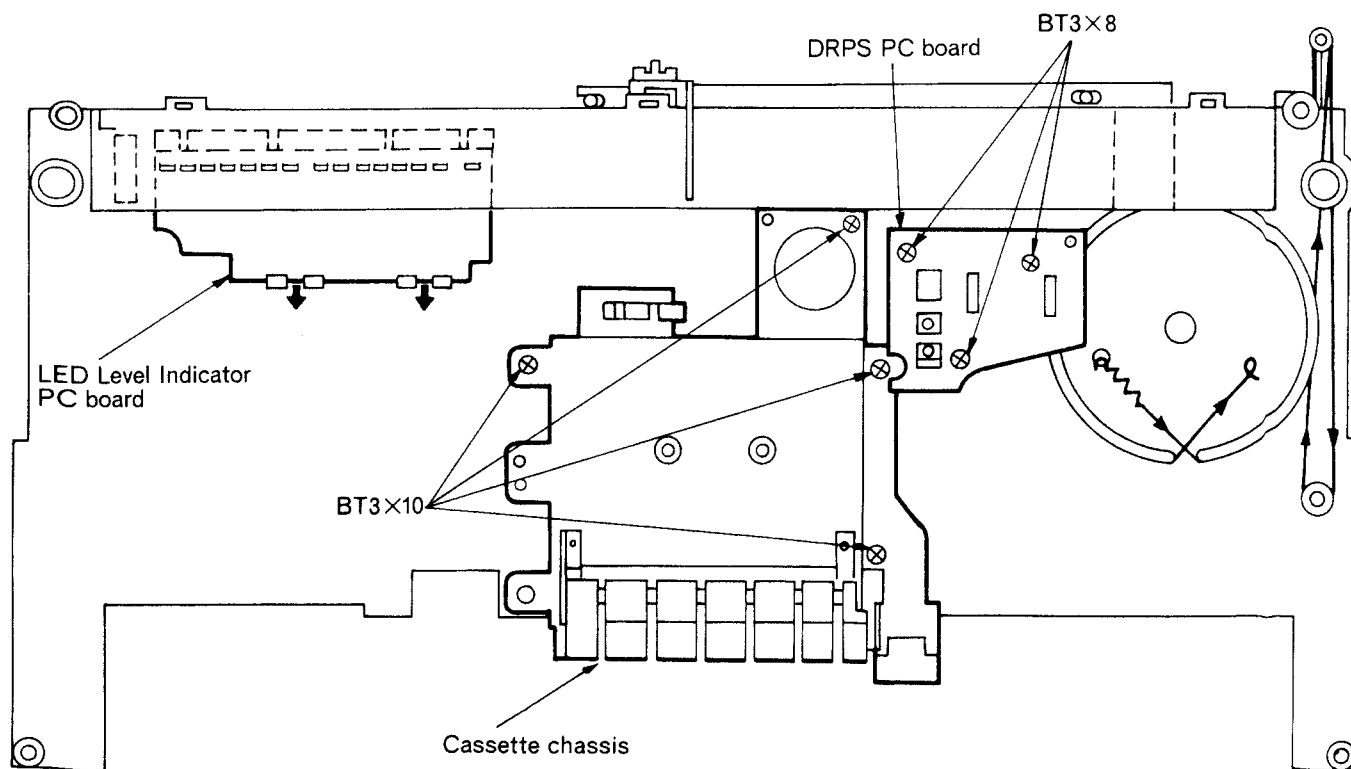
Press the eject button to release the engagement of the mechanism and cassette lid. Then lift up the battery side of the main chassis.



5. Switch and Control PC Board, Loudness PC Board

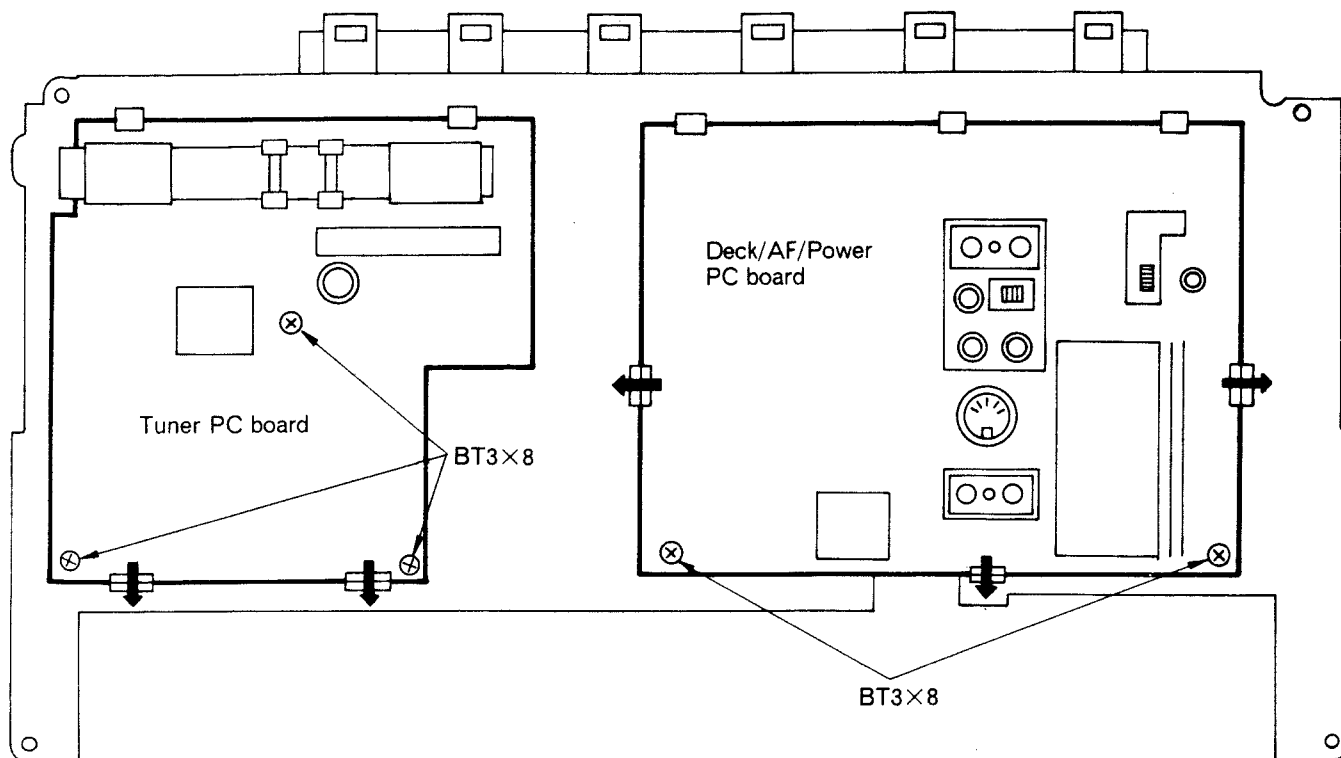


6. Cassette Chassis, LED Level Indicator PC Board, DRPS PC Board

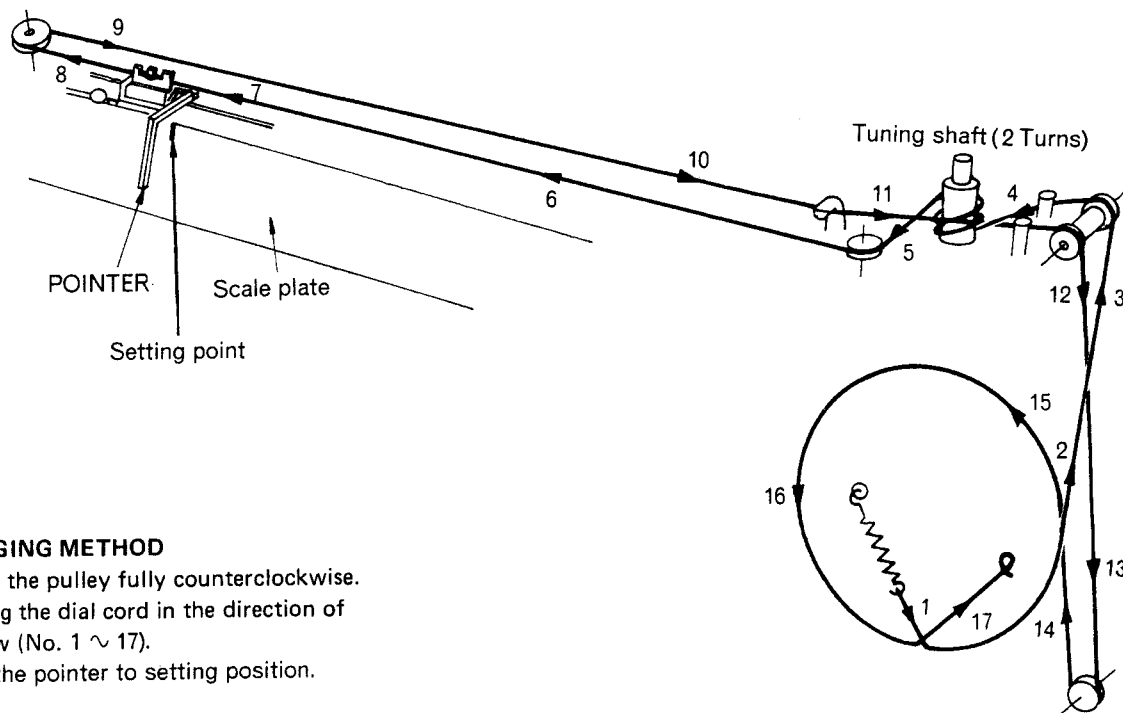


TRK-8190E, E(BS)

7. Tuner PC Board, Deck/AF/Power PC Board



DIAL CORD STRINGING



STRINGING METHOD

1. Turn the pulley fully counterclockwise.
2. String the dial cord in the direction of arrow (No. 1 ~ 17).
3. Set the pointer to setting position.

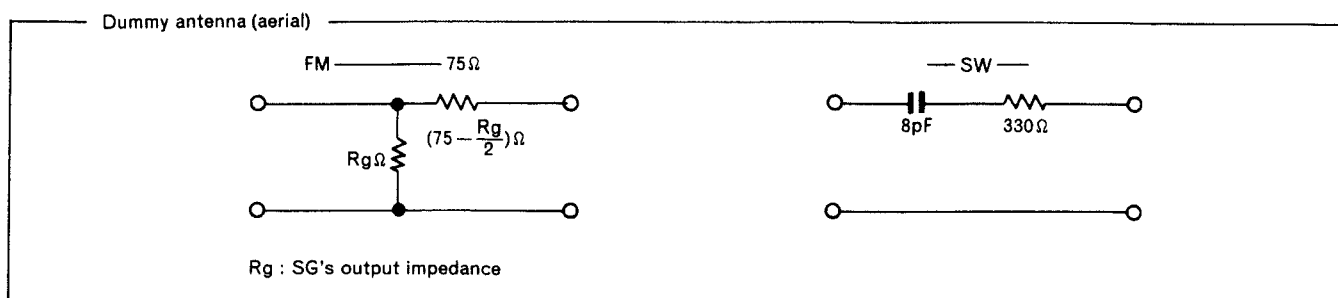
LUBRICATION

Lubricate one or two drops of machine oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed below once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication	Oil or grease
Motor shaft bearing	Oil
Capstan shaft bearing	
Pressure roller bearing	

ADJUSTMENT

TUNER SECTION

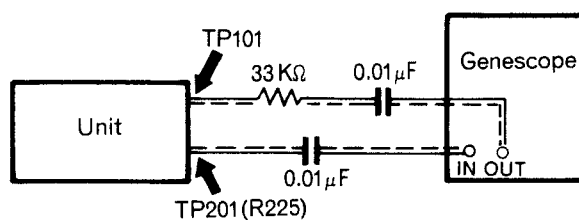


1. FM IF adjustment

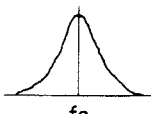
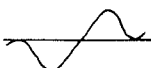
Setting:

- Function selector: Radio
- Mode switch: Mono
- Band selector: FM

Connection:

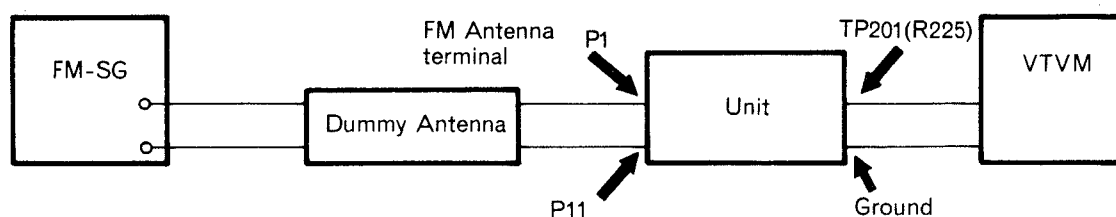


Adjustment:

Genescope	Dial pointer position	Adjust	Reading	Remarks
10.7 MHz	Highest	T202	—	Turn T202 fully counterclockwise.
		T101 T201	Maximum  fc	1) fc: Specified center frequency of the ceramic filter. 2) Reduce the level of the genescope to make one waveform.
		T202		Adjust T202 for a symmetrical sinewave (S curve) output.

TRK-8190E, E(BS)**2. FM RF (Covering & Tracking) adjustment****Setting:**

- Function selector: Radio
- Mode switch: Mono
- Band selector: FM

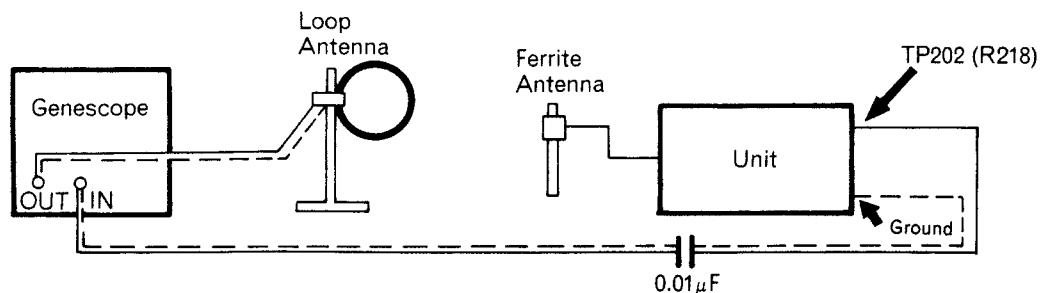
Connection:**Adjustment:**

Item		Signal generator		Dial pointer position	Adjust	Reading	Remarks
		Frequency	Modulation				
1	Covering	87.25 MHz (87.5 MHz*)	400 Hz 30%	Lowest	L103	Max.	
2		109 MHz		Highest	CT102		
3	Repeat 1 and 2.						
4	Tracking	90 MHz	400 Hz 30%	90 MHz	L101	Max.	
5		106 MHz		106MHz	CT101		
6	Repeat 4 and 5.						

* For West Germany

3. AM IF adjustment**Setting:**

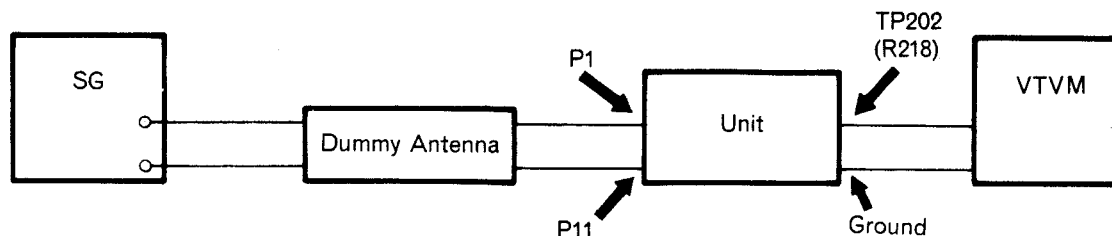
- Function selector: Radio
- Band selector: MW

Connection:**Adjustment:**

Genescope		Dial pointer position	Adjust	Reading	Remarks
Frequency	Modulation				
468 kHz	—	Highest	T151, T204	Max.	—

4. SW RF (Covering & Tracking) adjustment**Setting:**

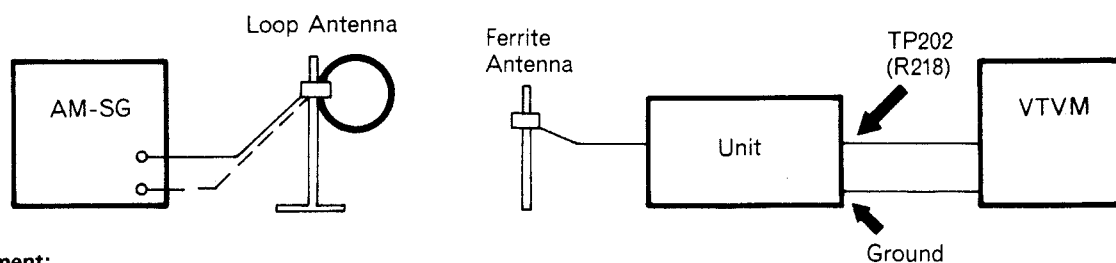
- Function selector: Radio
- Band selector: SW

Connection:**Adjustment:**

Item		Signal generator		Dial pointer position	Adjust	Reading	Remarks
		Frequency	Modulation				
1	Covering	5.8 MHz	400 Hz 30%	Lowest	L154	Max.	_____
2		18.5 MHz		Highest	CT154		
3	Repeat 1 and 2.						
4	Tracking	6.5 MHz	400 Hz 30%	6.5 MHz	L151	Max.	
5		16 MHz		16 MHz	CT151		
6	Repeat 4 and 5.						

5. MW/LW RF (Covering & Tracking) adjustment**Setting:**

- Function selector: Radio
- Band selector: MW or LW

Connection:**Adjustment:****1) MW**

Item		Signal generator		Dial pointer position	Adjust	Reading	Remarks
		Frequency	Modulation				
1	Covering	515 kHz	400 Hz 30%	Lowest	L155	Max.	—
2		1650 kHz		Highest	CT155		
3	Repeat 1 and 2.						
4	Tracking	600 kHz	400 Hz 30%	600 kHz	L152	Max.	
5		1400 kHz		1400 kHz	CT152		
6	Repeat 4 and 5.						

TRK-8190E, E(BS)

2) LW

Item		Signal generator		Dial pointer position	Adjust	Reading	Remarks
		Frequency	Modulation				
1	Covering	145 kHz	400 Hz 30%	Lowest	L156	Max.	
2		360 kHz		Highest	CT156		
3	Repeat 1 and 2.						
4	Tracking	160 kHz	400 Hz 30%	160 kHz	L153	Max.	
5		330 kHz		330 kHz	CT153		
6	Repeat 4 and 5.						

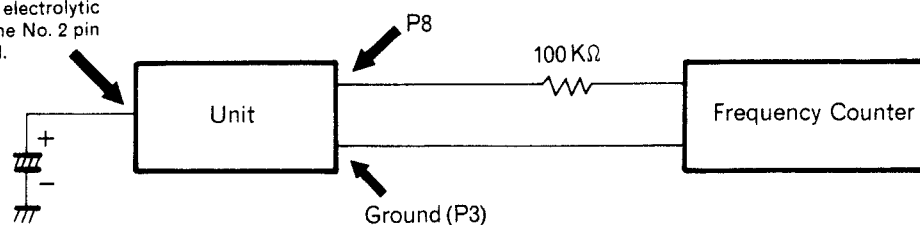
6. FM MPX (Multiplex) adjustment

Setting:

- Function selector: Radio
- Band selector: FM
- Mode switch: Stereo

Connection:

Connect a 10 μ F 25V electrolytic capacitor between the No. 2 pin of IC301 and ground.



Adjustment:

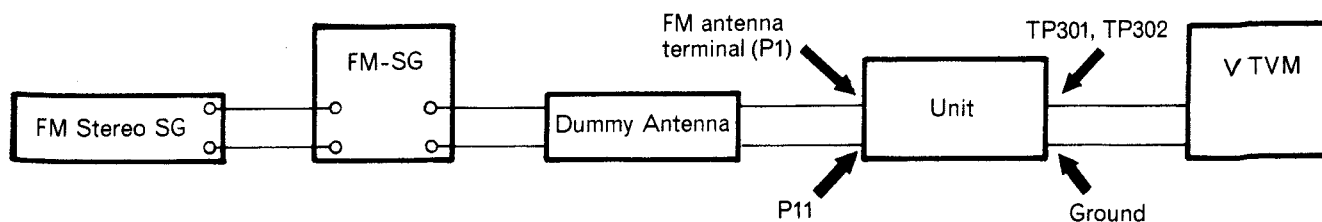
Adjust	Reading	Remarks
RT302	19 kHz $\pm$ 100 Hz	—

7. FM separation adjustment

Setting:

- Function selector: Radio
- Band selector: FM
- Mode switch: Stereo

Connection:



Adjustment:

Signal generator		Dial pointer position	Adjust	Reading	Remarks
Frequency	Modulation				
98 MHz 60 dB	L + R (1kHz): 180mV, 30% mod. Pilot (19kHz): 20mV, 10% mod.	98 MHz	RT301	Min.	1) After feeding in of R channel and pilot signals, adjust RT301 for a minimum L channel output. 2) Optimize RT301 so that the leak level of the L channel signal is equal to that of the R channel signal.

8. FM tuning level adjustment

Connect the VTVM to test point TP203. Supply the sweep signal to FM antenna terminal and adjust T203 so that the output is maximum.

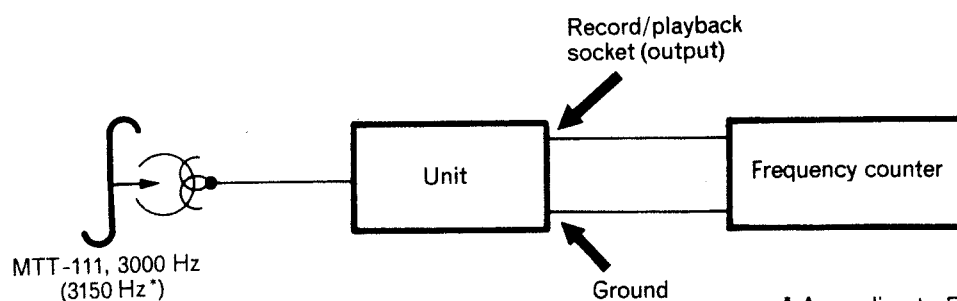
TAPE RECORDER SECTION

The following adjustments shall be performed in the sequence stated after the heads, the pressure roller and the capstan shaft were cleaned with a cleaning stick moistened in alcohol.

1. Tape speed adjustment (motor speed)

Setting : Playback mode

Connections :



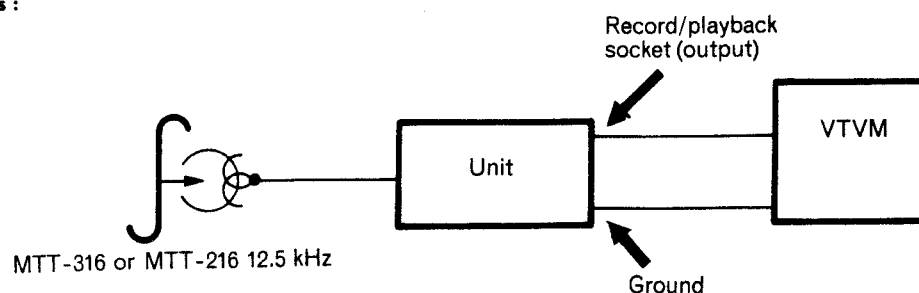
* According to DIN 45 500.

Adjustment : Warm-up the unit for approx. 20 minutes. Then playback the Test Tape MTT-111, 3000 Hz (3150 Hz*) and measure the speed deviation with the frequency counter. If required, adjust the semi-variable resistor in the motor until the frequency counter shows $3000 \text{ Hz } \begin{smallmatrix} +90 \\ -10 \end{smallmatrix}$ Hz (3150 Hz*). The measurement shall be performed at the middle of the tape.

2. Head azimuth adjustment

Setting : Playback mode

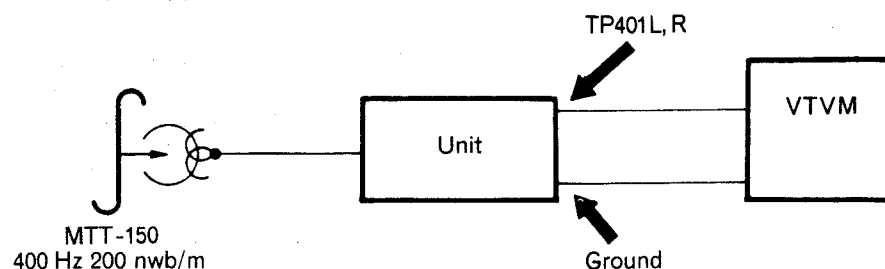
Connections :



Adjustment : Playback the Test Tape (MTT-316 or MTT-216, 12.5 kHz) and adjust the azimuth adjusting screw until maximum output is obtained.

TRK-8190E, E(BS)**3. Playback gain and level indicator adjustment****Setting :** Playback mode

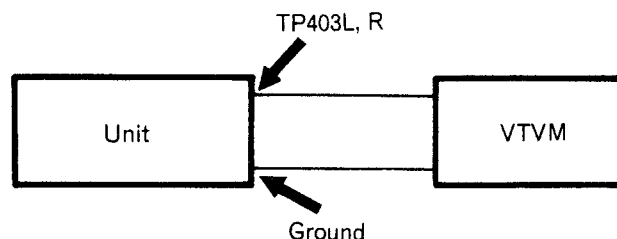
- Tape selector (EQ) : Normal

Connection :

Adjustment : Playback the Dolby Calibration Tape (MTT-150, 400 Hz 200 nwb/m) and adjust RT402 L/R so that the voltage at the test points TP401 L/R is 0.775V (0 dBm). Then adjust RT404 L/R so that the Level Indicator Lamp (0 dB) lights up.

4. Adjustment of bias leakage**Setting :** Recording mode

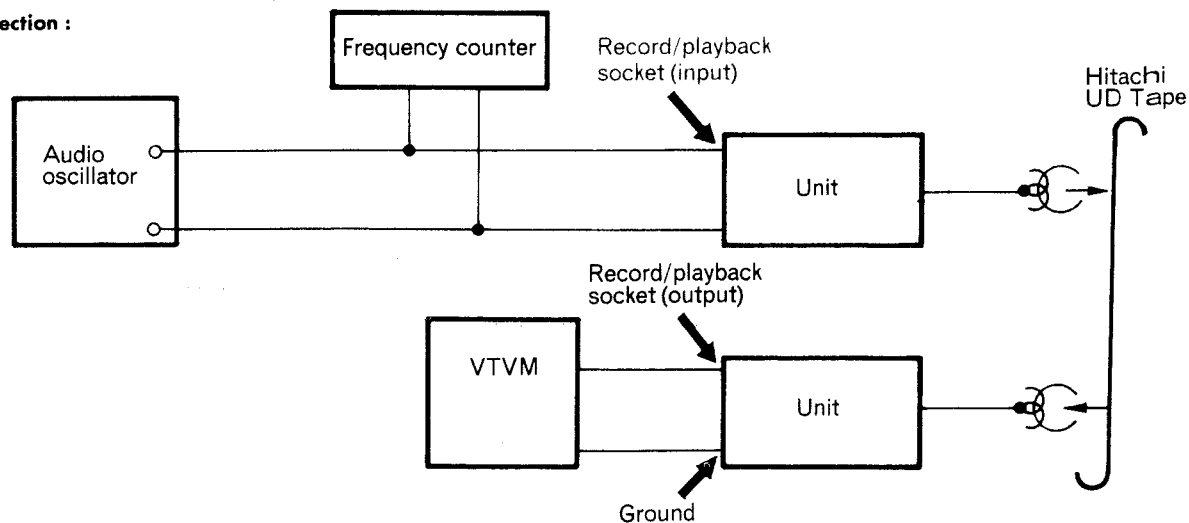
- Tape selector (Bias) : CrO₂

Connection :

Adjustment : Set the unit to the recording mode. Adjust L401L, R so that outputs at test points TP403L, R are minimum.

5. Adjustment of bias current**Setting :** Recording mode

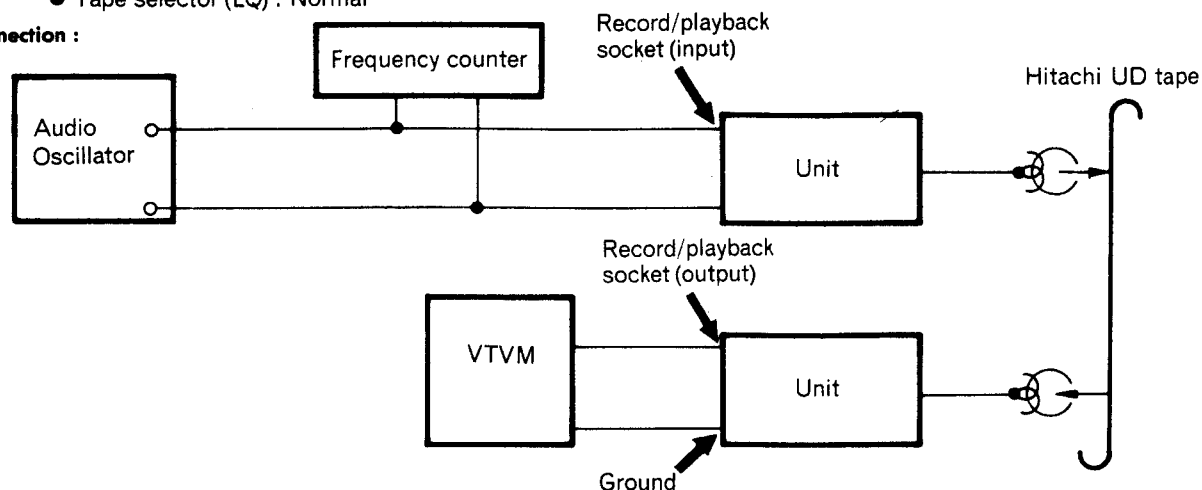
- Tape selector (Bias) : Normal
- Tape selector (EQ) : Normal
- RT403L/R : Center position

Connection :**Adjustment :**

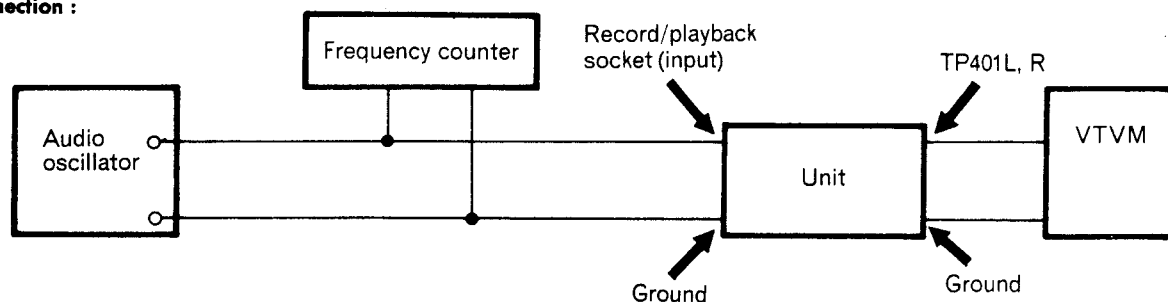
- 1) Adjust RT401L/R to center position.
- 2) Next, turn L402L/R fully clockwise.
- 3) Record a 1 kHz and a 12.5 kHz signal with a level of 0 dB -20 dB (at test point TP401L/R) on Hitachi UD tape. Then playback this tape and adjust RT401L/R so that the output difference is within ± 2 dB.

6. Recording/playback output adjustment**Setting :** Recording/playback mode

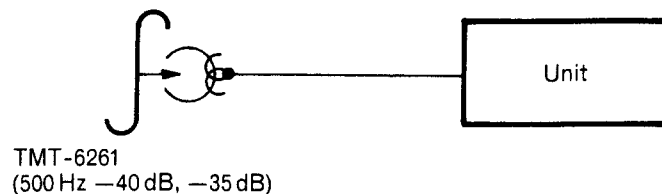
- Tape selector (Bias) : Normal
- Tape selector (EQ) : Normal

Connection :

Adjustment : Record a 400 Hz signal (0 dB) on Hitachi UD tape. Then playback this tape and adjust RT403L/R so that the playback output is $0 \text{ dB} \pm 1 \text{ dB}$.

7. Dolby NR check**Setting :** Recording mode**Connection :****Adjustment :**

Set the unit to the recording mode. Supply a 5 kHz signal to the Record/playback socket (input) to obtain the level of $-30.4 \text{ dBm} \pm 0.1 \text{ dB}$ at test points TP401L, R. Confirm that the level is boosted by $8 \pm 0.2 \text{ dB}$ when the Dolby NR switch is set to ON.

8. Adjustment of the DRPS operation level**Setting :** Playback mode**Connection :****Adjustment :**

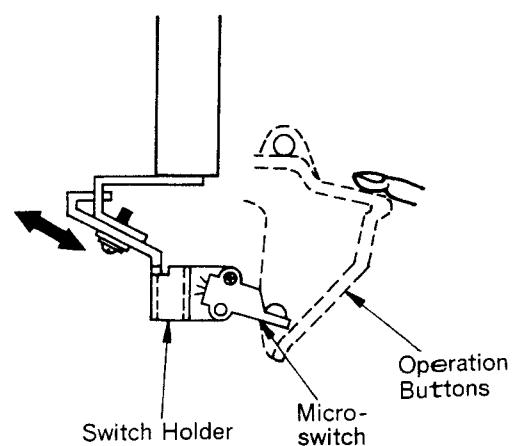
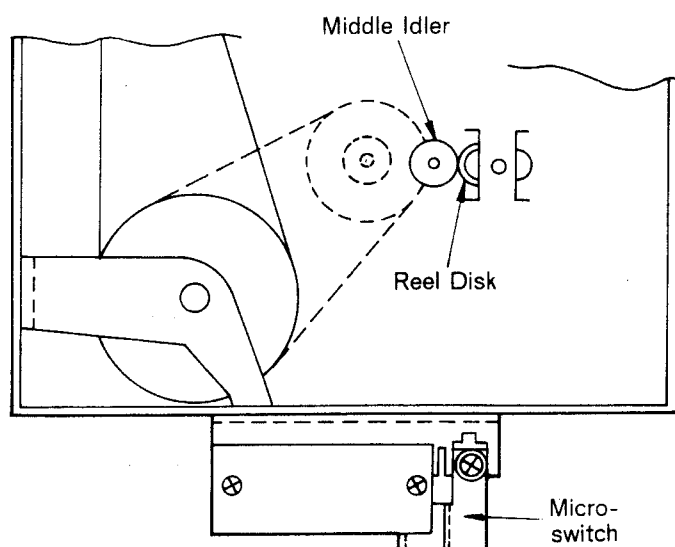
Load the test tape TMT-6261 (500 Hz -40 dB , -35 dB) and set the unit to the DRPS mode from the playback mode. Adjust RT701 so that the number displayed by the program indicator decreases by one when the level of the test tape changes from -35 dB to -40 dB .

TRK-8190E, E(BS)**INSPECTION**

Mode	Item	Pressure or Torque
Playback	Pressure of pressure roller	350g ~ 500g
	Take-up torque	35g-cm ~ 50g-cm
	Supply reel back tension	3.0g-cm ~ 5g-cm
Rewind	Rewind torque	85g-cm ~ 120g-cm
Fast Forward	Fast Forward torque	85g-cm ~ 120g-cm

Microswitch Timing Adjustment

Move the switch holder in the direction of the arrow (↔) and adjust so that the microswitch is turned ON when the middle idler is pressed against the reel disk during rewind (review) operation.



LED701

IC701

IC702

S16

S17

RT701

DRPS sensitivity

The diagram illustrates the internal layout of a cassette deck, showing the following components and their connections:

- Level Indicator:** Connected to **RT404L** and **RT404R**.
- L404R** and **L404L** are inductors connected to the **IC403** integrated circuit.
- TP401R** and **TP401L** are test points connected to **IC403**.
- IC401R** and **IC401L** are integrated circuits.
- RT403R** and **RT403L** are resistors connected to the **IC403** and **IC401** components.
- L402R** and **L402L** are inductors connected to the **IC401** components.
- TP402R** and **TP402L** are test points connected to the **IC401** components.
- L401R** and **L401L** are inductors connected to the **IC401** components.
- IC501** is an integrated circuit connected to the **IC401** components.
- S1** and **S2** are switches connected to the **IC401** components.
- RT401L** and **RT401R** are resistors connected to the **IC401** components.
- RT402L** and **RT402R** are resistors connected to the **IC401** components.
- IC402** is an integrated circuit connected to the **IC401** components.
- J1 EXT. MIC.** is a connector for an external microphone.
- J4 EXT. SPEAKER** is a connector for an external speaker.
- J7 DIN** is a connector for a DIN interface.
- S8** is a switch.
- S3** is a switch.
- Recording/playback output:** Connected to **RT403L** and **L401R**.
- Bias leakage:** Connected to **TP402R** and **TP402L**.
- Bias current:** Connected to **RT401L** and **RT401R**.
- Play back gain:** Connected to **RT402L** and **RT402R**.

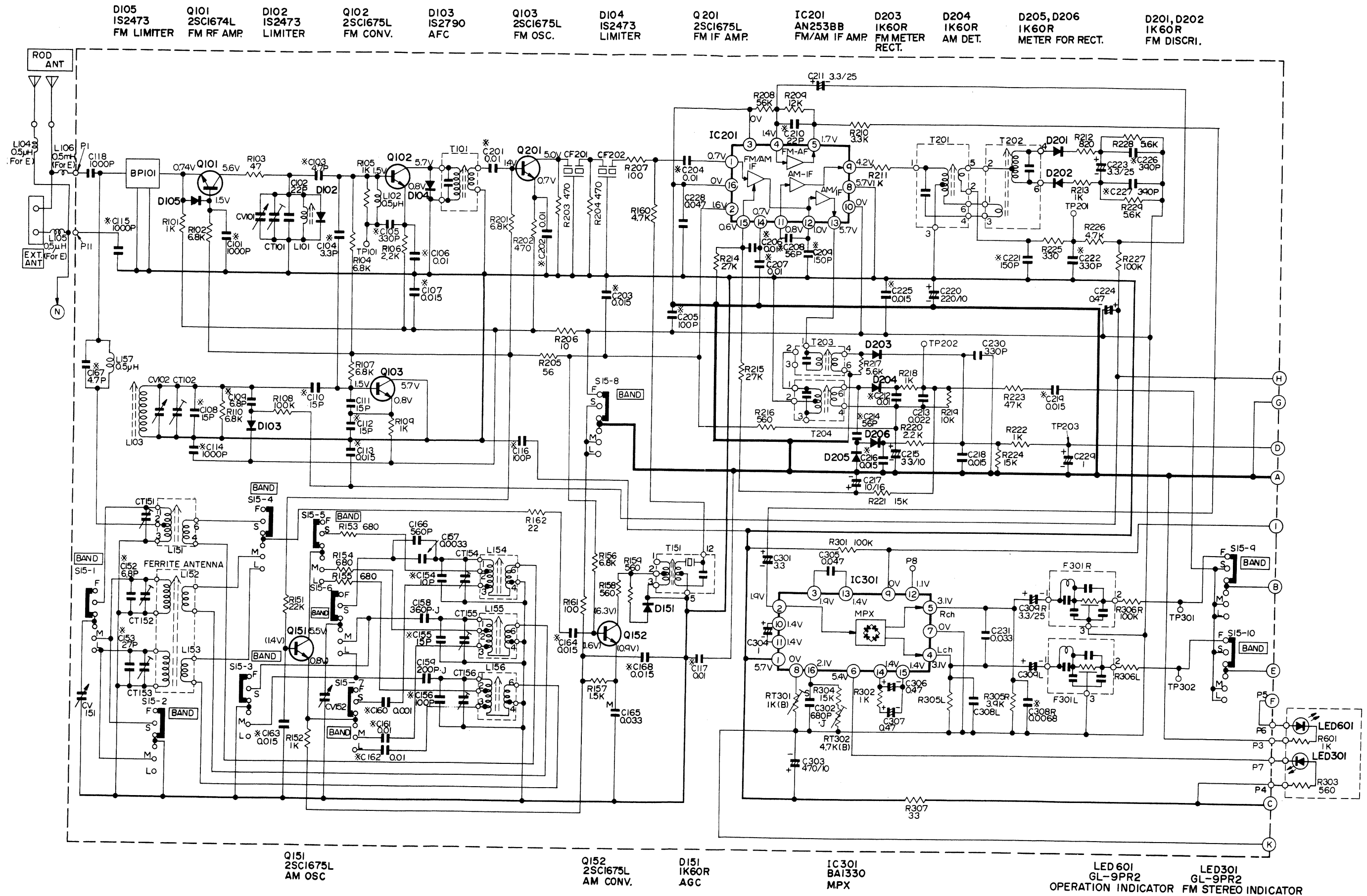
The block diagram illustrates the internal components and signal flow of a radio receiver. Key functional blocks include:

- Input/Output Stages:** LW-RF (Tracking), MW-RF (Tracking), SW-RF (Tracking), FM-RF (Tracking), and FM-RF (Covering) for reception; and LW-RF (Covering), MW-RF (Covering), SW-RF (Covering), and FM-RF (Covering) for transmission.
- Intermediate Frequency (IF) and Tuning:** FM-Tuning Level, AM-IF, FM-IF, and FM-Multiplex blocks.
- Control and Monitoring:** P1, P3, P8, P11, P15, and P16 pins for external control or monitoring.
- Power and Biasing:** R105, R218, R225, R306R, and R306L resistors; and TP101, TP201, TP202, TP301, and TP302 test points.
- Other Components:** IC201 (AN253), IC301, and various capacitors (C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258, C259, C260, C261, C262, C263, C264, C265, C266, C267, C268, C269, C270, C271, C272, C273, C274, C275, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C960, C961, C962, C963, C964, C965

[illegible]

TRK-8190E, E(BS)

SCHEMATIC DIAGRAM (TUNER SECTION)



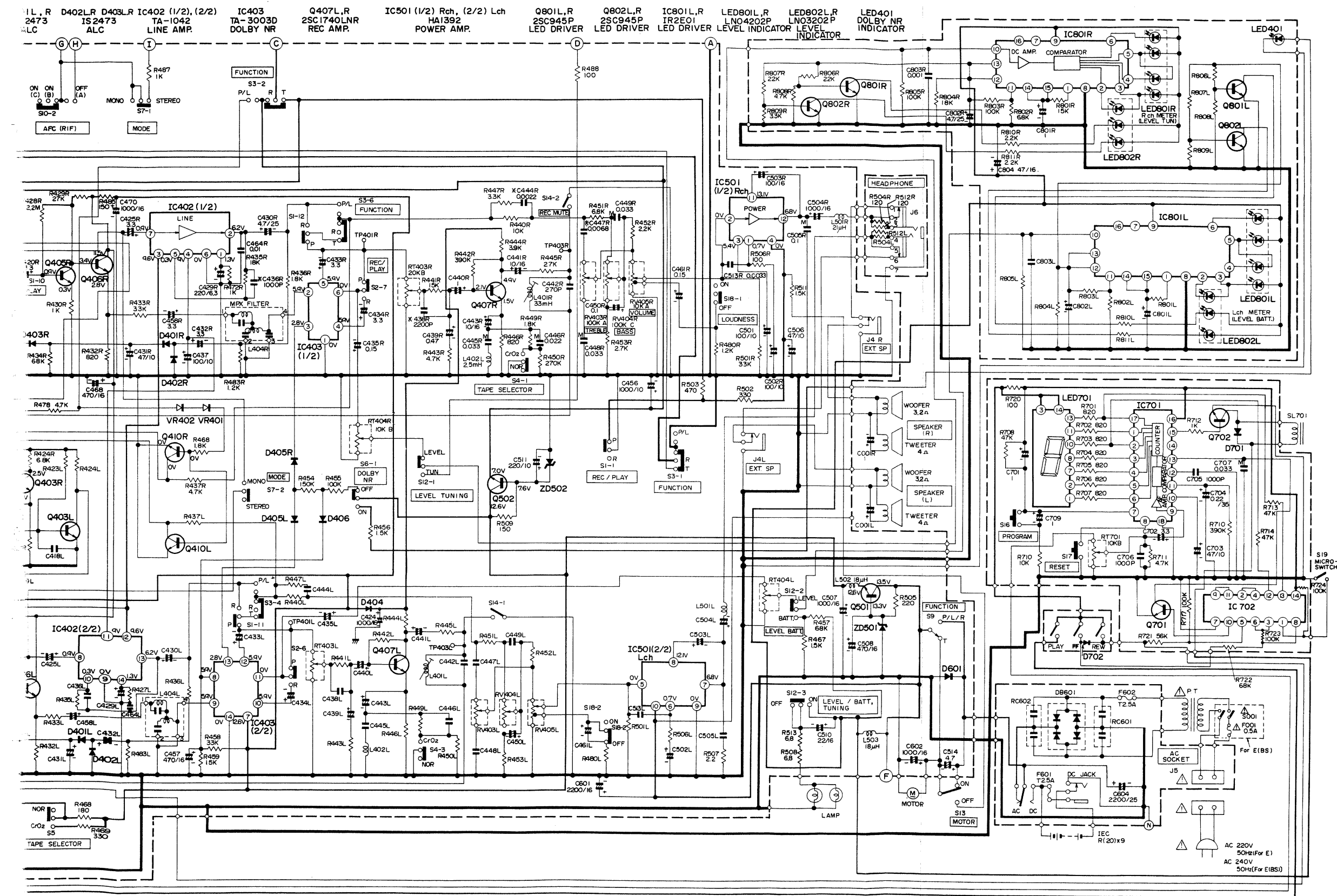
Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors.

Circuit No.	
Value	No indicated Ω (Ohm) M: 1000k Ω
Tolerance	No indicated $\pm 5\%$ K: $\pm 10\%$ M: $\pm 20\%$
Wattage	No indicated $\frac{1}{4}W$
Sort	No indicated Carbon film RC: Composition RW: Wire wound RN: Oxide metal film RN: Fixed metal film

Circuit No.	
Value	No indicated μF P: PF
Tolerance	No indicated $\pm 10\%$ J: $\pm 5\%$ M: $\pm 20\%$ Z: $\pm 80\%$ D: $\pm 0.5pF$ C: $\pm 0.25pF$
Sort	Ceramic Electrolitic Mylar Polyester Styrol
Voltage	No indicated 50WV

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with *, use specified ones stated on parts list since required temperature characteristics.

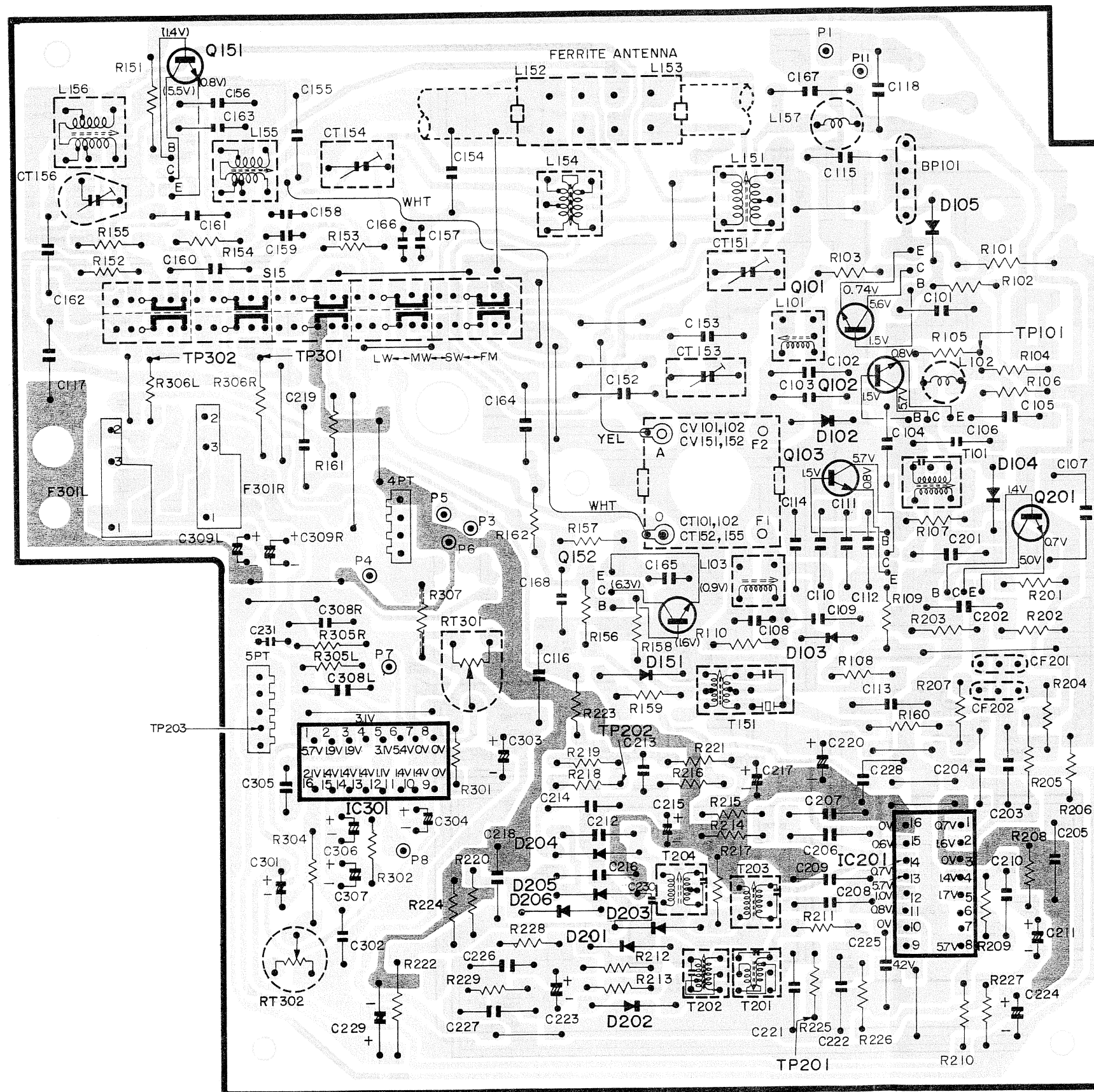


J3L,R 740LNR NG AMP. VR401,VR402 MV-12 MUTING Q410L,R 2SC1740 MUTING D405L,R IS2473 SWITCHING D406 IS2473 SWITCHING D404 IS2473 SWITCHING VOLT. STAB. Q502 2SC1162 VOLT. STAB. ZD502 HZ7C VOLT. STAB. Q501 2SC1162 VOLT. STAB. ZD501 HZ12C VOLT. STAB. D601 VO-3C PROTECTOR LED701 LA4010A INDICATOR IC701 HA12024 UP/DOWN COUNTER DECODER DRIVER Q701 2SC945P SWITCHING Q702 2SC1741R SWITCHING D701 1K60R PROTECTOR IC702 μ PD4011 NAND GATE D702 1K34A BACK CURRENT PROTECTOR

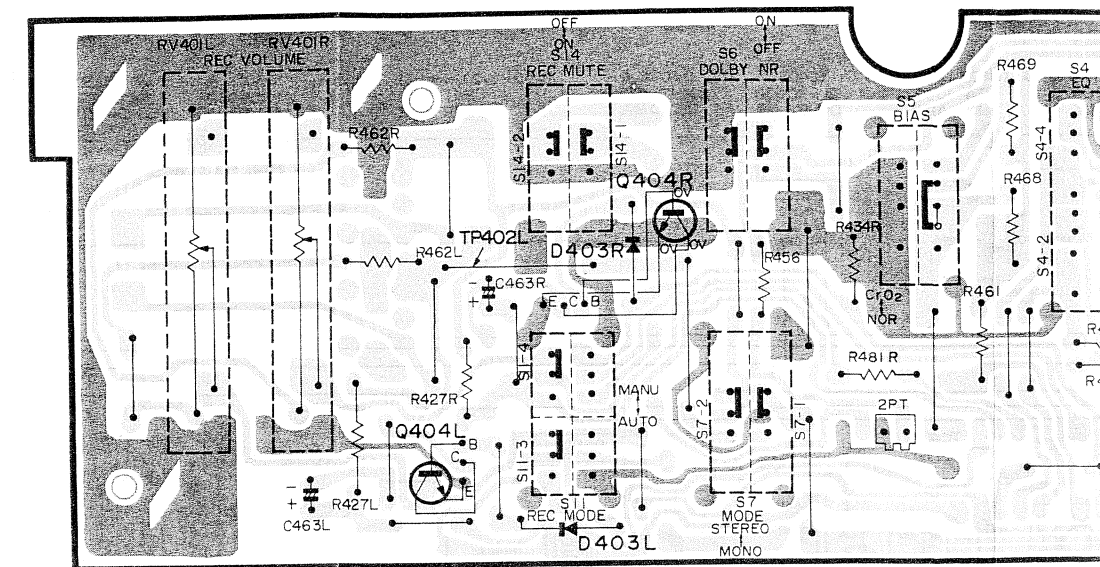
TRK-8190E, E(BS)

TRK-8190E, E(BS) TRK.

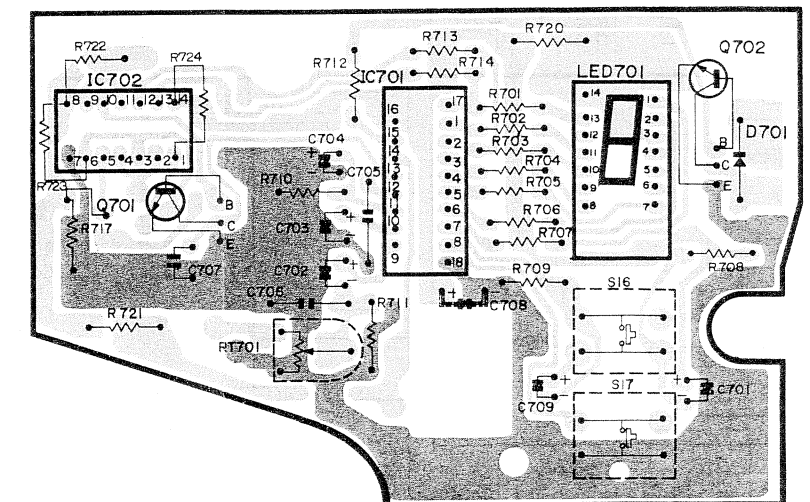
CIRCUIT BOARD DIAGRAM



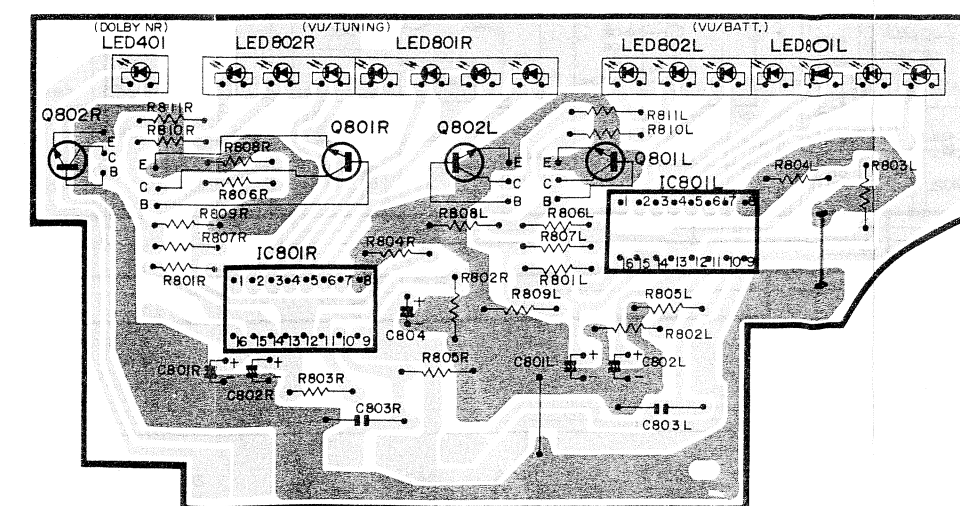
TUNER



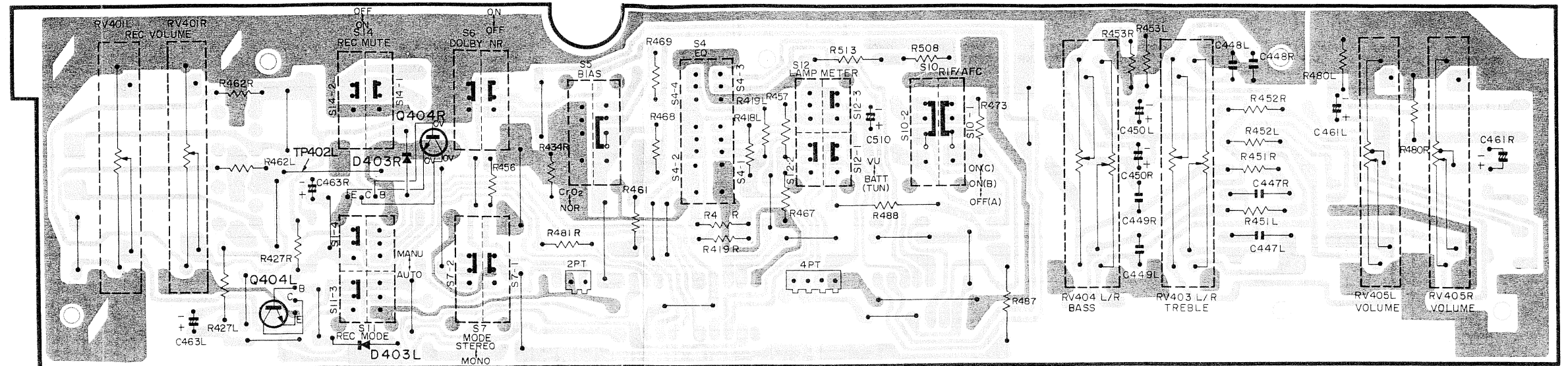
SWITCH/CONTROL



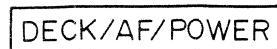
DRPS

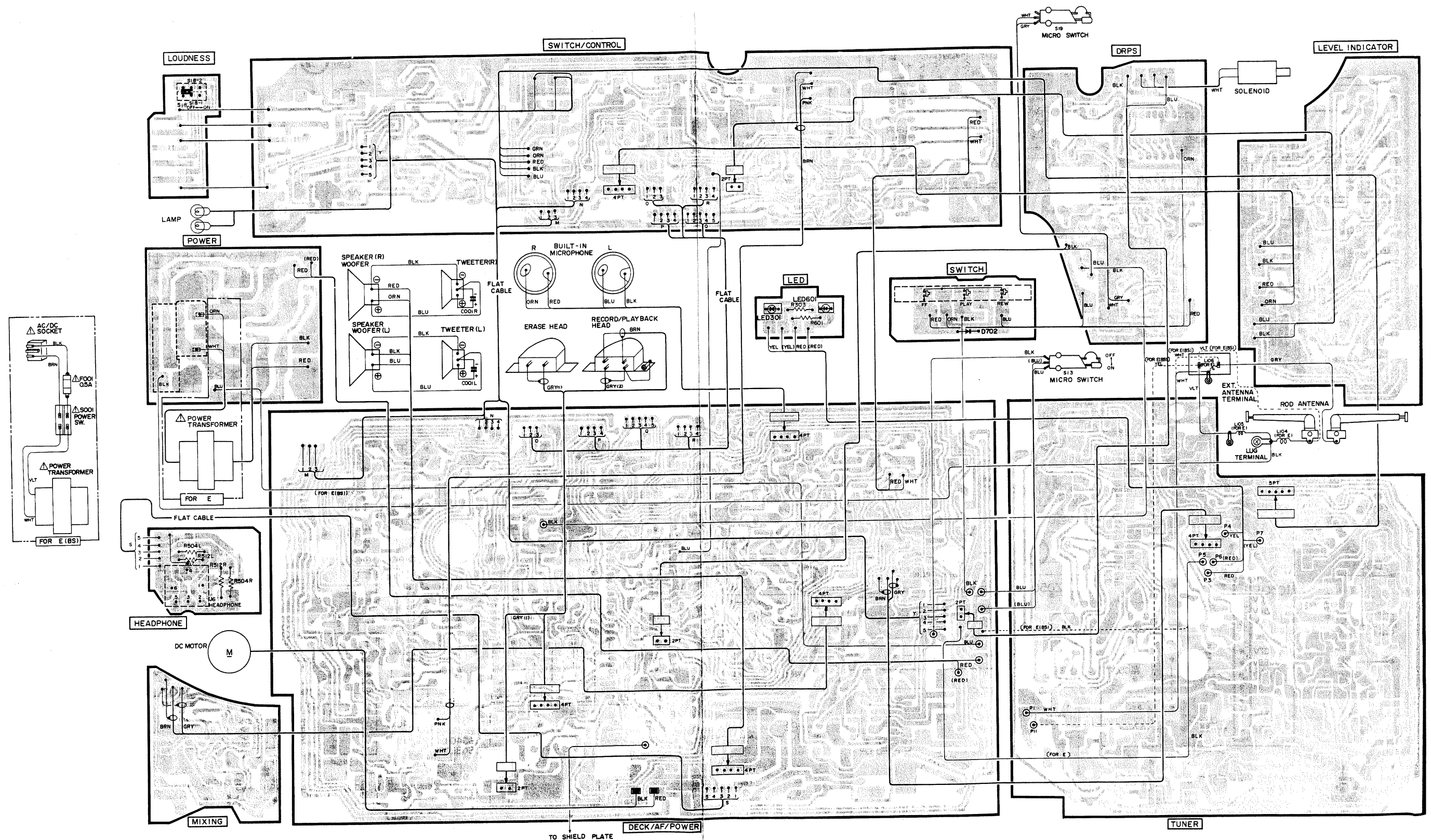


LEVEL INDICATOR



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TRK-8190E, E(BS) TRK-8190E, E(BS)
WIRING DIAGRAM


REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CAPACITORS					
CT101-102	5052391	PLASTIC FILM VARIABLE	C163	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
CT191	5058191	TRIMMER 10PF	C164	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
CT153-154	5058191	TRIMMER 10PF	C167	0208125	CERAMIC (RESISTOR SHAPE) 4.7PF+-5%
CT156	5058102	VARIABLE	C168	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
CV101-102	5052391	PLASTIC FILM VARIABLE	C201	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
CV151-152	5052391	PLASTIC FILM VARIABLE	C202	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C101	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	C203	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
C102	0208133	CERAMIC DISC (RESISTOR SHAPE) 22PF+-5%	C204	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C103	0208125	CERAMIC (RESISTOR SHAPE) 4.7PF+-5%	C205	0208141	CERAMIC DISC (RESISTOR SHAPE) 100PF +-5%
C104	0208124	CERAMIC (RESISTOR SHAPE) 3.3PF+-5%	C206	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C105	0209004	CERAMIC DISC (RESISTOR SHAPE) 330PF +-10%	C207	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C106	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30	C208	0208138	CERAMIC DISC (RESISTOR SHAPE) 680PF +-16%
C107	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3	C209	0209011	CERAMIC DISC (RESISTOR SHAPE) 150PF +-10%
C108	0246444	CERAMIC DISCAL 15PF+-5%	C210	0208133	CERAMIC DISC (RESISTOR SHAPE) 22PF+-5%
C109	0208157	CERAMIC (RESISTOR SHAPE) 6.8PF+-10% (NP-0)	C212	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C110	0208161	CERAMIC (RESISTOR SHAPE) 15PF+-10% (NP-0)	C214	0208138	CERAMIC DISC (RESISTOR SHAPE) 680PF +-16%
C111	0208161	CERAMIC (RESISTOR SHAPE) 15PF+-10% (NP-0)	C216	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
C112	0208161	CERAMIC (RESISTOR SHAPE) 15PF+-10% (NP-0)	C218	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
C113	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3	C219	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
C114	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	C221	0209011	CERAMIC DISC (RESISTOR SHAPE) 150PF +-10%
C115	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	C222	0209004	CERAMIC DISC (RESISTOR SHAPE) 330PF +-10%
C116	0208141	CERAMIC DISC (RESISTOR SHAPE) 100PF +-5%	C225	0209027	CERAMIC DISC (RESISTOR SHAPE) 0.015 MF+-3
C117	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30	C226	0209005	CERAMIC DISC (RESISTOR SHAPE) 390PF +-10%
C118	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	C227	0209005	CERAMIC DISC (RESISTOR SHAPE) 390PF +-10%
C152	0208125	CERAMIC (RESISTOR SHAPE) 4.7PF+-5%	C308LR	0209025	CERAMIC DISC (RESISTOR SHAPE) 6800P F+-30
C153	0208134	CERAMIC (RESISTOR SHAPE) 27PF+-5%	C402LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10
C154	0208129	CERAMIC (RESISTOR SHAPE) 10PF+-5%	C403LR	0208138	CERAMIC DISC (RESISTOR SHAPE) 680PF +-16%
C155	0208131	CERAMIC (RESISTOR SHAPE) 15PF+-5%	C405LR	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30
C156	0208141	CERAMIC DISC (RESISTOR SHAPE) 100PF +-5%			
C160	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10			
C161	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30			
C162	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30			

TRK-8190E, E(BS)

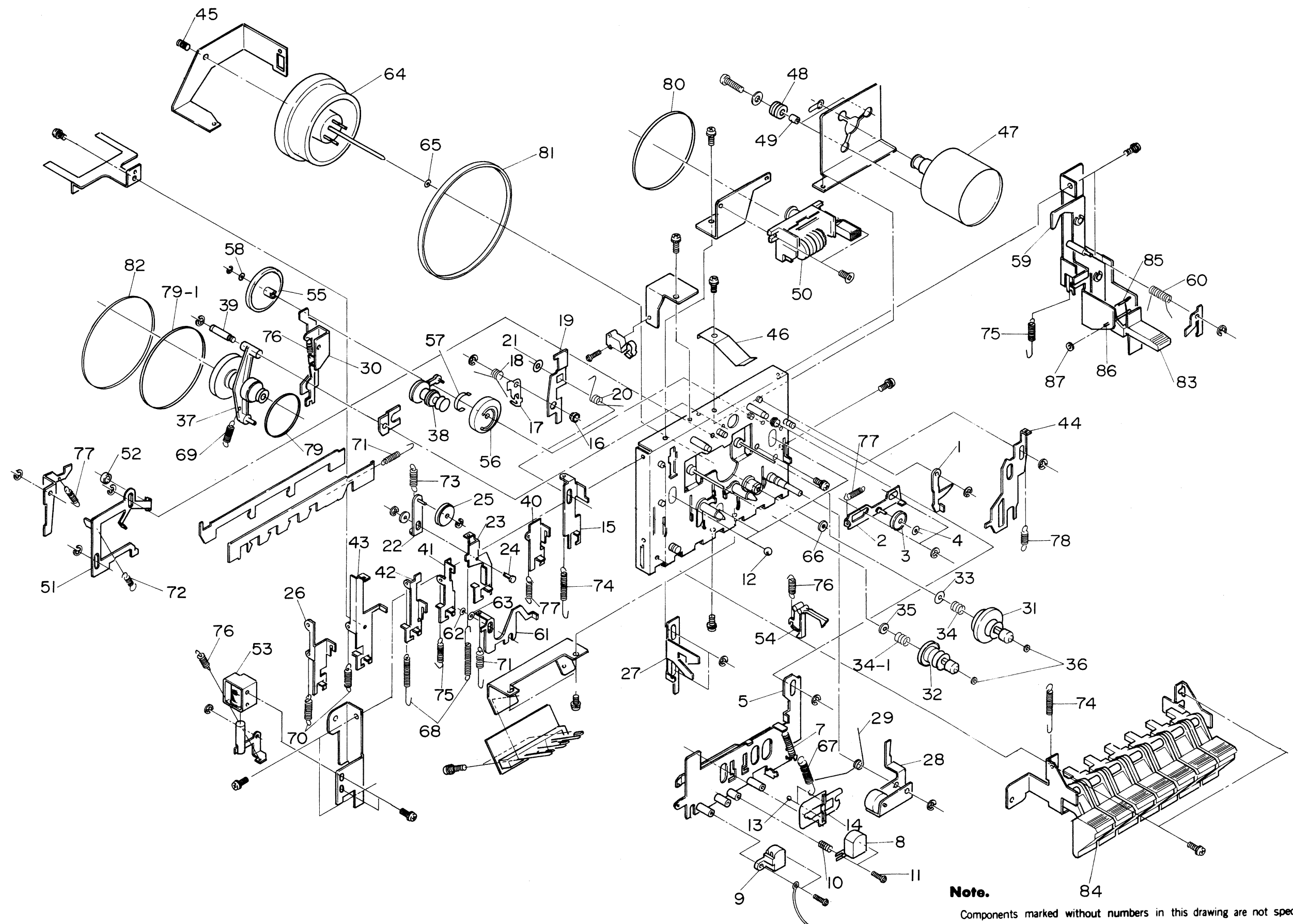
SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CAPACITORS			SEMI-CONDUCTORS		
C412LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	DB601	5331102	DIODE M4B-31-22
C415LR	0209001	CERAMIC (RESISTOR SHAPE) 180PF+-10%	D102	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C422LR	0208128	CERAMIC (RESISTOR SHAPE) 8.2PF+-5%	D103	5330661	DIODE SILICON LS2790 200MHZ 80MW
C426LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	D104-105	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C427LR	0209003	CERAMIC DISC (RESISTOR SHAPE) 270PF +-10%	D151	5331052	DIODE 1K60RLF-2
C428LR	0209021	CERAMICDISC(RESISTORSHAPE)1500PF+-10%	D201-202	5331052	DIODE 1K60RLF-2
C436LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	D203-206	5331052	DIODE 1K60RLF-2
C438LR	0209022	CERAMIC DISC (RESISTOR SHAPE) 0.002 2MF+-	D401LR	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C442LR	0209003	CERAMIC DISC (RESISTOR SHAPE) 270PF +-10%	D402LR	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C444LR	0209026	CERAMIC DISC (RESISTOR SHAPE) 0.01M F+-30	D405LR	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C447LR	0209025	CERAMIC DISC (RESISTOR SHAPE) 6800P F+-30	D406	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C451LR	0209002	CERAMIC DISC (RESISTOR SHAPE) 220PF +-10%	D407LR	5330573	DIODE SILICON 1S2473 300MHZ 300MW
C452	0209022	CERAMIC DISC (RESISTOR SHAPE) 0.002 2MF+-	D601	5330001	DIODE SILICON V03C 60H
C704	0256362	TANTALUM ELECTROLYTIC 0.22MF+-10% 3 5V	D701	5331052	DIODE 1K60RLF-2
C705-706	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	IC201	5351064	IC AN253BB
C803LR	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10	IC301	5350684	IC HA1330
RESISTORS			IC401LR	5350961	IC BA340
RC601-602	0186451	CR PACK	IC402	5357001	IC TA1024
RT301	0151806	SEMI VARIABLE RESISTOR 1KOHM B	IC403	5356832	MODULE TA3003
RT302	5007185	SEMI VARIABLE RESISTOR 4.7KOHM	IC501	5352141	IC HA1392
RT401LR	0151818	SEMI VARIABLE RESISTOR 100KOHM	IC701	5352381	IC HA12024
RT402LR	0151821	SEMI VARIABLE RESISTOR 50K OHM	IC702	5359501	IC MPD4011C
RT403LR	0151817	SEMI VARIABLE RESISTOR 20KOHM B	IC801LR	5352401	IC IR2E01
RT404LR	0151808	SEMI VARIABLE RESISTOR 10K OHM RS88	LED301	5380271	LED GL-9PR2
RT701	0151808	SEMI VARIABLE RESISTOR 10K OHM RS88	LED401	5380592	LED LN417GP
RV401LR	5020092	VARIABLE RESISTOR 50KOHM(B)	LED601	5380271	LED GL-9PR2
RV402	5000408	VARIABLE 10KOHM(B)	LED701	5380521	LED LA4010A
RV403LR	5020082	VARIABLE RESISTOR 100KOHM(B)	LED801LR	5380461	LED LN04202P
RV404LR	5020081	VARIABLE RESISTOR 100KOHM(C)	LED802LR	5380463	LED LN03202P
RV405LR	5020093	VARIABLE RESISTOR 10KOHM(A)	Q101	5321271	TRANSISTOR SILICON 2SC1674L 600MHZ
			Q102-103	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
			Q151	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
			Q152	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
			Q201	5321281	TRANSISTOR SILICON 2SC1675-L 230MHZ 200M
			Q401LR	5321293	TRANSISTOR 2SC1740LN-R
			Q402LR	5321293	TRANSISTOR 2SC1740LN-R
			Q403LR	5321293	TRANSISTOR 2SC1740LN-R
			Q404LR	5321293	TRANSISTOR 2SC1740LN-R

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
SEMI-CONDUCTORS			MISCELLANEOUS		
Q405LR	5321293	TRANSISTOR 2SC1740LN-R	△	5653242	POWER SOCKET
Q406LR	5321293	TRANSISTOR 2SC1740LN-R		5653321	IC SOCKET
Q407LR	5321293	TRANSISTOR 2SC1740LN-R		5659121	BACK COVER
Q408	5321293	TRANSISTOR 2SC1740LN-R		5671661	FM ANTENNA TERMINAL
Q409LR	5321293	TRANSISTOR 2SC1740LN-R	ANT	5752511	ROD ANTENNA
Q501-502	5320643	TRANSISTOR SILICON 2SC1162 150M	BP101	5161551	FILTER
Q701	5320813	TRANSISTOR 2SC945P	CF201-202	5160211	CERAMIC FILTER CF107A
Q702	5322213	TRANSISTOR 2SC1741R	△ F001	5720173	FUSE 500MA (For E(BS))
Q801LR	5320813	TRANSISTOR 2SC945P	F301LR	5161731	LCR FILTER
Q802LR	5320813	TRANSISTOR 2SC945P	F601-602	5721064	FUSE 2.5A
ZD501	5330533	DIODE SILICON HZ-12C 1.0M	J1	5679442	MIC JACK
ZD502	5330313	DIODE SILICON HZ7C 1.0M	J2	5674132	MIC. MIXING JACK
TRANSFORMERS			J3	5676241	JACK (PHONO)
△ PT	5212682	POWER TRANSFORMER (For E)	J4	5679442	EXT. SP. JACK
△ PT	5212683	POWER TRANSFORMER (For E(BS))	J6	5674132	HEADPHONE JACK
T101	5140071	FM IF	J7	5653211	DIN JACK
T151	5160101	AM IF	MIC	5421571	BUILT IN MICROPHONE
T201	5148111	FM DISCRIMINATOR	OSC401	5260662	OSCILLATOR BLOCK
T202	5148112	FM DISCRIMINATOR	PL001-002	5762281	LAMP
T203	5140072	FM IFT	S 1	5623611	SLIDE SWITCH (REC/P.B.)
T204	5130122	AM IFT	S 2	5623431	SLIDE SWITCH (REC/P.B.)
COILS			S 3	5624221	SLIDE SWITCH (FUNCTION)
L101	5126462	FM RF	S 4	5604282	LEVER SWITCH (TAPE SELECTOR-EQ)
L102	5150791	CHOKE COIL	S 5	5604441	LEVER SWITCH (TAPE SELECTOR-BIAS)
L103	5126278	FM OSCILLATOR COIL	S 6	5604082	LEVER SWITCH (DOLBY NR)
L104-106	5123271	FM TRAP COIL 0.5MH (For E)	S 7	5604082	LEVER SWITCH (MODE)
L151	5123493	SWITCH ANTENNA	S 8	5623871	SLIDE SWITCH (PHONO/LINE)
L152-153	5113501	FERRITE CORE ANTENNA	S 9	5632412	LEAF SWITCH (MICRO SWITCH)
L154	5123494	SW OSC	S 10	5604092	LEVER SWITCH (RIF/AFC)
L155	5120319	OSCILLATOR COIL	S 11	5604104	LEVER SWITCH (AUTO/MANUAL)
L156	5120465	LW OSC	S 12	5604104	LEVER SWITCH (LEVEL/TUNE/BATTERY)
L157	5123271	FM TRAP COIL 0.5MH	S 14	5604083	LEAF SWITCH (REC. MUTE)
L401LR	5260215	TRAP COIL 33MH	S 15	5625011	SLIDE SWITCH (BAND SELECTOR)
L402LR	5120274	CHOKE COIL	S 16	5633352	PUSH SWITCH (PROGRAM)
L403LR	5260215	TRAP COIL 33MH	S 17	5633352	PUSH SWITCH (RESET)
L404LR	5161661	DOLBY FILTER	S 18	5633313	PUSH SWITCH (LOUDNESS)
L501LR	5150761	CHOKE COIL	SP	5401122	SPEAKER-5CM
L502	5152123	CHOKE 16MICRO H	SP	5407401	SPEAKER-16CM
			△ S001	5602021	POWER SWITCH (For E(BS))

TPK-8190E, E(BS)

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
MISCELLANEOUS					
5701-703	5603411	LEVER SWITCH (PLAY/F.F./REW)	34	6305751	SPRING (FOR TAKE UP)
FOR ACCESSORIES			34-1	6320874	SPRING (FOR SUPPLY)
△	5747321	POWER CURD (For E)	35	7786119	POLYESTER WASHER
△	5746341	POWER CORD (For E(BS))	36	7786115	POLYESTER WASHER
	5896391	FM ANTENNA (For E(BS))	37	6422141	CLUTCH ASSEMBLY
FOR CASSETTE DECK ASSEMBLY (A)			38	6422131	AUTO STOP PICK UP BLOCK ASSEMBLY
1	7325671	PLAY ARM	39	7566711	CLUTCH ARM SHAFT
2	7327741	PLAY ROLLER ARM ASSEMBLY	40	7325713	STOP LEVER
3	6344301	PLAY ROLLER	41	7325703	PLAY LEVER
4	7786211	POLYESTER WASHER	42	7326873	REWIND LEVER
5	7041513	HEAD PLATE ASSEMBLY	43	7325693	RECORDING LEVER
7	6302011	SPRING	44	7326823	PAUSE ARM
8	5444931	RECORD PLAYBACK HEAD	45	7790261	CAPSTAN SCREW
9	5445131	ERASE HEAD	46	6533732	CASSETTE HOLDER SPRING
10	7790251	HEAD SPRING	47	5576723	MOTOR ASSEMBLY
11	7781002	HEAD FIXING SCREW-2MMDX6MM	48	6585051	RUBBER CUSHION
12	7548741	BALL-4MMO	49	7790281	SPACER
13	7548742	BALL-2MMO	50	5559247	COUNTER
14	6533741	HEAD PLATE HOLDER	51	7326891	BRAKE PLATE
15	7325613	PAUSE LEVER ASSEMBLY	52	6579231	RUBBER WASHER
16	7575951	COLLAR	53	7325592	SOLENOID ASSEMBLY
17	6533862	PAUSE LOCK PIECE	54	6759441	RECORD PREVENTION LEVER
18	6546041	SPRING	55	6422121	AUTO STOP PULLEY
19	7326961	PICK UP LEVER	56	6759451	AUTO STOP CAM
20	6546191	PICK UP SPRING	57	6533871	SPRING
21	7786626	WASHER	58	7778656	POLYESTER WASHER
22	7327731	F.F ARM ASSEMBLY	59	7326951	TIMER STANDBY LEVER
23	7326883	F.F LEVER	60	6546181	LOCK SPRING
24	7548732	F.F LEVER SHAFT	61	7326811	TRANSFER PLATE
25	6344311	F.F ROLLER	62	7786219	POLYESTER WASHER
26	7327513	EJECT LEVER	63	7786117	POLYSLIDER WASHER
27	7326942	EJECT ARM	64	6373651	FLYWHEEL ASSEMBLY
28	7325681	PRESSURE ROLLER ARM ASSEMBLY	65	7778856	POLYESTER WASHER
29	6546051	SPRING	66	7786623	POLYSLIDER WASHER
30	7325651	AUTO STOP LEVER ASSEMBLY	67	6541151	SPRING
31	6414002	TAKE UP REEL BASE ASSEMBLY	68	6541161	SPRING
32	6414012	SUPPLY REEL BASE ASSEMBLY	69	6541131	SPRING
33	7786217	POLYSLIDER WASHER	70	6541101	SPRING
			71	6533721	LEAF SPRING
			72	6541111	SPRING

EXPLODED VIEW (Cassette Chassis)



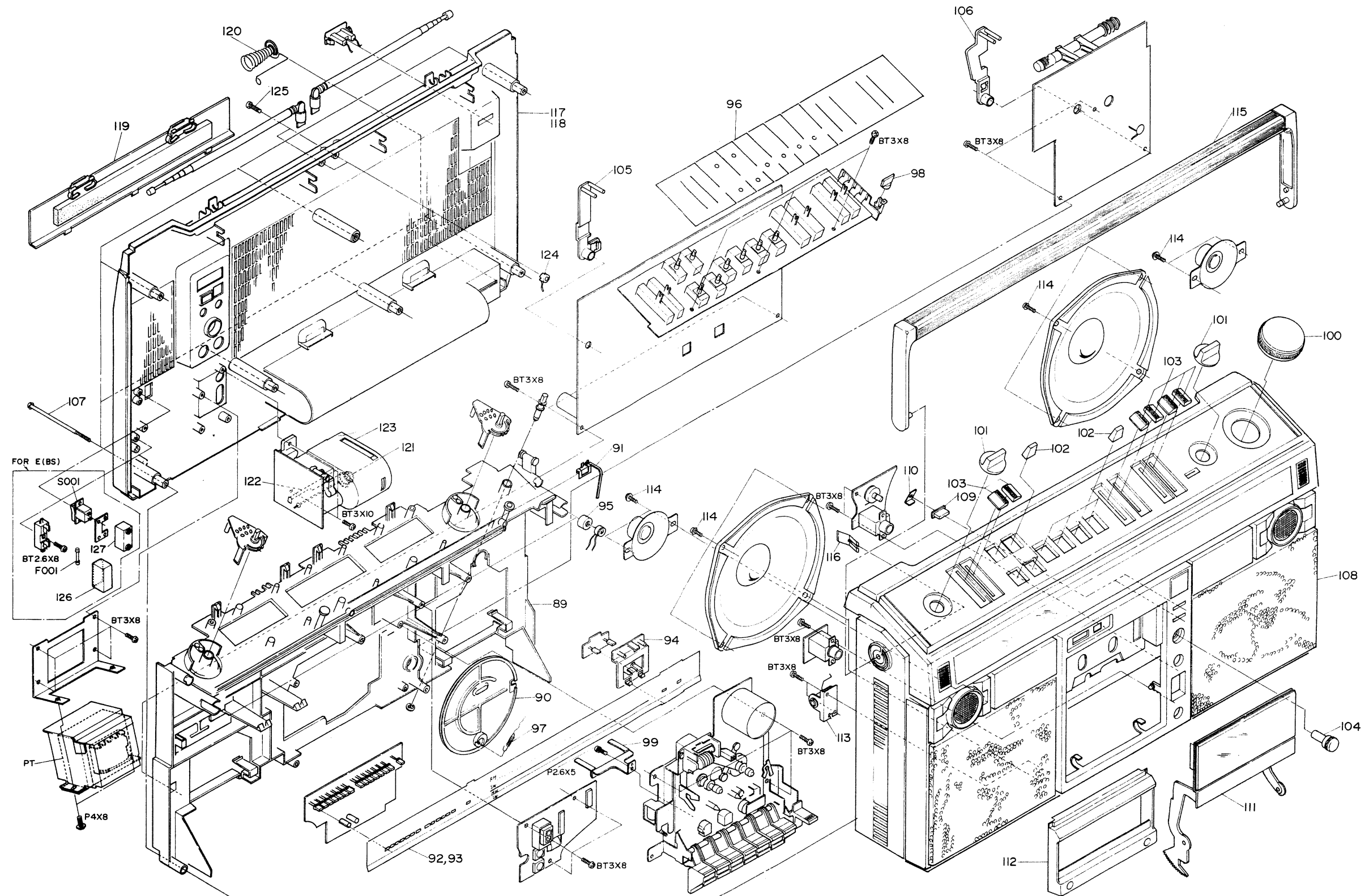
Note.

Components marked without numbers in this drawing are not specified as replacement parts.

TRK-8190E, E (BS)

TRK-8190E, E (BS)

EXPLODED VIEW (Cabinet)

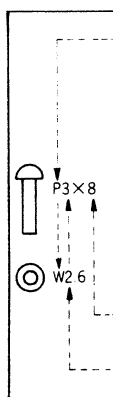


Note.

Components marked without numbers in this drawing are not specified as replacement parts.

MEMO

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
FOR CASSETTE DECK ASSEMBLY (A)			MISCELLANEOUS		
73	6541291	SPRING	100	6283381	TUNING KNOB
74	7790252	SPRING	101	6283391	KNOB ASSEMBLY (FUNCTION+EAND)
75	7790253	SPRING	102	6296851	LEVER KNOB
76	7790254	SPRING	103	6295553	SLIDE KNOB
77	7790255	SPRING	104	6283451	KNOB-14MMD (MIC VOLUME)
78	6318882	SPRING	105	6759001	FUNCTION LEVER
79	6355111	BELT	106	6759011	BAND SELECT LEVER
79-1	6355131	BELT	107	7781148	BT SCREW-3MMDX50MM
80	6355121	COUNTER BELT	108	6034411	FRONT CASE ASSEMBLY
81	6357131	FLYWHEEL BELT	109	6053013	PUSH BUTTON
82	6355181	BELT	110	6533491	BUTTON SPRING
83	6257821	BUTTON (TIMER STANDBY)	111	6092693	CASSETTE LID ASSEMBLY
84	6257861	FUNCTION BUTTON ASSEMBLY	112	6182202	HEAD COVER ASSEMBLY
85	6533881	BUTTON HOLDER SPRING	113	7324884	DAMPER ASSEMBLY
86	7243353	PIN	114	7781133	BT SCREW-3MMD
87	7786624	POLYSLIDER WASHER	115	6333648	HANDLE ASSEMBLY
FOR CHASSIS ASSEMBLY			116	6531143	SPRING
89	6759121	CHASSIS ASSEMBLY	117	6034431	REAR CASE ASSEMBLY (For E)
90	6345672	PULLEY-160MM	118	6034435	REAR CASE ASSEMBLY (For E(BS))
91	6394462	POINTER	119	6173454	BATTERY LID ASSEMBLY
92	6467794	SCALE PLATE (For E)	120	6305691	BATTERY TERMINAL (+,-)
93	6467793	SCALE PLATE (For E(BS))	121	6305702	BATTERY SPRING (-)
94	6759021	LED HOLDER	122	7451491	BATTERY TERMINAL
95	6570291	MIC COVER	123	6758591	TERMINAL HOLDER
96	7766323	SPACER	124	5687142	CAP TERMINAL
97	6316231	SPRING M	125	8744414	BIND SCREW-3MMDX14MM
98	6053211	PUSH BUTTON (LOUDNESS)	126	6746881	FUSE COVER (For E(BS))
99	7322583	RECORD SPRING ASSEMBLY	127	6746902	SWITCH COVER (For E(BS))

	Type of head					
	P	Pan head screw		BT	Binding head tapping screw	
	F	Flat countersunk head screw		BL	Bolt	
	B	Binding head screw		W	Washer	
	T	Round head tapping screw		E	"E" ring	
	Length (L mm)				 	
Diameter (D mm)						

When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.

TRK-8190E, E (BS)

The schematic diagram illustrates a portable stereo receiver with the following key sections:

- Input and Tuning Section:** Includes FM and AM antennas, limiters (D105, D102, D104), a frequency converter (Q102), an IF amplifier (Q201), and an AF amplifier (Q103). It also features an AM oscillator (Q151), an AM converter (Q152), and an AM AGC (D151).
- Audio Processing Section:** Contains a mixer (Q403), an EQ amplifier (Q401, Q402), a line amplifier (Q405, Q406), and a rec amp (Q407). It includes a Dolby-B noise reduction system (IC403) and a rec mute (Q404).
- Tape Deck Section:** Features a tape transport mechanism with a motor (MOTOR), a tape head (R/P HEAD), and a tape deck control section (IC701, IC702) with a counter and decoder driver.
- Power and Output Section:** Includes a power supply (P.T., F601, F602), a DC jack, a level indicator (LED801, LED802), a speaker system (WOOFER 3.2 Ω , TWEETER 4 Ω), and a tape deck control section (IC701, IC702).