

SERVICE MANUAL

STEREO TUNER



JT250L

(EUROPE)

This is a service manual for model JT250L and only items changed from model JT300L are indicated. For other items, refer to Service Manual for model JT300L (WM-8681).

mark represents a non-interchangeable part.

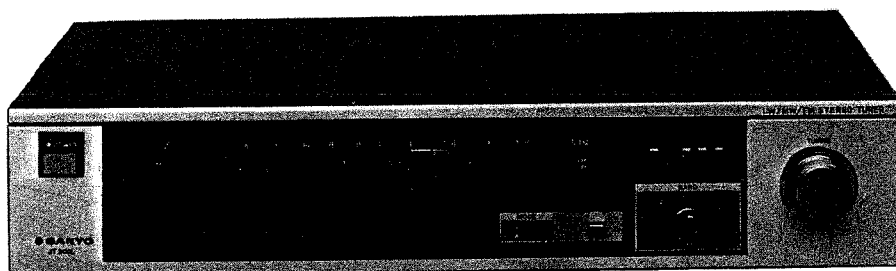
Key No.	JT300L	JT-250L	Description	Remark
	(PACKING & ACCESSORY)			
	141-6-133T-39902	141-6-133T-46201	Individual Carton	#
	141-6-410T-83302	141-6-410T-83308	Instruction Manual	#
	(CABINET)			
1	141-0-122T-46201	141-0-122T-46205	Front Panel Assy	#
4	141-2-163T-81330	141-2-163T-81340	Rotary Knob, Timing	#
5	141-2-163T-91900	141-2-163T-91930	Rotary Knob, Selector	#
	(CHASSIS)			
12	141-2-126T-41102	141-2-126T-41109	Back Lid	#
16	141-2-160T-09700	141-2-160T-09701	Push Button, MONO/STEREO	#
17	141-2-160T-16500	141-2-160T-16501	Push Button, POWER SW	#
27	141-2-247T-11800	Not used	Sheet	

Add this sheet to Model JT300L Service Manual.

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi, Osaka-fu, 570 Japan.

SERVICE MANUAL

STEREO TUNER

**SANYO****JT 300L****(EUROPE)**

SPECIFICATIONS

NOTE:

The below mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

FM section

Frequency range	87.5 — 108 MHz (nominal)
Usable sensitivity	2.0 μ V (mono)
Signal to noise ratio (1 mV ANT.)	70 dB (mono)
Harmonic distortion (1 kHz)	0.2%
Frequency response	30 Hz — 15 kHz
Stereo separation (1 kHz)	40 dB
IF rejection	75 dB
Aerial input	75 ohms unbalanced

AM (MW and LW) section

Frequency range	MW: 531 — 1602 kHz
	LW: 150 — 285 kHz
Sensitivity (ferrite aerial)	MW: 350 μ V/m, LW: 500 μ V/m
Signal to noise ratio (5 m V/m)	MW: 40 dB
Selectivity	30 dB

General

Power requirements	AC: 18 V, 50 Hz
Power consumption	AC: 18 V, 300 mA (maximum)
Dimensions (Approx.)	420 x (W) x 220 (D) x 85 (H) mm
	(16-1/2" x 8-5/8" x 3-3/8")
Weight (Approx.)	2.6 kg (6 lbs.)

* Specifications subject to change without notice.

NOTE:

The power switch is mounted on the secondary side and does not disconnect the set from AC-power, even when switched off.

WM-8681

HOW TO REMOVE THE PANEL

Pull out the power cord from outlet.

1. Cabinet

Remove Four screws "a" (binding head tapping Screw 4 x 8 mm) and one screw "b" (binding head tapping screw 3 x 8 mm) securing the cabinet.

2. Front panel

Pull out rotary knobs (Tuning and Band Select).

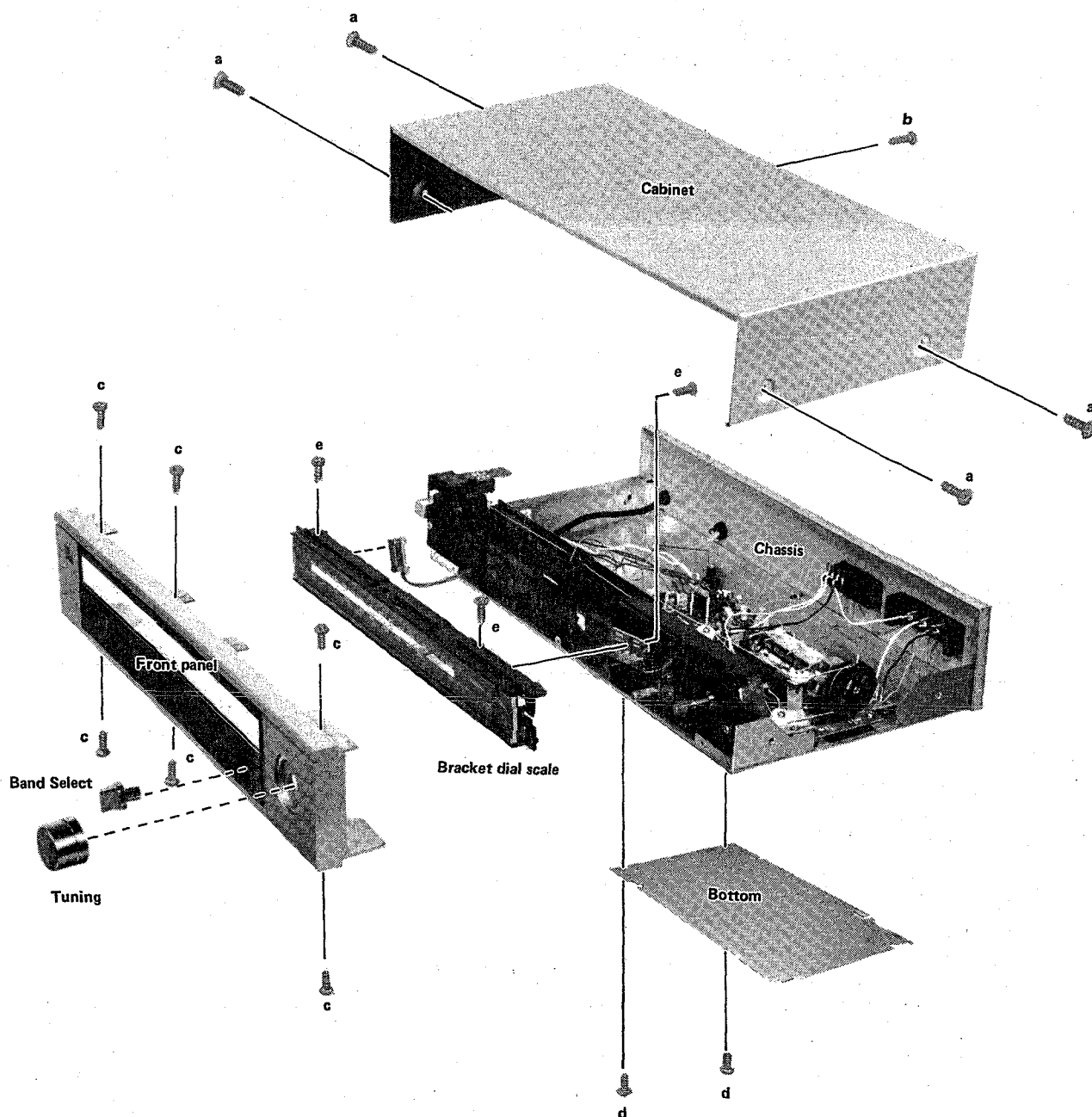
Remove six screws "c" (binding head tapping screw 3 x 10mm) securing the front panel.

3. Bottom lid

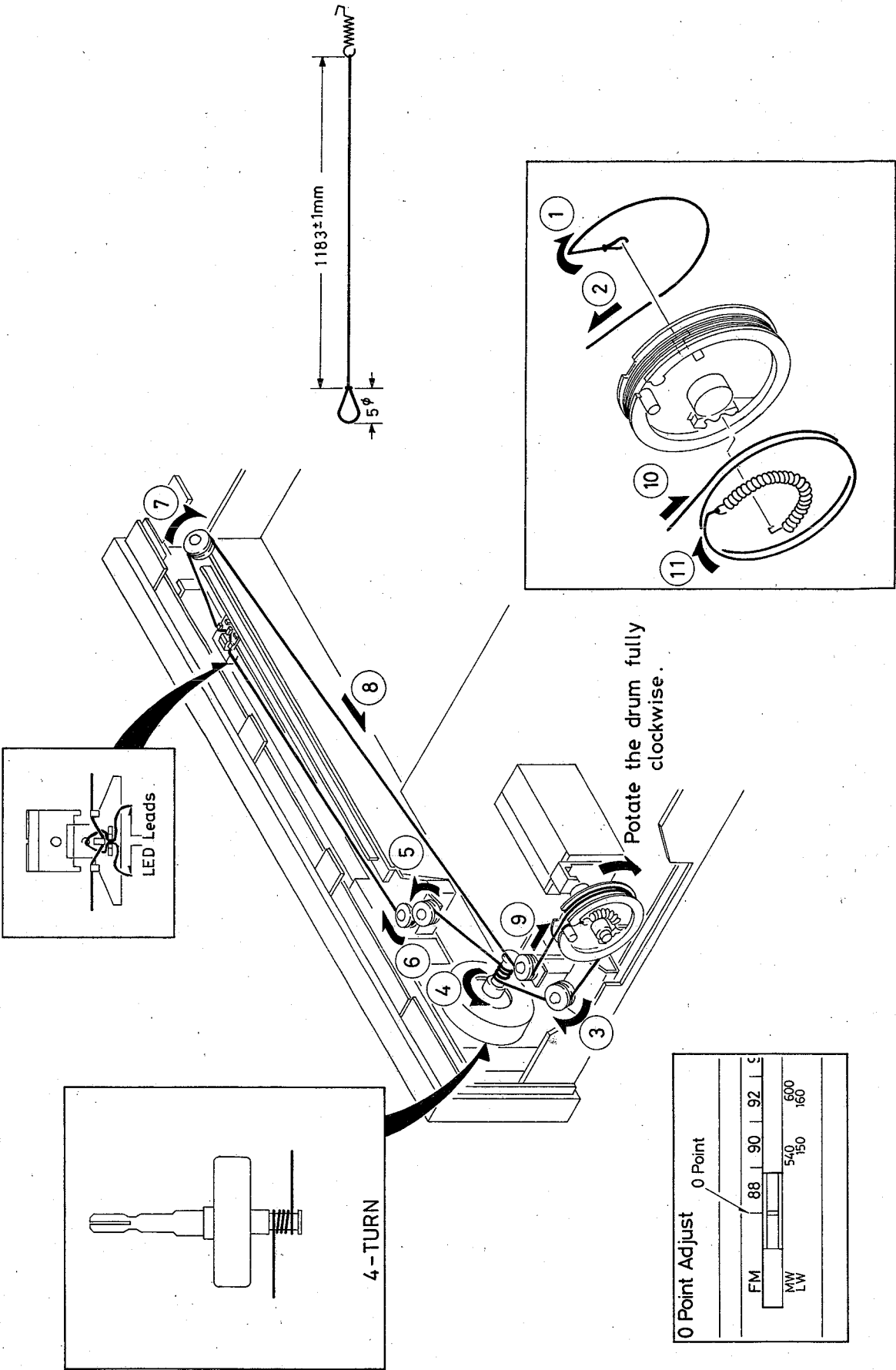
Remove two screws "d" (binding head tapping screw 3 x 6mm) securing the bottom lid, and slide the lid from left side.

4. Bracket dial scale.

Remove three screws "e" (binding head tapping screw 3 x 8mm) securing the bracket dial scale.



DIAL ROPE STRINGING



ALIGNMENT PROCEDURES

GENERAL ADJUSTMENT CONDITION

- AC voltage is 18V and output power 500mV.
- Use a screw driver with plastic grip for all adjustment.
- Signal input must be kept as low as possible to avoid overload.
- Use an output meter of the highest possible sensitivity.

FM ADJUSTMENT • Band selector switch "FM" position.

Standard modulation frequency : 1000 Hz $\pm$ 40kHz dev. 20 ~ 25dB

Step	Adjustment circuit	Input condition		Position of Tuning dial	Output condition		Adjustment Point	Adjustment procedure
		Measuring instrument (Frequency)	Condition point (Input strength)		Measuring instrument	Condition point		
1	I.F.	V	TP-3 (H), TP-4(E) Low level	Lowest end (Where no incoming Signal)	V. T. V. M. Oscilloscope	TP-5 (H)	T-201 T-202 T-203 T-204	- Match wave-form with center of ceramic filter. - Used the 300 ohms dummy antenna. - Adjust for maximum sensitivity with a symmetrical curve.
		S	Non modulation			TP-6 (H) TP-7 (E)	T-205	
2	OSC.	Low	FM Signal generator 87.4 MHz 108.25 MHz	Lowest end Highest end	V. T. V. M. Oscilloscope Distortion meter	Output terminal	L104 CT-3	Adjust until the distortion factor becomes minimum with the output value at the maximum.
		High					L101 L102 CT-1 CT-2	
3	ANT.	Low High	FM Signal generator 90 MHz 106 MHz	90 MHz 106 MHz	V. T. V. M. Oscilloscope Distortion meter	Output Terminal		Turn in SG and unit, and adjust so that the distortion factor becomes minimum at the maximum output value.
4	VCO (19KHz)	FM Signal generator (98MHz) (Non modulation)	External antenna (300 ohms) (20 ~ 25dB)	98 MHz	Frequency Counter	TP-9 (H) TP-7 (E)	SVR302	- Set the function switch to "Stereo" - Turn in SG and unit. - Adjust for 19 kHz $\pm$ 30 Hz.
5	Separation	FM Signal generator (98 MHz) + Stereo modulator	External antenna (300 ohms) (66dB)	98 MHz	V. T. V. M. Oscilloscope Distortion meter	Output Terminal	SVR301	- Set the function switch to "Stereo" - Measure the voltage leakage for each channel separately and adjust for optimum separation and balance.
6	Signal meter	FM signal generator (98 MHz)	External antenna (300 ohms) (60dB) External antenna (300 ohms) (59dB)	98 MHz	V. T. V. M. Oscilloscope Distortion meter	Output Terminal	SVR201	- Set SG in 98 MHz, and tune in by turning the tuning dial so that the distortion factor becomes the minimum. - Set attenuator of SG to 59 dB and adjust the SVR302 until (3) go out of signal indicator.

Note: The tuning point should be the output dip point at 4 kHz modulation.

Standard modulation frequency: 1000 Hz 30% 75 ~ 85dB

MW ADJUSTMENT

• Band selector switch "MW" position.

Step	Adjustment circuit	Input condition		Position of Tuning dial	Output condition		Adjustment Point	Adjustment procedure
		Measuring instrument (Frequency)	Condition Point (Input strength)		Measuring instrument	Condition point		
1	I.F.	AM Sweep generator (460 kHz)	IRE Loop antenna (Low level)	Lowest end (Where no incoming Signal)	V. T. V. M. Oscilloscope.	TP-8 (H) TP-7 (E)	T-206 T-207 T-208	- Adjust for maximum. - Repeat Adjustment.
2	OSC.	AM Signal generator	IRE Loop antenna	Lowest end Highest end	V. T. V. M. Oscilloscope	Output Terminal	L106 CT-5	
				600 kHz 1400 kHz			L105 CT-4	
3	ANT.	AM Signal generator	IRE Loop antenna	600 kHz 1400 kHz	V. T. V. M. Oscilloscope	Output terminal		

Note: The Tuning point should be the minimum distortion point.

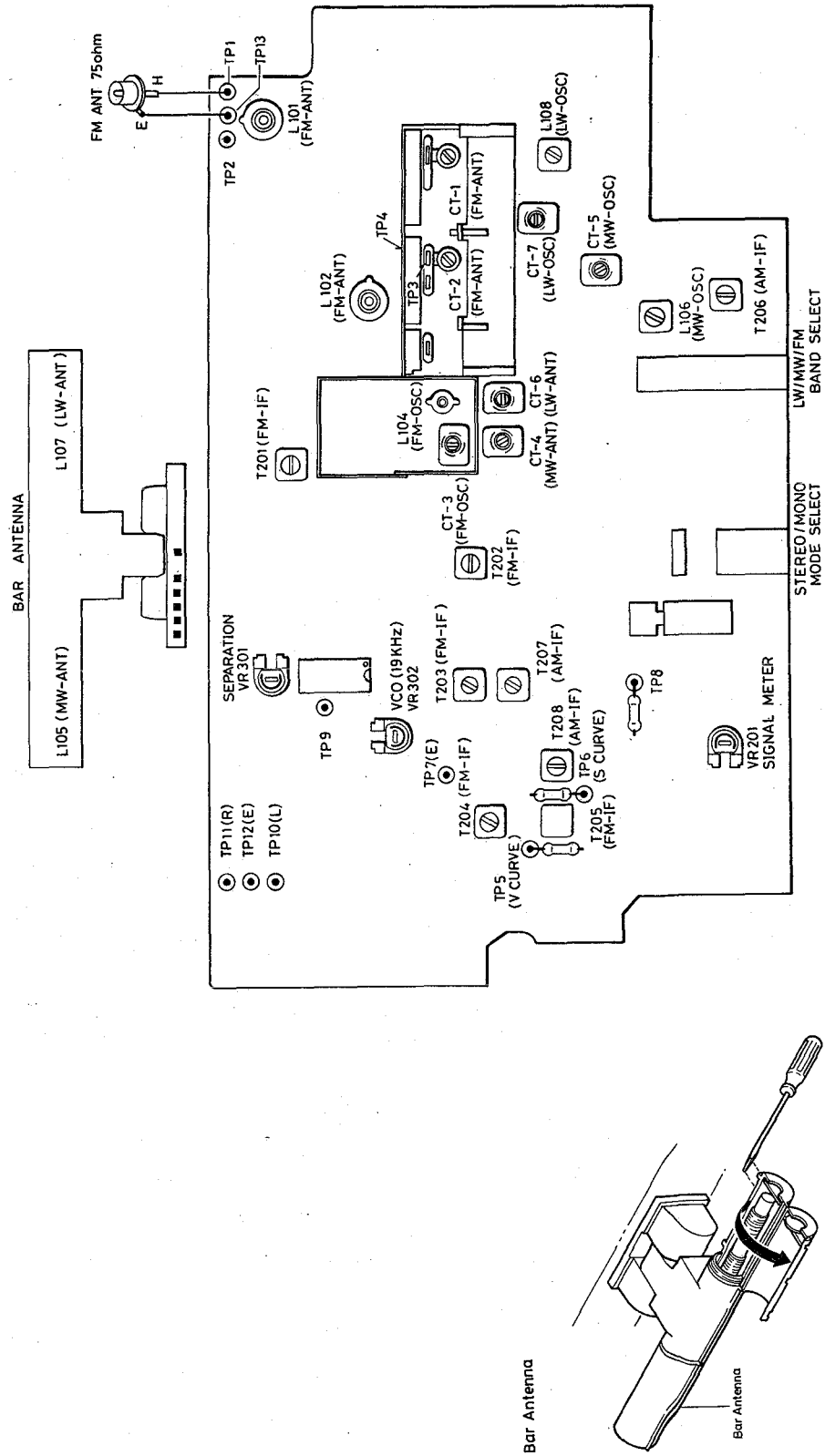
ALIGNMENT PROCEDURES

- Band selector switch "LW" position.

Standard modulation frequency: 1000 Hz 30% 75 ~ 85dB

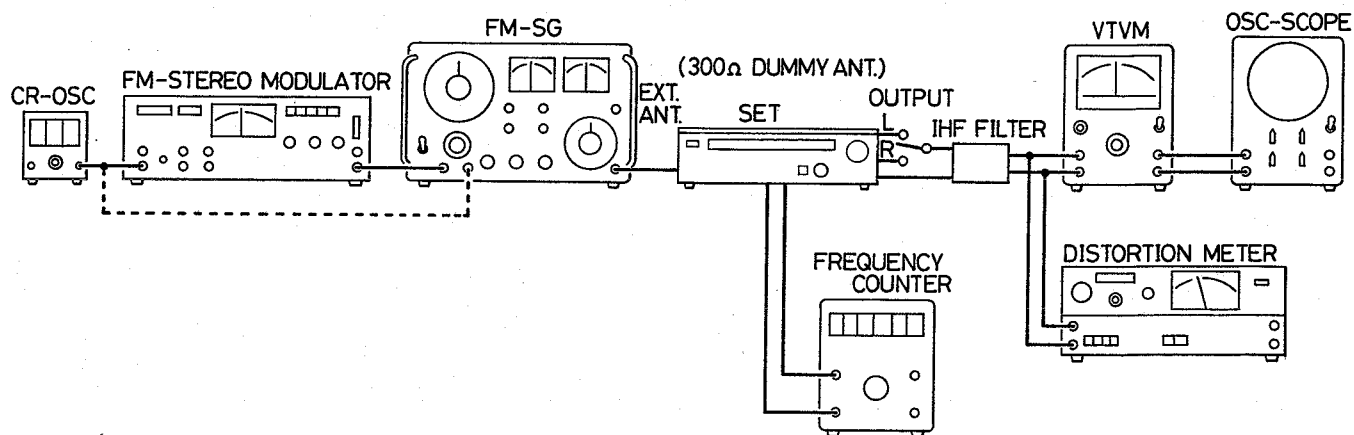
Step	Adjustment circuit	Input condition	Position of Tuning dial	Output condition	Adjustment Point	Adjustment procedure
				Measuring instrument	Condition point	
1	OSC.	Low	IRE Loop antenna	V. T. V. M. Oscilloscope	L108	• Adjust for maximum. • Repeat Adjustment.
		High			CT-7	
2	ANT.	Low	IRE Loop antenna	V. T. V. M. Oscilloscope	L107	• Repeat Adjustment.
		High			CT-6	

PARTS LOCATION

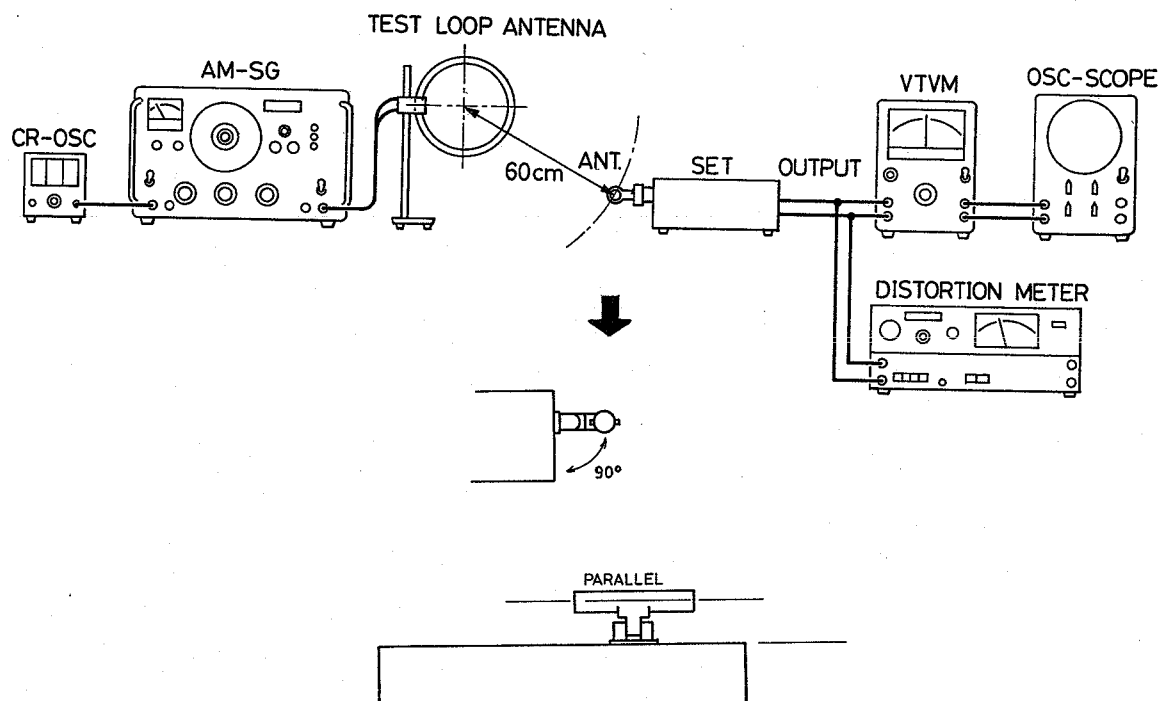


ADJUSTMENT CONNECTIONS

FM ADJUSTMENT CONNECTIONS



AM ADJUSTMENT CONNECTIONS



PARTS LIST

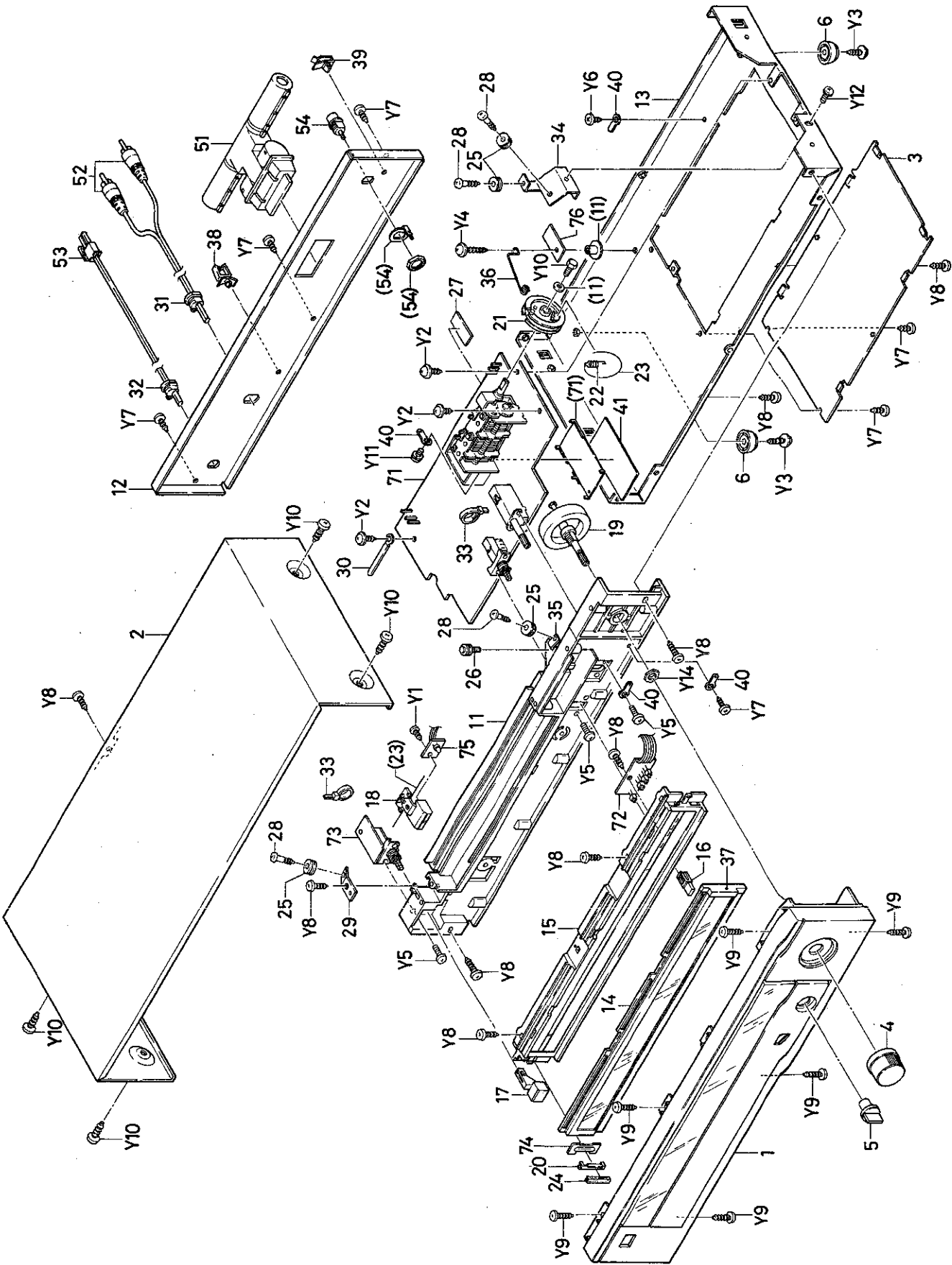
Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKING & ACCESSORY				FIXING PARTS			
	141-6-133T-39902	Individual Carton	1	Y12		Pan. Hd. Screw W/Spring	1
	141-6-144T-85000	Foam Plastic Case	1	Y13		Washer 3 x 8mm	1
	141-6-231T-35600	Inner Poly Cover, Set	1	Y14		Hexagon Hd. Bolt 2.6 x 6mm	1
	141-6-231T-25350	Inner Poly Cover, Inst. M	1			Hexagon Nut 9φ	1
	141-6-331T-11600	Protector Sheet	1	ELECTRICAL PARTS			
	141-6-415T-23500	Notice	1	51	4-257T-52701	Antenna Coil Ass'y	1
	141-6-415T-32301	Notice	1	52	4-243T-19974	Lead Cord	1
	141-6-410T-83302	Instruction Manual	1	53	4-236T-20000	Plug	1
	4-245T-00700	Antenna	1	54	4-240T-32800	Socket	1
CABINET				TUNER P. C. B. ASS'Y			
1	141-0-122T-46201	Front Panel Ass'y	1	71	141-4-250T-15704	P.C.B. Ass'y, Tuner	1
2	141-2-111T-54900	Cabinet	1	CT3,4,5	4-224T-08372	Variable Capacitor	1
3	141-2-125T-25900	Bottom Lid	1	CT6,7	4-224R-11600	Trimmer	3
4	141-2-163T-81330	Rotary Knob, Tuning	1	L101	4-224T-15471	Trimmer	2
5	141-2-163T-91900	Rotary Knob, Selector	1	L102	4-265T-03700	V H F Coil	1
6	141-2-174T-11200	Stand	2	L103	4-265T-03800	V H F Coil	1
CHASSIS				L104	4-265R-15100	V H F Coil	1
11	141-2-221T-10600	Bracket Panel	1	L106	4-265T-51340	V H F Coil	1
12	141-2-126T-41102	Back Lid	1	L108	4-258T-28640	O S C Coil	1
13	141-2-125T-30100	Bottom Lid	1	L109	4-258T-28840	O S C Coil	1
14	141-2-146T-30601	Dial Scale	1	T201	4-253T-15014	O S C Coil	1
15	141-2-231T-01900	Bracket Dial Scale	1	T202,203	4-256T-05140	I F T	1
16	141-2-160T-09700	Push Button, MONO/STEREO	1	T204	4-256R-19540	I F T	2
17	141-2-160T-16500	Push Button, POWER SW	1	T205	4-256T-04540	I F T	1
18	141-2-511T-24500	Pointer	1	T206,207	4-256T-04040	I F T	1
19	141-0-566T-13600	Tuning Shaft Ass'y	1	T208	4-256R-00141	I F T	2
20	141-2-329T-08600	Reflector	1	T301	4-256R-00241	I F T	1
21	141-2-538T-13200	Drum	1	CF201,202	4-255T-02900	MX Coil	1
22	141-2-855T-38700	Spring Coil	1		4-256T-81000	I F Filter	2
23	141-2-340T-05003	Rope	1		141-2-322T-40800	Shield Plate	1
24	141-2-447T-96001	Cushion	1		141-2-322T-18900	Shield Plate	1
25	141-2-661T-71300	Pulley	4		141-2-322T-72101	Shield Plate	1
26	141-0-661T-36300	Pulley Ass'y	1	S1	4-238T-58200	Rotary Switch	1
27	141-2-247T-11800	Sheet	1	S2	4-238T-39000	Push Switch	1
28	141-2-421T-20900	Special Screw	4	SVR301	4-222T-97572	Semi-Variable Resistor 1K ohm	1
29	141-2-310T-76000	Bracket, Pulley (Left)	1	SVR302	4-222T-97574	Semi-Variable Resistor 5K ohm	1
30	141-2-472T-01001	Lug	1	SVR201	4-222T-97578	Semi-Variable Resistor 100K ohm	1
31	141-2-464T-14400	Fixer	1	B101	123-2-471R-10900	Core	1
32	141-2-464T-11800	Fixer, AC Cord	1		4-240T-11200	Socket, 3p	1
33	141-2-464T-20600	Fixer, Lead	2		4-240T-11271	Socket, 4p	1
34	141-2-310T-81100	Bracket, Pulley (Right)	1	IC301		IC LA3350 S	1
35	141-2-310T-81200	Bracket, Pulley (Center)	1	IC302		IC LB1426	1
36	141-2-852T-43500	Spring Wire	1	Q101,106		Transistor 2K212	2
37	141-2-247T-12500	Sheet	1	Q102		Transistor 2SC2840	1
38	141-2-464T-29900	Fixer, Output Lead	1	Q103,104,		Transistor 2SC930 CONV	3
39	141-2-464T-39500	Fixer, Output Lead	1	105			
40	123-2-472R-00401	Lug, Earth	4	Q107		Transistor 2SC1571	1
41	141-2-247T-11801	Sheet, Shield Plate	1	Q201,203		Transistor 2SC930 IF	2
FIXING PARTS				Q202		Transistor 2SC930 IF	1
Y 1		Pan. Hd. Tapping Screw	1	Q301,302,		Transistor 2SC536 AUD	3
Y 2		2.3 x 6mm		204			
Y 3		Pan. Hd. Tapping Screw	3	Q303,304		Transistor 2SC945	2
Y 4		W/Washer 3 x 6mm		Q305		Transistor 2SA608	1
Y 5		Pan. Hd. Tapping Screw	2	Q306		Transistor 2SD325	1
Y 6		W/Washer 3 x 8mm		D305		Zener Diode GZA13Y	1
Y 7		Pan. Hd. Tapping Screw	1	D206		Diode 1S189	1
Y 8		3 x 20mm		D203,204		Diode 1S189	2
Y 9		Binding Hd. Screw 3 x 8mm	3	D207,208		Diode 1S189	2
Y 10		Binding Hd. Tapping Screw	1	D201,202,		Diode DS442X	8
Y 11		3 x 4mm		102,103,			
		Binding Hd. Tapping Screw	5	101,205,			
		3 x 6mm		301,302			
		Binding Hd. Tapping Screw	12	D303		Diode DS17	1
		3 x 8mm		D304		Diode DS18	1
		Binding Hd. Tapping Screw	6	CAPACITORS			
		3 x 10mm		C107		Ceramic 1pF NPO ±0.5pF 50V	1
		Binding Hd. Tapping Screw	5	C209		Ceramic 2pF ±0.25pF 50V	1
		4 x 8mm		C106		Ceramic 3pF NPO ±0.25pF 50V	1
		Pan. Hd. Screw W/Spring	1	C206		Ceramic 6pF ±0.25pF 50V	1
		Washer 3 x 4mm		C114		Ceramic 10pF NPO ±0.5pF 50V	1
				C108		Ceramic 6pF NPO ±5% 50V	1
				C116		Ceramic 15pF ±5% 50V	1

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
TUNER P. C. B. ASS'Y				TUNER P. C. B. ASS'Y			
	CAPACITORS						
C121		Ceramic 15pF N1500 $\pm 10\%$ 50V	1	R120,207,		330 ohm	7
C101		Ceramic 18pF N220 $\pm 5\%$ 50V	1	133,210,			
C105		Ceramic 18pF N220 $\pm 5\%$ 50V	1	339,312,			
C113		Ceramic 18pF N220 $\pm 5\%$ 50V	1	316,			
C102		Ceramic 20pF $\pm 5\%$ 50V	1	R212		470 ohm	1
C210		Ceramic 30pF N750 $\pm 5\%$ 50V	1	R201		560 ohm	1
C115		Ceramic 33pF $\pm 5\%$ 50V	1	R208		680 ohm	1
C221		Ceramic 100pF $\pm 5\%$ 50V	1	R118,217,		1K ohm	6
C109		Ceramic 220pF $\pm 5\%$ 50V	1	218,219,			
C216		Ceramic 220pF $\pm 5\%$ 50V	1	220,224			
C307,311		Ceramic 560pF $\pm 10\%$ 50V	2	R215,324,		1.5K ohm	3
C104,217,		Ceramic 0.001 μ F $\pm 10\%$ 50V	3	205			
218				R334,335,		33 ohm	3
C204,208		Ceramic 0.0047 μ F $\pm 10\%$ 50V	2	336			
C124		Ceramic 18p NPO ± 0.25 pF 50V	1	R308,309		2.2K ohm	2
C130		Ceramic 20pF NPO $\pm 5\%$ 50V	1	R111		2.7K ohm	1
C125		Ceramic 33pF $\pm 5\%$ 50V	1	R107,115,		3.3K ohm	6
C337		Ceramic 100pF $\pm 5\%$ 50V	1	R303,304,			
C132		Ceramic 220pF $\pm 5\%$ 50V	1	305,321			
C140		Ceramic 47pF $\pm 5\%$ 50V	1	R325,122		5.6K ohm	2
C141,143		Ceramic 0.01 μ F +80—20% 50V	2	R318,319		4.7K ohm	2
C142		Ceramic 0.022 μ F +80—20% 50V	1	R105,221,		5.6K ohm	3
C103,110,		Ceramic 0.01 μ F +80—20% 50V	14	222			
111,112,				R306,307,		8.2K ohm	5
117,201,				310,314,			
202,203,				320			
325,333,				R114,213,		10K ohm	7
334,335,				126,132,			
336,133				331,223,			
C112,205,		Ceramic 0.022 μ F +80—20% 50V	10	344			
207,211,				R233		1.2K ohm	1
212,213,				R127,231,		3.3K ohm	4
223,225,				234,134			
316,222				R135,130		1K ohm	2
C127		BC Con 0.0033 μ F $\pm 20\%$ 50V	1	R110,119		12K ohm	2
C308,312,		BC Con 0.0022 μ F $\pm 20\%$ 25V	2	R109,204,		15K ohm	4
C118,119,		BC Con 0.01 μ F $\pm 20\%$ 25V	4	226,333			
219,220				R106,203,		22K ohm	4
C315		BC Con 0.047 μ F $\pm 20\%$ 25V	1	225,302			
C310,314		BC Con 0.0033 μ F $\pm 20\%$ 25V	2	R113,125		39K ohm	2
C302,303		BC Con 0.015 μ F $\pm 20\%$ 25V	2	R322,328,		56K ohm	3
C227		BC Con 0.047 μ F $\pm 20\%$ 25V	1	229			
C120		Styrol 340pF $\pm 5\%$ 50V	1	R332		68K ohm	1
C317		P P Con 0.0015 μ F $\pm 5\%$ 100V	1	R214		82K ohm	1
C228		BC Con 0.01 μ F $\pm 20\%$ 25V	1	R101,227,		100K ohm	5
C332		Electrolytic 470 μ F 25V	1	228,313,			
C329		Electrolytic 470 μ F 16V	1	317			
C301		Electrolytic 220 μ F 16V	1	R327		150K ohm	1
C331		Electrolytic 100 μ F 25V	1	R123		100K ohm	1
C214,330		Electrolytic 100 μ F 16V	2	R230		27K ohm	1
C328		Electrolytic 10 μ F 16V	1	R323		18K ohm	1
C229		Electrolytic 4.7					

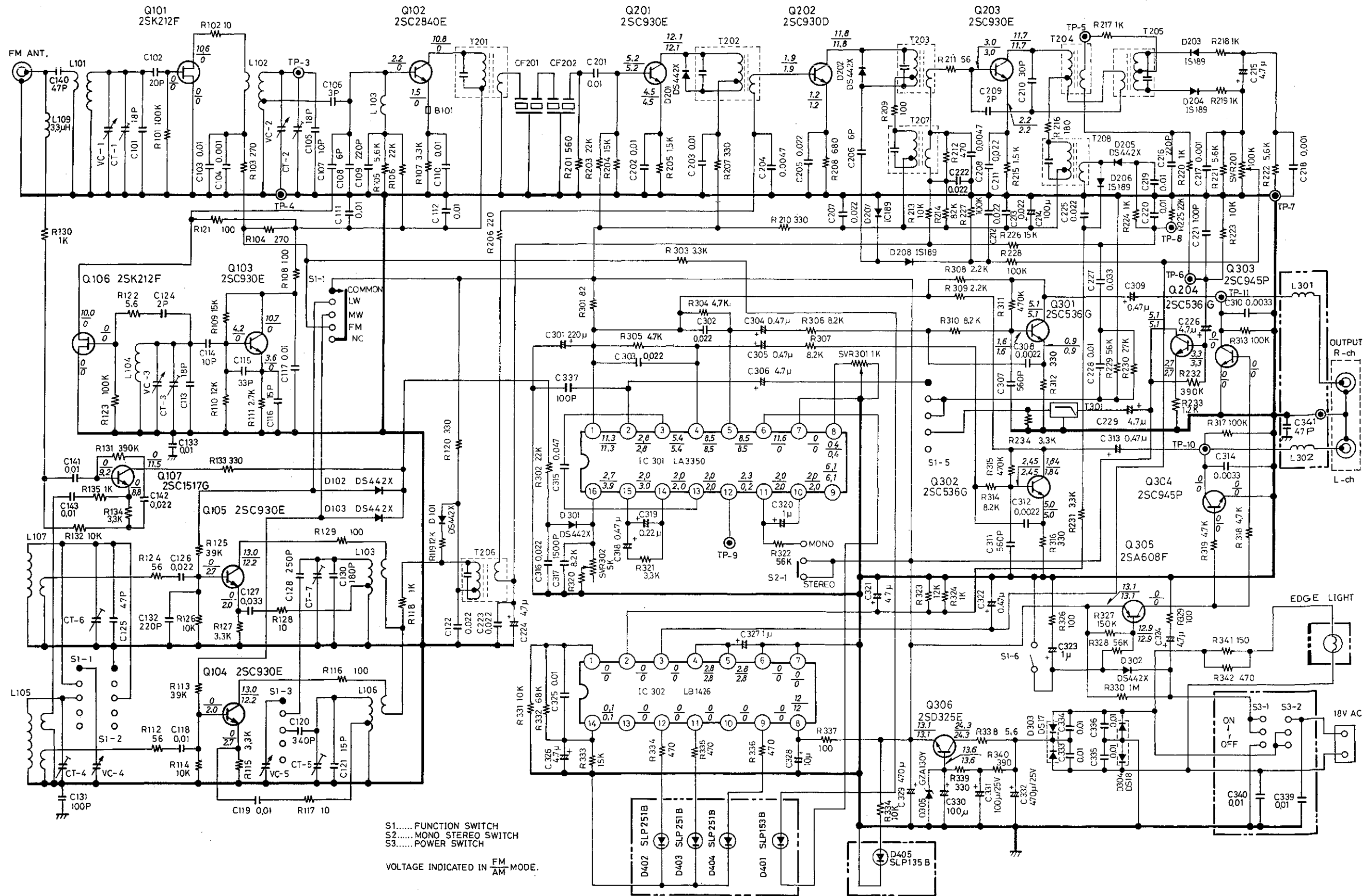
PARTS LIST

Ref. No.	Part No.	Description	Q'ty
POWER SWITCH P. C. B. ASS'Y			
73	141-4-250T-15901	P.C.B. Ass'y, Power Switch	1
S3	4-238T-41200	Push Switch	1
C339,340		Ceramic 0.01μF +80—20% 50V	2
LAMP P. C. B. ASS'Y			
74	141-4-250T-64300	P.C.B. Ass'y, Lamp	1
	4-612T-17400	Lamp	1
POINTER LED P. C. B. ASS'Y			
75	141-4-250T-18902	P.C.B. Ass'y, Pointer LED	1
		LED SLP135BB Red	1
OUTPUT P. C. B. ASS'Y			
76	141-4-233T-22502	P.C.B. Ass'y, Output	1
L301,302	4-265R-12600	V H F Coil	2
C341		Ceramic 47pF ±10% 50V	1

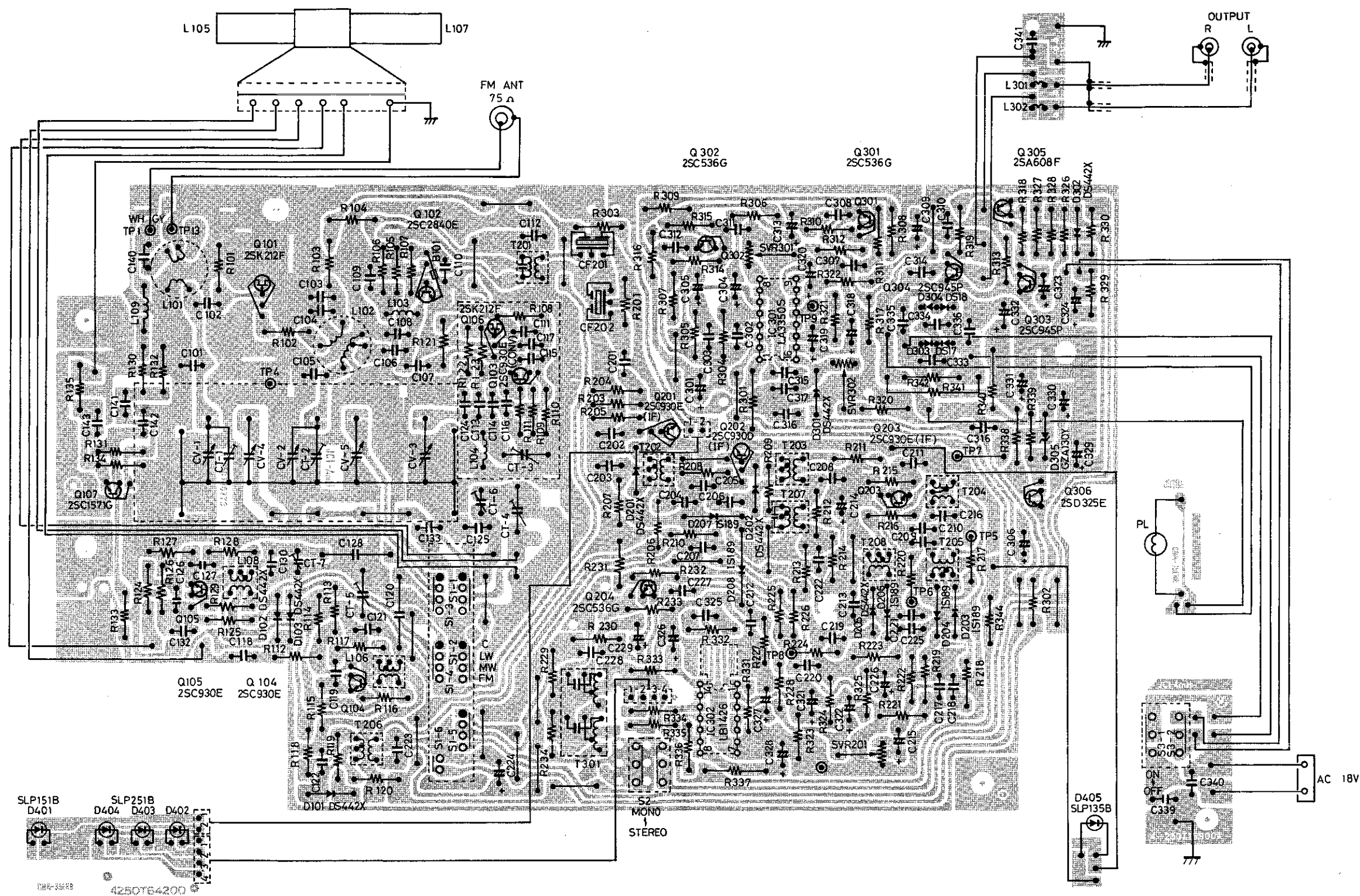
EXPLODED VIEW



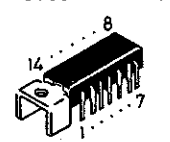
SCHEMATIC DIAGRAM



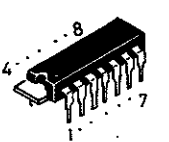
WIRING DIAGRAM



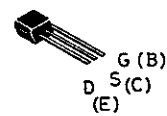
IC302...LB1426



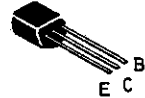
IC301...LA3350



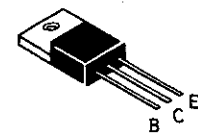
Q101, Q106...2SK212
Q102...2SC2840



Q103, Q104, Q105
Q201, Q202, Q203...2SC930
Q204, Q301, Q302...2SC536
Q303, Q304...2SC945
Q305...2SA608

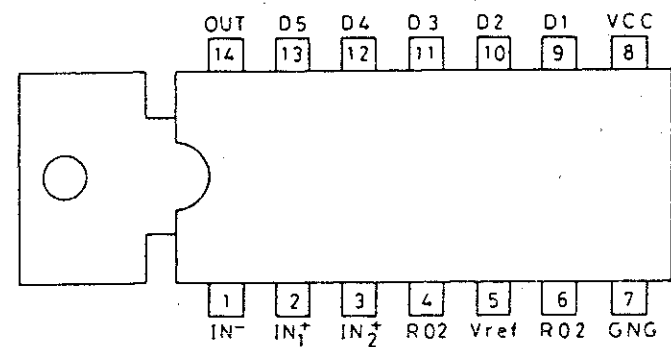
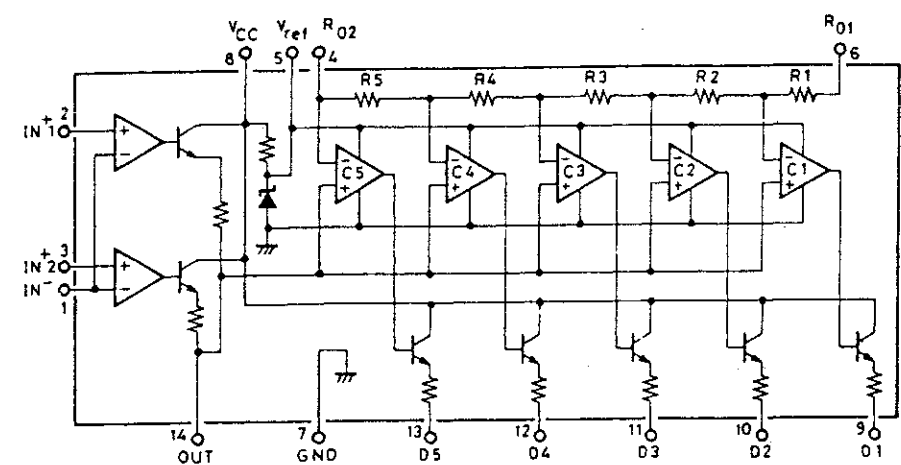


Q306...2SD325

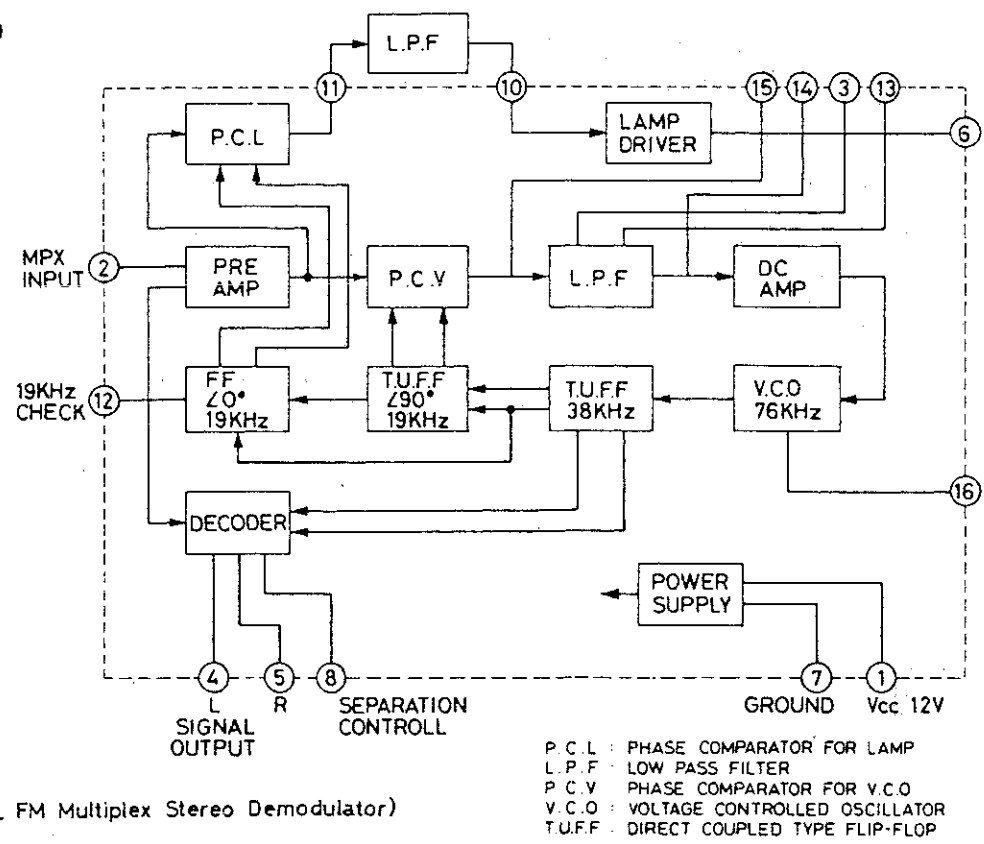


IC BLOCK DIAGRAM

LB1426 (5 DIGITS LEVEL METER DRIVER)



LA3350



(PLL FM Multiplex Stereo Demodulator)

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan.