

SERVICE MANUAL

PORTABLE RADIO

 **SANYO****RP8700**

(U.S.A)



SPECIFICATIONS

FREQUENCY RANGES

AM	530 – 1605 KHz
MB	1.6 – 4.0 MHz
SW1	5.95 – 6.25 MHz
SW2	7.1 – 18.0 MHz
FM	88 – 108 MHz
CB	26.965 – 27.505 MHz

INTERMEDIATE FREQUENCY

AM	455 KHz
FM	10.7 MHz

SEMICONDUCTORS

IC	2
TRANSISTORS	11
DIODES	10
RECTIFIERS	2

SENSITIVITY (for 50 mW output)

AM	31 μ V/m
MB	31 μ V/m
SW1	6 μ V
SW2	6 μ V
FM	6 μ V (S/N=30dB)
CB	13 μ V

POWER OUTPUT

Maximum	2000 mW
Undistorted	1600 mW

POWER SOURCE

DC	6 V For 1.5 V "D" size x 4
AC	120 V 60 Hz 8 W

CURRENT DRAIN

No Signal	45 mA
Maximum	560 mA
SPEAKER	12 Cm Permanent Dynamic Speaker 8 ohm

DIMENSIONS 259 mm(W) x 212 mm(H) x 89 mm(D)

WEIGHT

(without batteries) 2 Kg (approx.)

ALIGNMENT PROCEDURES

GENERAL ALIGNMENT CONDITIONS

1. The position of volume control is at maximum position.
2. Signal input must be kept as low as possible to avoid overload.
3. Use an output meter of the highest possible sensitivity.
4. Standard modulation is 400 Hz at 30% amplitude (for AM) and 22.5 kHz deviation (for FM).

AM BAND – Band selector switch in AM position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Loop Antenna	455 kHz	Lowest End	Across Speaker	IFT T304, 305	Adjust for Maximum
2	Same	515 kHz	Lowest End	Same	Osc. Coil L113	Same
3	Same	1650 kHz	Highest End	Same	Osc. Trim VCT1-4	Same
4	Same	600 kHz	600 kHz	Same	Ant. Coil L108a	Same
5	Same	1400 kHz	1400 kHz	Same	Ant. Trim VCT1-3	Same

Repeat steps 2 thru 5 to obtain maximum sensitivity.

MB BAND – Band selector switch in MB position.

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	1.55 MHz	Lowest End	Across Speaker	Osc. Coil L114	Adjust for Maximum
2	Same	4.3 MHz	Highest End	Same	Osc. Trim CT4	Same
3	Same	1.75 MHz	1.75 MHz	Same	Ant. Coil L108b	Same
4	Same	4.0 MHz	4.0 MHz	Same	Ant. Trim CT1	Same

Repeat steps 1 thru 4 to obtain maximum sensitivity.

SW1 BAND – Band selector switch in SW1 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	5.9 MHz	Lowest End	Across Speaker	Osc. Coil L116	Adjust for Maximum
2	Same	6.25 MHz	Highest End	Same	Osc. Trim. CT5	Same
3	Same	5.95 MHz	5.95 MHz	Same	Ant. Coil L109	Same
4	Same	6.2 MHz	6.2 MHz	Same	Ant. Trim. CT2	Same

Repeat steps 1 thru 4 to obtain maximum sensitivity.

SW2 BAND – Band selector switch in SW2 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	6.85 MHz	Lowest End	Across Speaker	Osc. Coil L118	Adjust for Maximum
2	Same	18.5 MHz	Highest End	Same	Osc. Trim. CT6	Same
3	Same	7.5 MHz	7.5 MHz	Same	Ant. Coil L110	Same
4	Same	17.5 MHz	17.5 MHz	Same	Ant. Trim. CT3-1	Same

Repeat steps 1 thru 4 to obtain maximum sensitivity.

ALIGNMENT PROCEDURES

CB BAND – Band selector switch in CB position ion

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	26.9 MHz	Lowest End	Across Speaker	Osc. Coil L 119	Adjust for Maximum
2	Same	27.55 MHz	Highest End	Same	Osc. Trim. CT 7	Same
3	Same	26.965 MHz	26.965MHz (1ch)	Same	Ant. Coil L111	Same
4	Same	27.255 MHz	27.255MHz (23ch)	Same	Ant. Trim. CT 3-2	Same

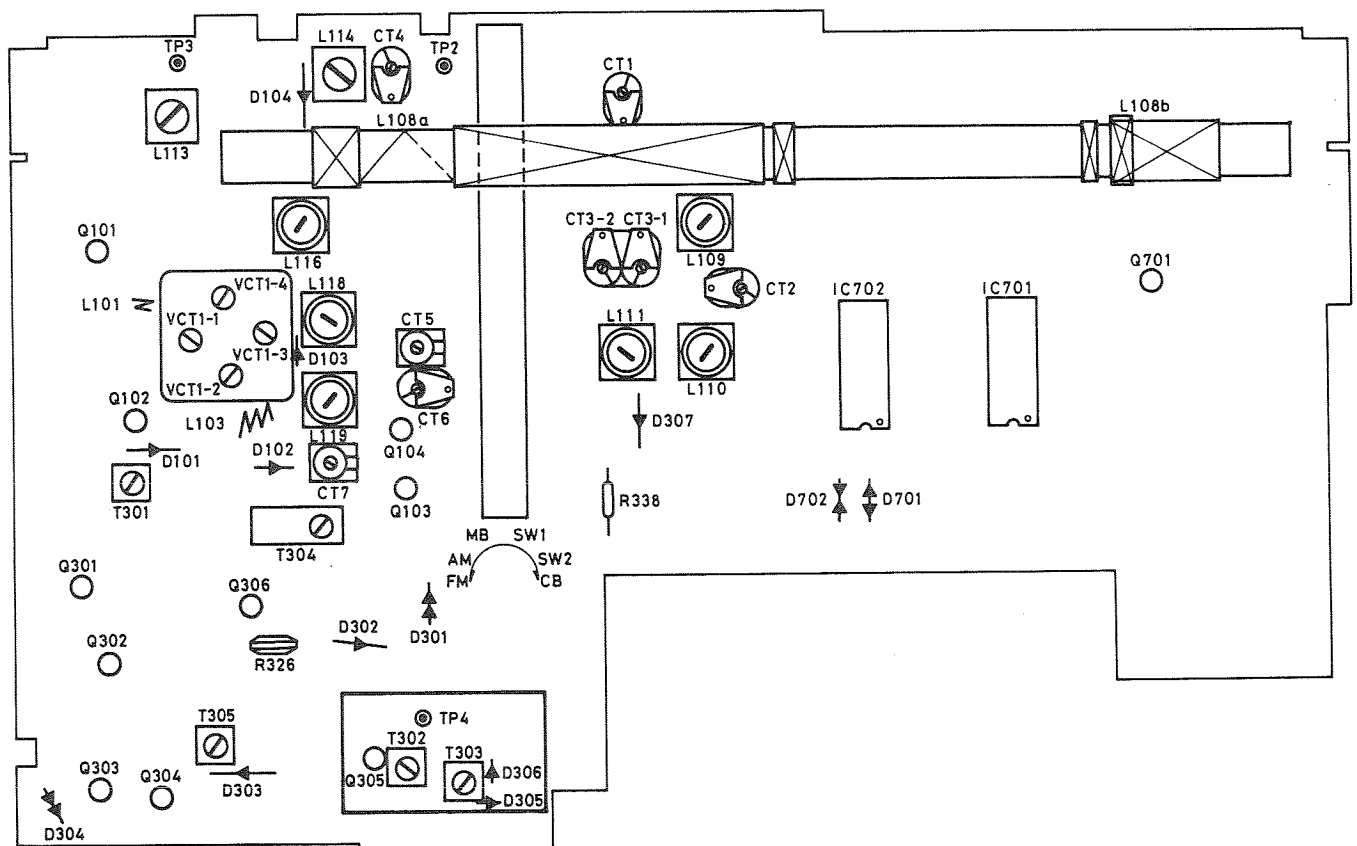
Repeat steps 1 thru 4 to obtain maximum sensitivity.

FM BAND – Band selector switch in FM position

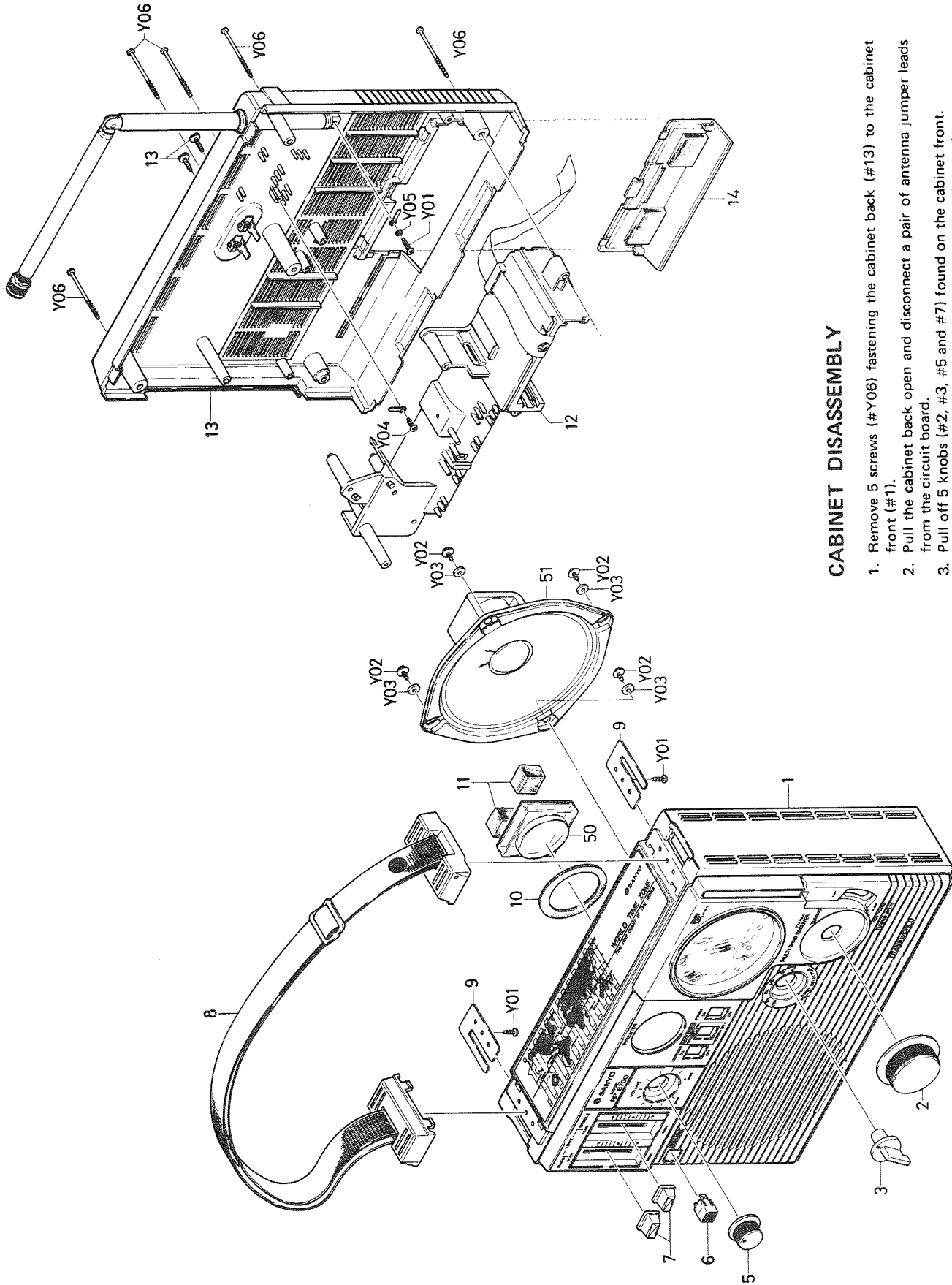
Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Meter or Oscilloscope	Adjust	Remarks
1	Connect Sweep Marker Generator to VCT1 Ground.	10.7 MHz	Lowest End	Connect scope input cable thru network to TP4, Ground	IFT T301, 302,	Adjust for maximum sensitivity with symmetrical curve.
2	Same	10.7 MHz	Lowest End	Connect scope input cable thru network to R338, Ground	IFT T303	Adjust for symmetrical "S" curve.
3	Connect Signal Generator to VCT1, Ground.	87.0 MHz	Lowest End	Connect V.T.V.M. across speaker	Osc. Coil L103	Adjust for Maximum
4	Same	109.0 MHz	Highest End	Same	Osc. Trimmer VCT1-2	Same
5	Same	90 MHz	90 MHz	Same	RF Coil L101	Same
6	Same	106 MHz	106 MHz	Same	RF Trimmer VCT1-1	Same

Repeat steps 1 thru 6 to obtain maximum sensitivity.

PARTS LOCATION



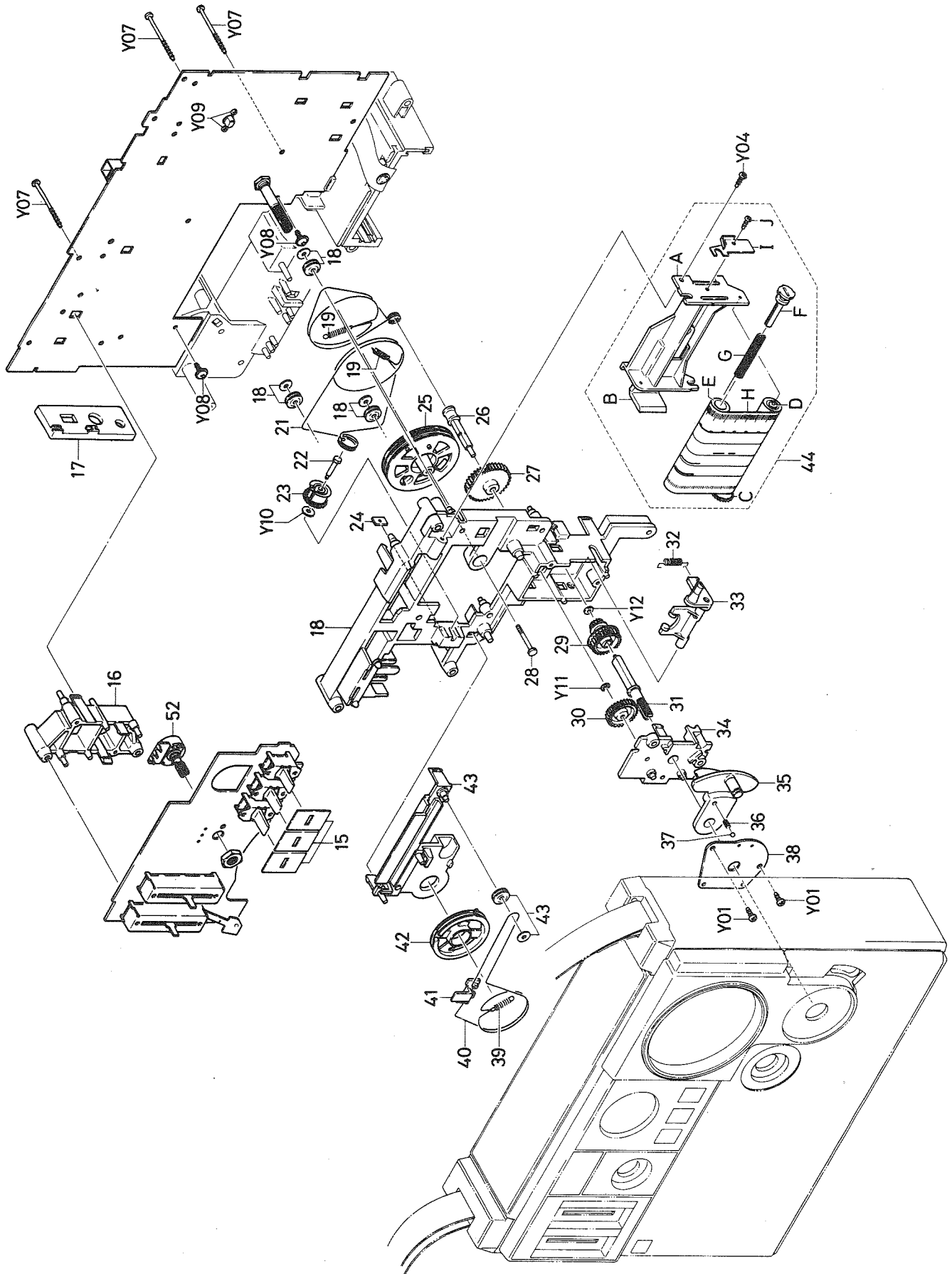
CABINET EXPLODED VIEW



CABINET DISASSEMBLY

1. Remove 5 screws (#Y06) fastening the cabinet back (#13) to the cabinet front (#1).
2. Pull the cabinet back open and disconnect a pair of antenna jumper leads from the circuit board.
3. Pull off 5 knobs (#2, #3, #5 and #7) found on the cabinet front.
4. Remove 3 red marked screws (#Y07) fixing the circuit board.
5. Disconnect a pair of speaker jumper leads from the circuit board.
6. Take out the circuit board.

CHASSIS EXPLODED VIEW



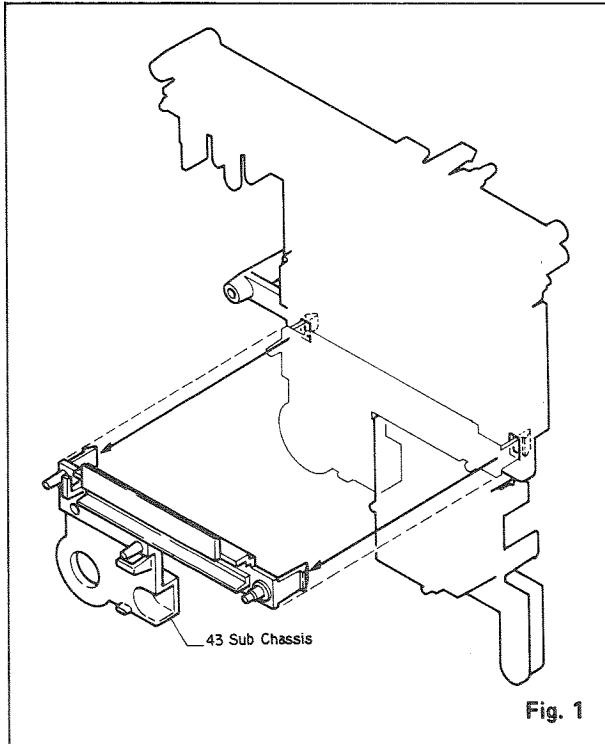


Fig. 1

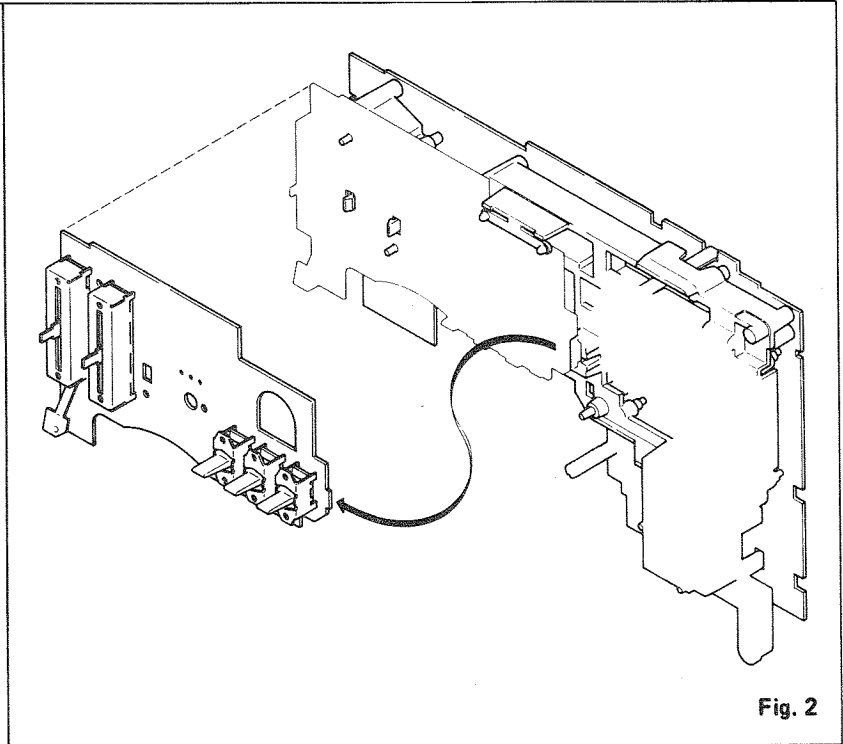


Fig. 2

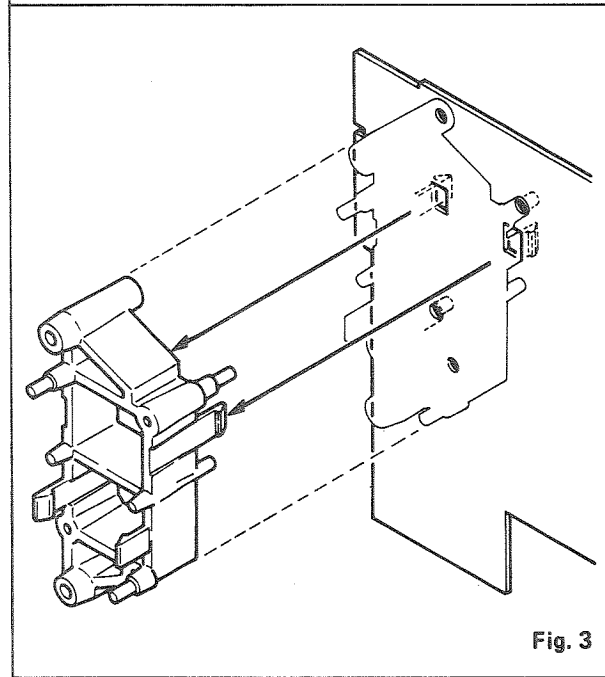


Fig. 3

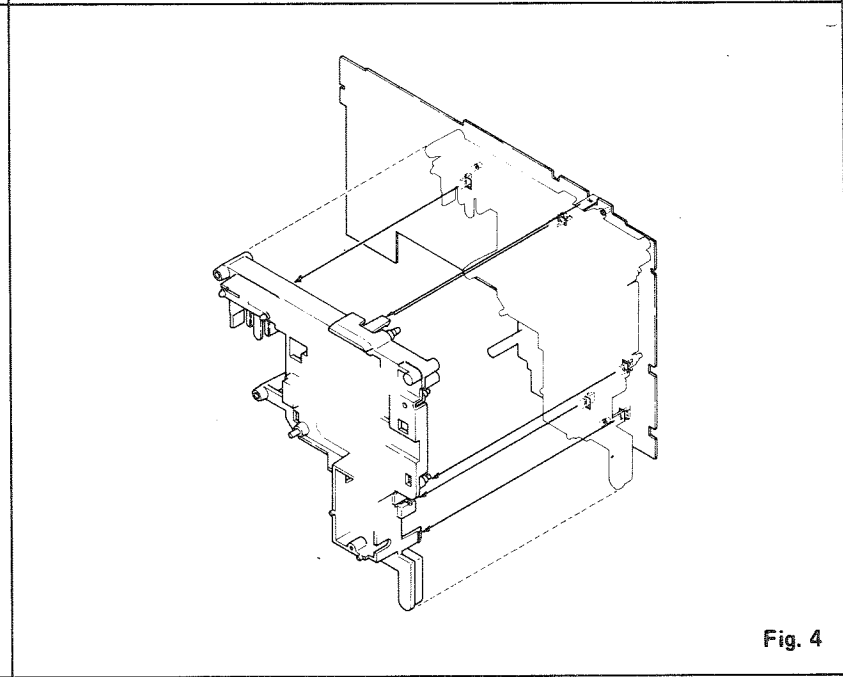


Fig. 4

1. Disengage a righthand catch
Disassemble the subchassis (#43) with its righthand catch disengaged from the chassis assembly (#18). (Refer to Fig. 1).
2. Disassemble the subchassis (#16)
Disassemble the small circuit board by disengaging two plastic catches of the subchassis (#16) from it. (Refer to Fig. 2).
3. Disassemble the dial mechanism (#44) with a screw (#Y04) removed from its section A.
4. Disassemble the chassis (#18) with its six catches disengaged from the circuit board, after removing a hex. head screw (#28). (Refer to Fig. 4)

Schematic Location	Part No.	Description	Q'ty	Schematic Location	Part No.	Description	Q'ty
CAPACITORS				CAPACITORS			
C335		Ceramic, 1pF, ±0.25pF, 50V	1	C328,330,		Mylar, 0.0033μF, ±20%, 50V	7
C119,130,		Ceramic, 3pF, ±0.25pF, 50V	4	331,719,			
149,315				720,725,			
C316		Ceramic, 4pF, ±0.25pF, 50V	1	726			
C106,133		Ceramic, 5pF, ±0.25pF, 50V	2	C124,134,		Mylar, 0.0047μF, ±20%, 50V	3
C111,113		Ceramic, 6pF, ±0.5pF, 50V	2	310			
C115		Ceramic, 7pF, ±0.5pF, 50V	1	C703		Mylar, 0.0068μF, ±20%, 50V	1
C139		Ceramic, 8pF, ±0.5pF, 50V	1	C128,321,		Mylar, 0.01μF, ±20%, 50V	4
C116		Ceramic, 10pF, ±10%, 50V	1	322,706			
C112		Ceramic, 12pF, ±5%, 50V	1	C131,302,		Mylar, 0.022μF, ±20%, 50V	11
C117		Ceramic, 15pF, ±10%, 50V	1	304,308,			
C104		Ceramic, 18pF, ±5%, 50V	1	314,325,			
C101,109,		Ceramic, 20pF, ±10%, 50V	3	326,337,			
144				339,345,			
C118,148,		Ceramic, 30pF, ±10%, 50V	3	704			
329				C323,342		Mylar, 0.033μF, ±20%, 50V	2
C145		Ceramic, 35pF, ±5%, 50V	1	C336,341,		Mylar, 0.039μF, ±20%, 50V	6
C122,303,		Ceramic, 40pF, ±5%, 50V	3	701,705,			
141				707,708			
C123,142		Ceramic, 60pF, ±5%, 50V	2	C721,727		Mylar, 0.1μF, ±20%, 50V	2
C121		Ceramic, 90pF, ±5%, 50V	1	C129		Styrol, 300pF, ±5%, 125V	1
C126,143,		Ceramic, 100pF, ±10%, 50V	4	C132		Styrol, 900pF, ±5%, 125V	1
343,735				C138		Styrol, 3600pF, ±5%, 125V	1
C338		Ceramic, 220pF, ±20%, 50V	1	C333		Electrolytic, 0.1μF, 10V	1
C110		Ceramic, 470pF, ±20%, 50V	1	C702		Electrolytic, 0.22μF, 10V	1
C107,108,		Ceramic, 0.01μF, +80-20%, 50V	6	C114,318,		Electrolytic, 1μF, 10V	4
301,307,				714,723			
319,334				C740,741		Electrolytic, 2.2μF, 16V	2
C127,147,		Ceramic, 0.022μF, +80-20%, 50V	6	C332,730		Electrolytic, 4.7μF, 25V	2
312,317,				C311		Electrolytic, 10μF, 16V	1
340,347				C717,724		Electrolytic, 22μF, 10V	2
C102,103,		Ceramic, 0.04μF, +80-20%, 50V	10	C722,728		Electrolytic, 47μF, 10V	2
105,306,				C716		Electrolytic, 100μF, 10V	1
313,320,				C324		Electrolytic, 220μF, 6.3V	1
731,732,				C711,715		Electrolytic, 220μF, 10V	2
733,734				C712		Electrolytic, 470μF, 10V	1
C327,709		Ceramic, 0.1μF, ±20%, 12V	2	C713		Electrolytic, 1000μF, 6.3V	1
C135		Ceramic, 30pF, ±5%, 50V	1	C729		Electrolytic, 2200μF, 10V	1
C136		Ceramic, 100pF, ±5%, 50V	1	VC,VCT	4-224T-07100	Tuning Capacitor	1
C125		Ceramic, 0.001μF, +80-20%, 50V	1	CT1,2,4,6	4-224R-01600	Trimmer, 16pF	4
C328,330,		Mylar, 0.001μF, +20%, 50V	7	CT3	4-224R-11800	Trimmer, 16pF x 2	1
331,719,				CT5,7	4-224T-07300	Trimmer, 30pF	2
720,725,							
726							
C137,140,		Mylar, 0.0022μF, ±20%, 50V	4				
305,710							

CB CHANNEL VS FREQUENCY

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	26.965	15	27.135	29	27.295
2	26.975	16	27.155	30	27.305
3	26.985	17	27.165	31	27.315
4	27.005	18	27.175	32	27.325
5	27.015	19	27.185	33	27.335
6	27.025	20	27.205	34	27.345
7	27.035	21	27.215	35	27.355
8	27.055	22	27.225	36	27.365
9	27.065	23	27.255	37	27.375
10	27.075	24	27.235	38	27.385
11	27.085	25	27.245	39	27.395
12	27.105	26	27.265	40	27.405
13	27.115	27	27.275		
14	27.125	28	27.285		

DIAL CORD STRINGING

244 mm x 2

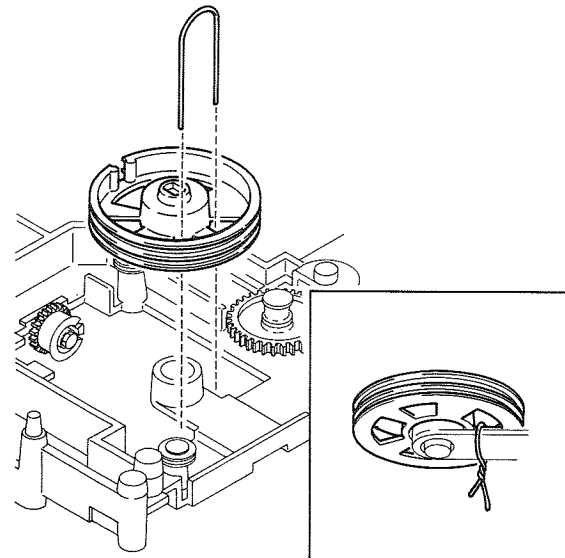


Fig. 5

Tie the drum to the chassis with a rope.

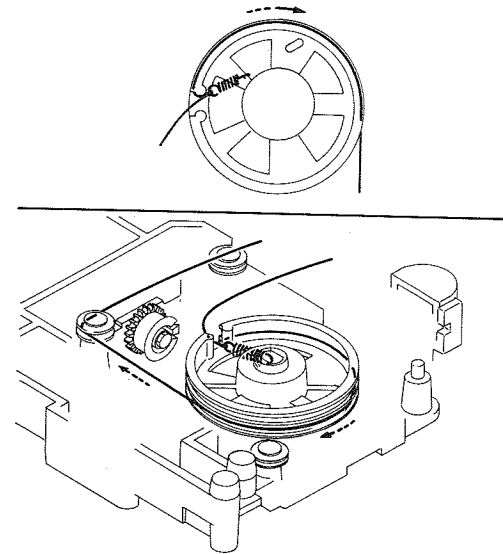


Fig. 6

Hook the free end of a tension spring to the drum at its center and place the dial cord along a lower groove of the drum around the drum along its lower groove as shown.

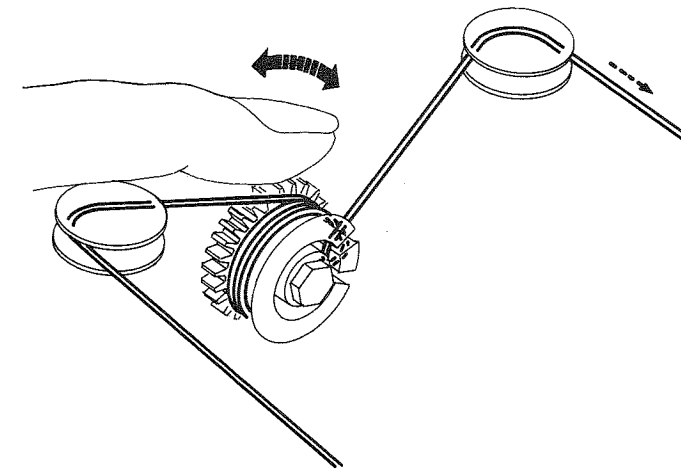


Fig. 7

Wind the cord around the geared drum 3 turns, then loop it through cut openings on the drum a turn, as shown.

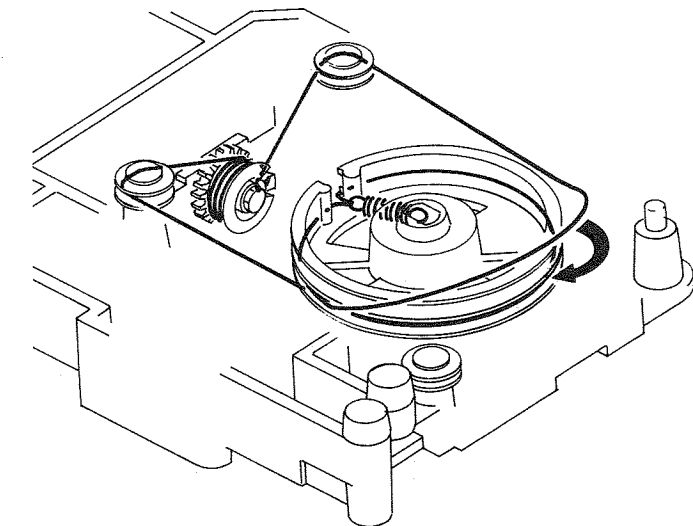


Fig. 8

Wind the cord around the drum as shown.

192 mm x 2

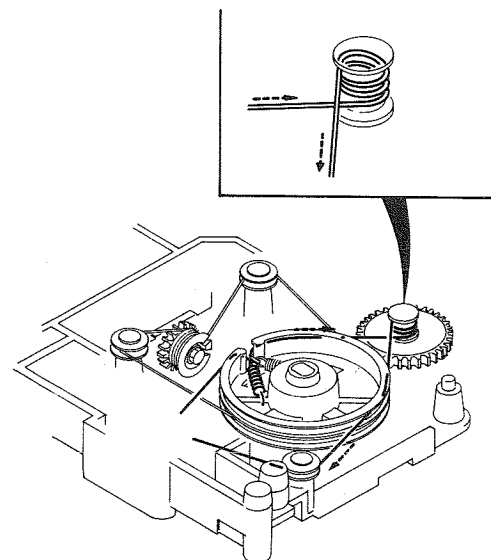


Fig. 9

Hook the free end of another tension spring to the drum and place the dial cord around the drum along its upper groove. Then turn it around the gear by 3 turns.

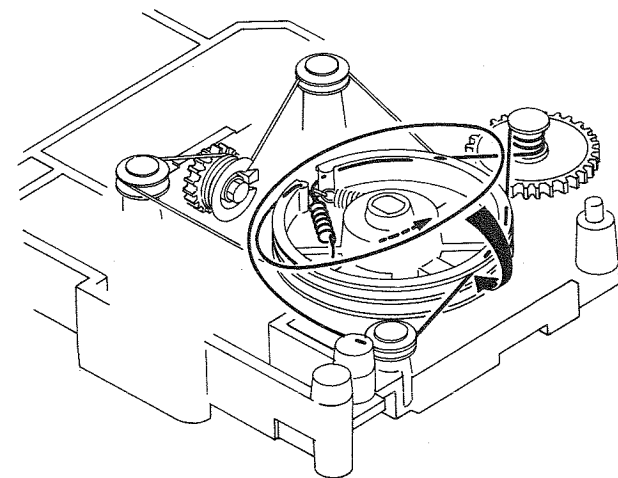


Fig. 10

Pass it through 2 pulleys and turn it around the drum by 1 turn as shown. Then reform the dial cord stringing neatly.

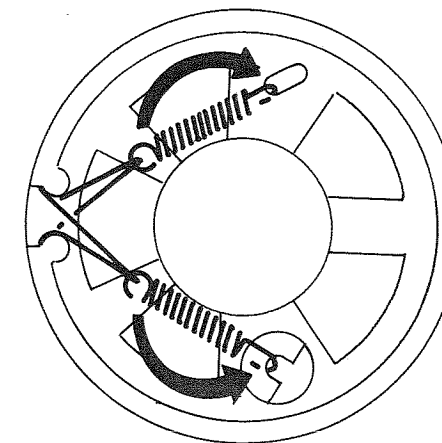
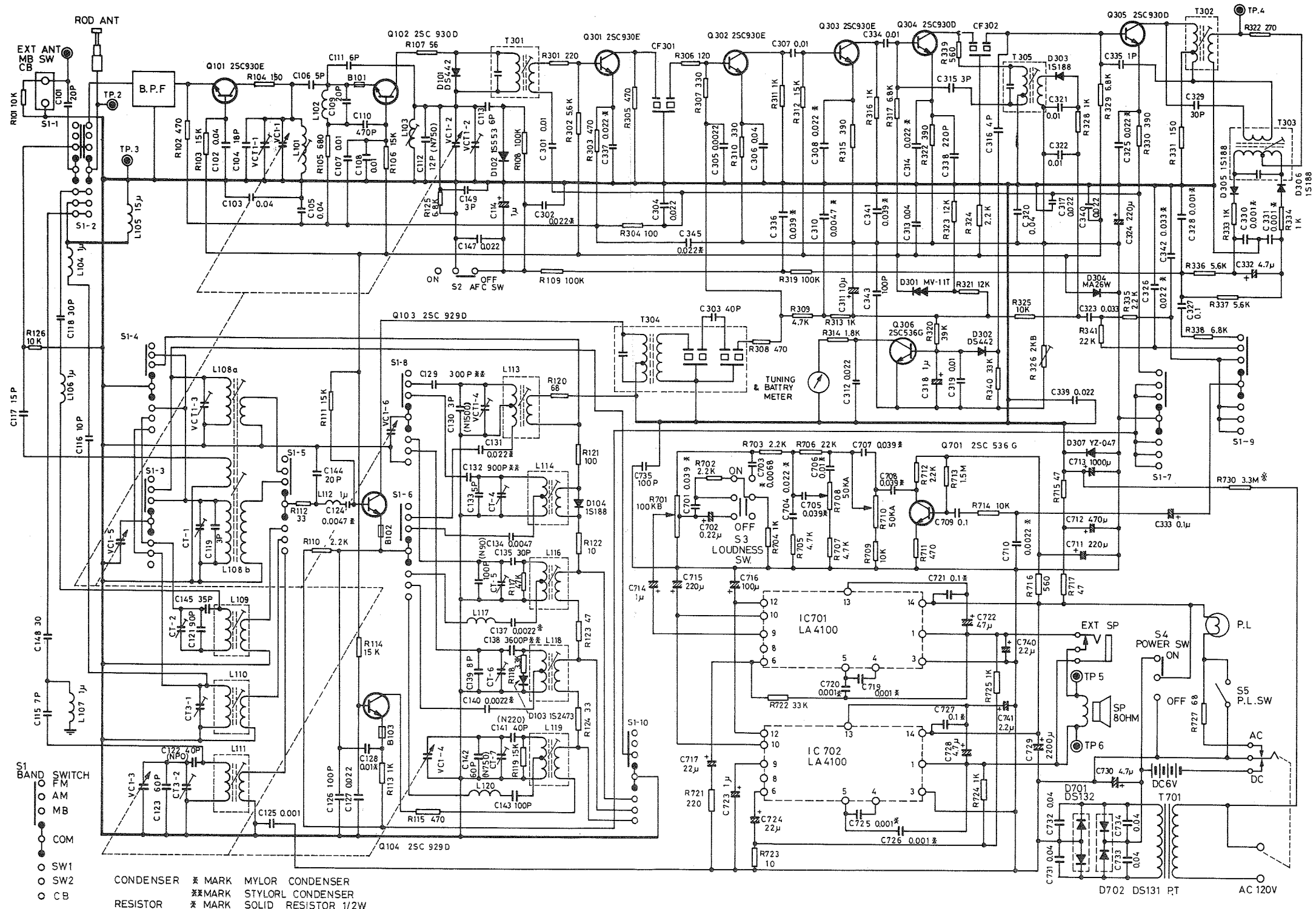


Fig. 11

Shift the hooking point of each tension spring at the respectively specified point as shown.

SCHEMATIC DIAGRAM



VOLTAGE CHART OF EACH TRANSISTORS

		Q101	Q102	Q103	Q104	Q301	Q302	Q303	Q304	Q305	Q306	Q701
C	AM	0	0	4.6	4.2	0	3.8	3.6	4.0	0	4.0	4.6
	FM	4.2	4.3	0	0	4.0	3.8	3.6	4.0	4.0	4.0	4.6
B	AM	0	0	1.1	1.05	0	0.9	1.0	1.1	0	0.6	0.7
	FM	0.9	0.9	0	0	0.95	0.9	1.0	1.1	1.05	0.6	0.7
E	AM	0	0	0.5	0.5	0	0.25	0.4	0.4	0	0.1	0.25
	FM	0.25	0.3	0	0	0.3	0.25	0.4	0.4	0.45	0.1	0.25

NOTES 1. All voltage are measured from common negative (-) ground.
 2. Volume control is at the minimum position.

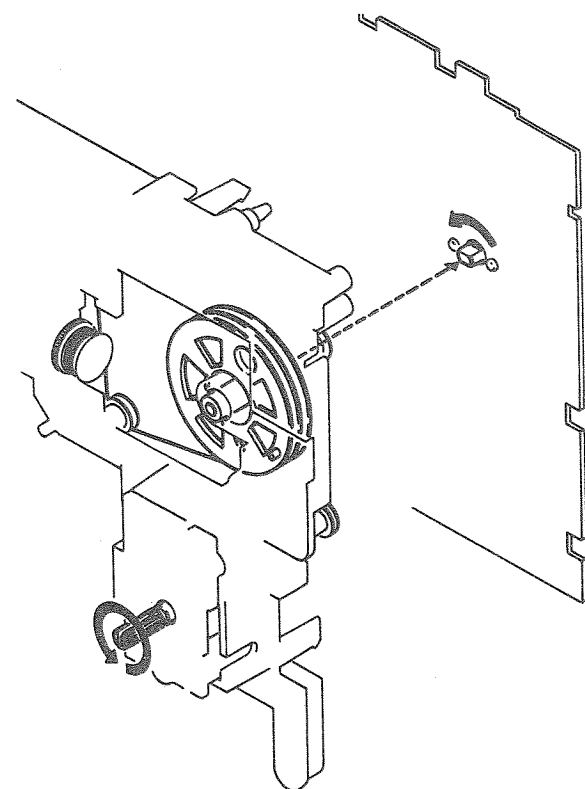
Integrated Circuit IC 701.702

	NO 1	NO 2	NO 3	NO 4	NO 5	NO 6	NO 7
AM	3.0	0	0	4.3	0.8	3.0	0
FM	3.0	0	0	4.3	0.8	3.0	0

	NO 8	NO 9	NO 10	NO 11	NO 12	NO 13	NO 14
AM	2.4	3.0	3.1	0	5.8	5.9	6.0
FM	2.4	3.0	3.1	0	5.8	5.9	6.0

NOTES 1. All voltages are measured from common negative (-) ground.
 2. Volume control is at the minimum position.

DRUM MOUNTING ON THE TUNING CAPACITOR SHAFT



Mount the drum on the tuning capacitor shaft with its shaft rotated fully counterclockwise when the tuning control shaft is placed at a fully counterclockwise position to provide a lowest frequency indication on dial scale.

Fig. 12

HOW TO STRING DIAL CORD FOR WAVE BAND INDICATION

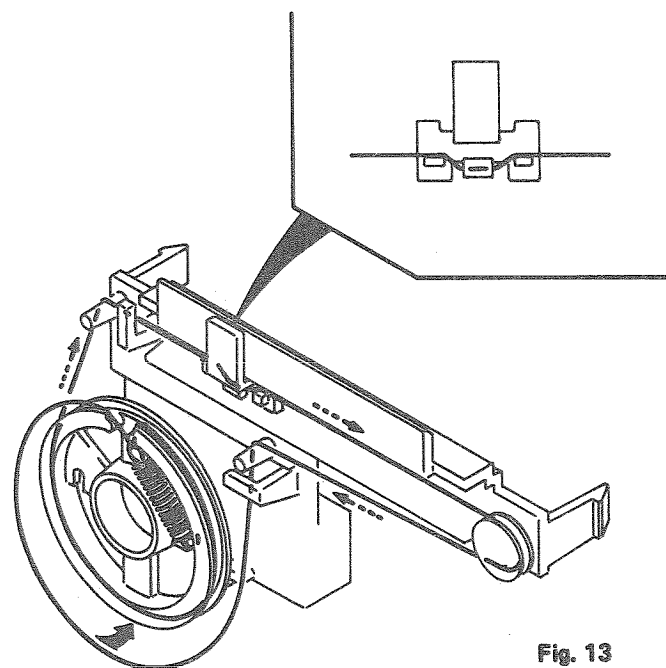
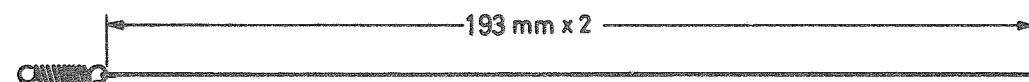


Fig. 13

DIAL SCALE CALIBRATION

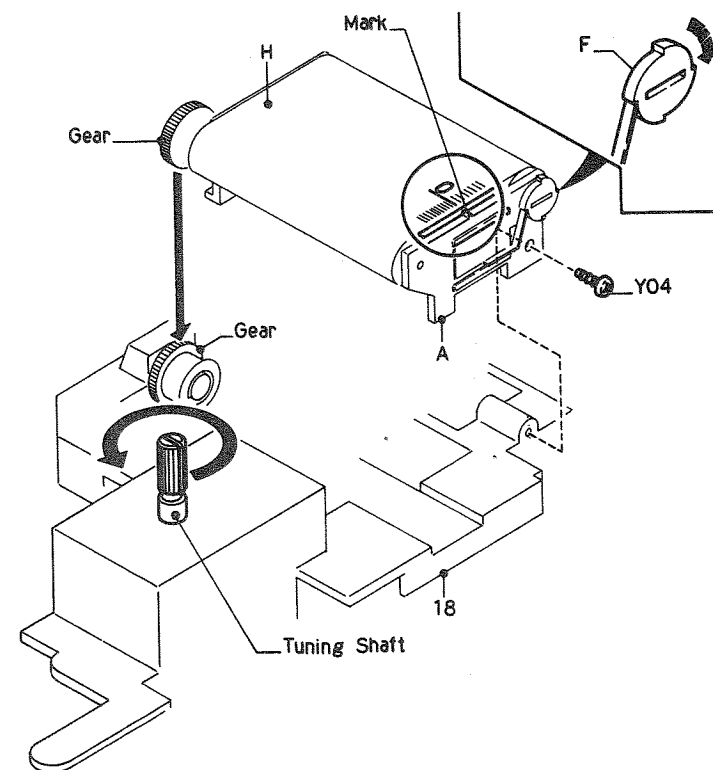


Fig. 14

Turn the tuning shaft fully counter-clockwise and adjust the zero point (on the dial scale) at the projected mark (on the bracket (A)) by rolling the dial scale. Then, mount the dial scale and the bracket on the chassis (18) with a screw (Y04) after engaging the gears of both the dial scale and the chassis with each other. Eliminate a slack in the dial scale by turning the gear (F) clockwise by 10 turns.

ZERO ADJUSTMENT ON INDICATOR

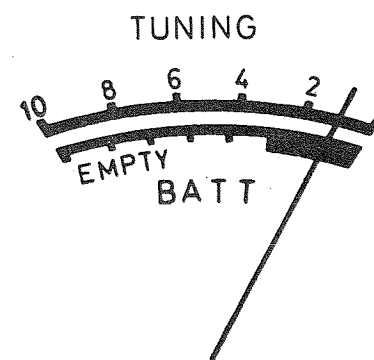


Fig. 15

Set the band selector switch at MW. Apply a 6V DC source voltage to the unit and adjust the mini-pot (R326) to make pointer point the letter "1" on the scale (a center of bold yellow line.)