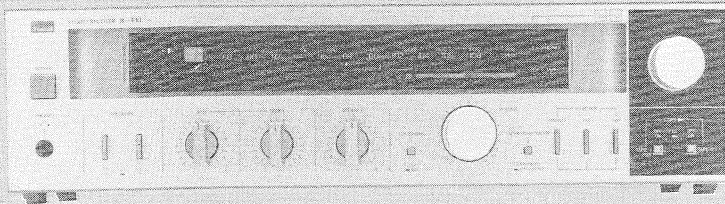


# SERVICE MANUAL

STEREO RECEIVER

## SANSUI R-410/410L

(Silver & Black Model)



### Note

R-410 and R-410L are additional models which external appearances are different from those of R-303 and R-303L. *+568*  
 This manual contains **OTHER PARTS LIST**, **PACKING LIST** and **ACCESSORY LIST** in which changed parts are printed with bold-face.  
 For other parts list, refer to R-303/303L service manual previously issued.

### •SPECIFICATIONS

#### Audio section

##### Power output

Min. RMS, both channels driven, from 40 to 20,000 Hz with no more than 0.07% total harmonic distortion.  
 20 watts per channel into 8 ohms

##### Total harmonic distortion

..... less than 0.07% at or below rated min. RMS power output

##### Frequency response (at 1 watt)

..... 10 to 50,000 Hz, +1 dB, -2 dB

##### Input sensitivity and impedance (at 1 kHz)

PHONO ..... 2.5 mV/47 kilohms  
 TAPE PLAY ..... 150 mV/47 kilohms

##### Signal to noise ratio (short-circuit, A-network)

PHONO ..... 72 dB  
 TAPE PLAY ..... 90 dB

#### FM section

Tuning range ..... 88 to 108 MHz

##### Usable sensitivity

Mono IHF ..... 10.8 dBf (1.9  $\mu$ V)  
 DIN ..... 0.9  $\mu$ V

##### 50 dB quieting sensitivity

Stereo ..... 37 dBf

##### Signal to noise ratio (at 65 dBf)

Stereo ..... 65 dB

##### Distortion (at 65 dBf)

Stereo ..... less than 0.25% at 1,000 Hz

Stereo separation ..... 40 dB at 1,000 Hz

#### AM section

Tuning range ..... MW: 530 to 1,600 kHz  
 LW: 150 to 350 kHz  
 <R-410L Only>

Usable sensitivity ..... MW: 53 dB/m (446  $\mu$ V/m)  
 LW: 62 dB/m  
 <R-410L Only>

Signal to noise ratio ..... 45 dB

#### Others

Power voltage ..... 120/220/240V (50/60 Hz)  
 <R-410>  
 220/240V (50/60 Hz)  
 <R-410L>

For U.S.A. and Canada

..... 120V (60 Hz) <R-410>  
**Power consumption** ..... 100 watts 110 VA Rated  
 <R-410>  
 130 watts Maximum  
 <R-410>  
 130 watts <R-410L>

**Dimensions** ..... 430 mm (16-15/16") W  
 118 mm (4-11/16") H  
 241 mm (9-1/2") D

**Weight** ..... 4.5 kg (9.9 lbs.) net  
 5.2 kg (11.5 lbs.) packed

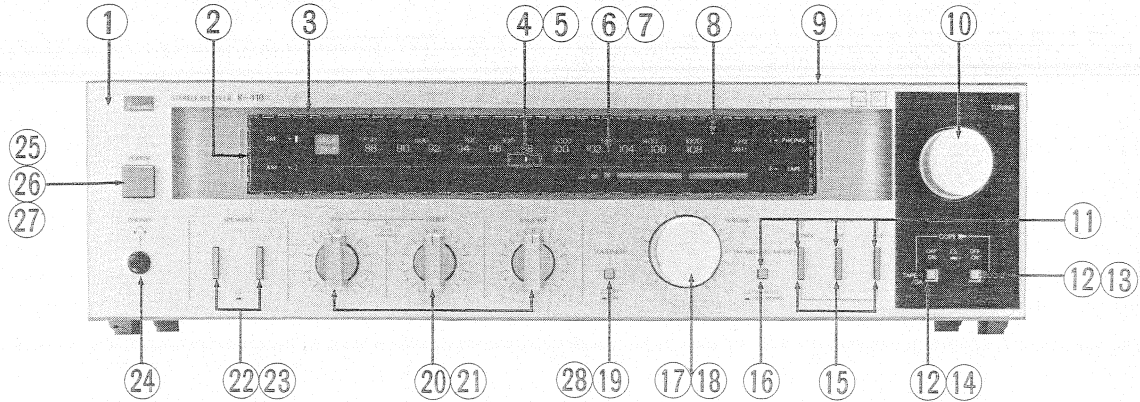
\* Design and specifications subject to change without notice for improvements.



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# 1. OTHER PARTS

•Front View



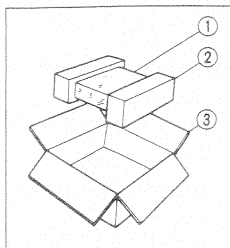
Parts List

Parts No.	Stock No.	Description
1	47472910	Front Panel Ass'y <R-410 Silver Model>
	47473000	Front Panel Ass'y <R-410 Black Model>
	47473110	Front Panel Ass'y <R-410L Silver Model>
	47473200	Front Panel Ass'y <R-410L Black Model>
2	07918500	Dress Knob
3	07947810	Display Holder
4	07919300	Dial Pointer Holder
5	46321100	LED Ass'y (Dial Pointer)
6	47470810	Dial Scale <R-410>
	47470900	Dial Scale <R-410L>
7	47009800	Smoked Plate <Silver Model>
	07954600	Smoked Plate <Black Model>
8	47470510	Display Cover
9	07952400	Bonnet
10	47430100	Tuning Knob <Silver Model>
	47430200	Tuning Knob <Black Model>
11	46368300	Push Switch, SELECTOR, FM MUTING/MODE
12	07917200	Push Knob, TAPE <Silver Model>
	07917300	Push Knob, TAPE <Black Model>
13	46365400	Push Switch, TAPE-2 <R-410>, TAPE <R-410L>
14	46365400	Push Switch, TAPE-1 <R-410>
	46361000	Push Switch, MW/LW <R-410L>

Parts No.	Stock No.	Description
15	47473600	Push Knob, SELECTOR
16	07922100	Push Knob, FM MUTING/MODE <Silver Model>
	07957000	Push Knob, FM MUTING/MODE <Black Model>
17	47411400	Knob, VOLUME <Silver Model>
	47471300	Knob, VOLUME <Black Model>
18	46362800	150kΩ(B) × 2 VR., VOLUME
19	46365500	Push Switch, LOUDNESS
20	47397200	Knob, BASS, TREBLE, BALANCE <Silver Model>
	47397300	Knob, BASS, TREBLE, BALANCE <Black Model>
21	46363100	50kΩ(C) × 2, 50kΩ(C) × 2, 250kΩ VR., BASS, TREBLE, BALANCE
22	07910900	Push Knob, SPEAKER <Silver Model>
	07911000	Push Knob, SPEAKER <Black Model>
23	46361100	Push Switch, SPEAKER
24	46265700	PHONES Jack
25	07971200	Push Knob, POWER <Silver Model>
	07911200	Push Knob, POWER <Black Model>
26	46360800	Push Switch, POWER (AUDIO MUTING)
27	46364300	Push Switch, POWER
28	47490000	Push Knob, LOUDNESS

# 2. PACKING LIST

Parts No.	Stock No.	Description
1	91263810	Vinyl Cover
2	07949000	Styrofoam Packing
3	47467800	Carton Case <R-410 Silver Model>
	47467900	Carton Case <R-410 Black Model>
	47468000	Carton Case <R-410L Silver Model>
	47468100	Carton Case <R-410L Black Model>



# 3. ACCESSORY LIST

Stock No.	Description
46897600	Operating Instruction <R-410>
46897700	Operating Instruction <R-410L>
46051700	FM Antenna
46145700	AM Loop Antenna
07563000	Antenna Holder
38103200	PJP Cord



SANSUI ELECTRIC CO., LTD.:

SANSUI ELECTRONICS CORPORATION:

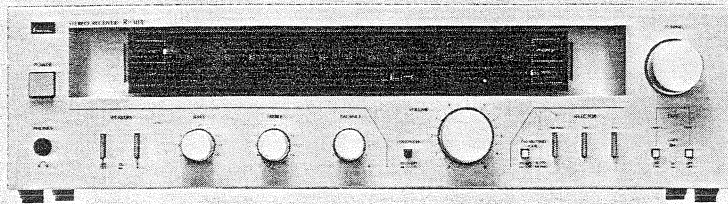
SANSUI ELECTRONICS (U.K.) LTD.:  
SANSUI ELECTRONICS G.M.B.H.:

14-1, Izumi 2-chome, Sugunami-ku, Tokyo 168 Japan  
PHONE: (03) 324-8891/TELEX: 232-2076 (International Division)  
1250 Valley Brook Ave. Lyndhurst, N.J. 07071 U.S.A.  
17150 South Margay Ave. Carson, California 90746 U.S.A.  
3036 Koapaka Street. Honolulu, Hawaii 96819 U.S.A.  
Unit 10A, Lyon Industrial Estate, Rockware Avenue, Geenford, Middx UB6, OAA, England  
Pau Ehrich Strasse 8, 6074 Rödermark 2, West Germany

# SERVICE MANUAL

## STEREO RECEIVER

# SANSUI R-303/303L *R-303*



### CAUTION

1. Use only replacement parts recommended by the manufacturer.
2. Measure insulation resistance before returning the appliance to the customer to prevent electrical shock.

### • SPECIFICATIONS

#### Audio section

##### Power output

Min. RMS, both channels driven, from 40 to 20,000 Hz with no more than 0.08 % total harmonic distortion  
20 watts per channel into 8 ohms

##### Total harmonic distortion

..... less than 0.07 % at or below rated min. RMS power output

##### Frequency response (at 1 watt)

..... 10 to 50,000 Hz, +1 dB, -3 dB

##### Input sensitivity and impedance (at 1 kHz)

PHONO ..... 2.5 mV/47 kilohms  
TAPE PLAY ..... 150 mV/47 kilohms

##### Signal to noise ratio (short-circuit, A-network)

PHONO ..... 72 dB  
TAPE PLAY ..... 90 dB

#### FM section

Tuning range ..... 88 to 108 MHz

##### Usable sensitivity

Mono IHF ..... 10.8 dBf (1.9  $\mu$ V)  
DIN ..... 0.9  $\mu$ V

##### 50 dB quieting sensitivity

Stereo ..... 37 dBf

##### Signal to noise ratio (at 65 dBf)

Stereo ..... 65 dB

##### Distortion (at 65 dBf)

Stereo ..... less than 0.25 % at 1,000 Hz

Stereo separation ..... 40 dB at 1,000 Hz

#### AM section

Tuning range ..... MW: 530 to 1,600 kHz

..... LW: 150 to 350 kHz <R-303L Only>

Usable sensitivity ..... MW: 53 dB/m (446  $\mu$ V/m)

..... LW: 62 dB/m <R-303L Only>

Signal to noise ratio .. 45 dB

#### Others

Power voltage ..... 120/220/240 V (50/60 Hz) <R-303>  
For U.S.A. and Canada

..... 120 V (60 Hz) <R-303>

Power consumption ... 100 watts 110 VA Rated <R-303>

..... 130 watts Maximum <R-303L>

Power voltage ..... 220/240 V (50/60 Hz) <R-303L>

..... 130 watts <R-303L>

Dimensions ..... 430 mm (16-15/16") W

..... 118 mm (4-11/16") H

..... 241 mm (9-1/2") D

Weight ..... 4.5 kg (9.9 lbs.) net

..... 5.2 kg (11.5 lbs.) packed

\* Design and specifications subject to change without notice for improvements.

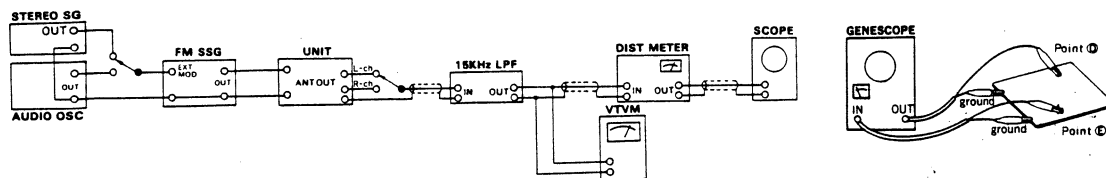


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## 2. ADJUSTMENTS

### 2-1. FM Adjustment (See Top View on Page 8)

Note: 1. Selector . . . . . FM



#### (1) FM IF, RF Adjustment and Dial Calibration

Note: 1. FM MUTING/MODE Switch . . . . . OFF/MONO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	98MHz ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point (A) (dVR1) & Earth DC Volt Meter	dT1 F-3784	Max. DC Volt (about 1.7V)	
2.	Discriminator Coil Adj. In case of using Genescope	1	No Input	Between Point (B) & Point (C) (dR41) (or TP2 & TP3) (See F-3767 on Page 6) DC Volt Meter	dT2 F-3767	DC 0V ± 30mV	
		2	Output 80dB, Genescope	Point (D) (dTC2)	Between Point (E) (dD2) & Earth (See F-3767 on Page 6)	dT3 F-3767	
	Discriminator Coil Adj. In case of using Dist meter	1	No Input	Between Point (B) & Point (C) (dR41) (or TP2 & TP3) (See F-3767 on Page 6) DC Volt Meter	dT2 F-3767	DC 0V ± 30mV	<ul style="list-style-type: none"> <li>Repeat procedures as stated in subject 1 &amp; 2.</li> <li>Since the dT1 has already adjusted, perform only a fine adjustment in this procedure.</li> </ul>
		2	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	REC OUT L-CH or R-CH VTVM & SCOPE	dT3, dT1 F-3767	
3.	90MHz Dial Calibration	90MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Dial Pointer	Tuning Knob	90MHz	<ul style="list-style-type: none"> <li>Repeat procedures as stated in step 3 &amp; 4.</li> </ul>
				REC OUT L-CH or R-CH VTVM & SCOPE	dL3 F-3784	Max. Output	
4.	106MHz Dial Calibration	106MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Dial Pointer	Tuning Knob	106MHz	
				REC OUT L-CH or R-CH VTVM & SCOPE	dTC3 F-3784	Max. Output	
5.	90MHz RF Adj.	90MHz ANT Input Minimum value with sine wave 1000Hz (100% MOD.), FM SSG	Same as above	REC OUT L-CH or R-CH VTVM & SCOPE	dL1, dL2 F-3784	Max. Output	
6.	106MHz RF Adj.	106MHz ANT Input Minimum value with sine wave 1000Hz (100% MOD.), FM SSG	Same as above	Same as above	dTC1, dTC2 F-3784	Max. Output	

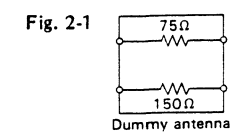
(2) FM STEREO Adjustment

Note: 1. FM Mode . . . . . AUTO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	PLL VCO Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG	ANT terminal 300Ω	Stereo indicator	dVR2 F-3767	Light indicator	Adjust the VR within center of lighting level
	PLL VCO Adj. In case of using Freq.	98MHz ANT Input 65dBf (59.8dB), FM SSG, No MOD.	Same as above	Between Point ⑤ (Pin 10 of dIC2) & Earth (See F-3767 on Page 6) Freq. counter	dVR2 F-3767	19kHz ±50Hz	
2.	Muting level Adj.	98MHz ANT Input 22dBf (16.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	Stereo indicator or REC OUT L-CH or R-CH VTVM & SCOPE	dVR1 F-3784	Stereo indicator turns ON or Out- put Signal comes out	

◆ ADJUSTMENT FOR FM

- There are two kind in indication of FM SG output attenuator
  - Attenuator with marking of 75Ω open . . . . . open indication type.
  - Attenuator with marking of 75Ω load or close . . . . . load or close indication type.
- FM SG output level in this FM adjustment are described as open indication type.
- To feed FM signal, a dummy antenna circuit as Fig. 2-1 must be connected between FM SG output and ANT terminal (300Ω) of the unit.



The following table shows relations among FM SG attenuator indication (dB), available power radio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

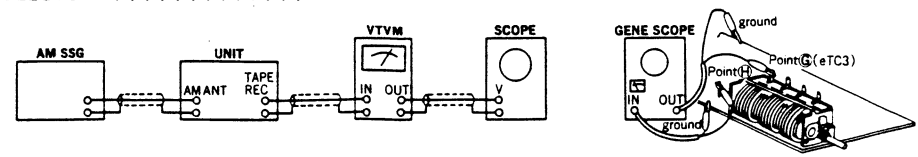
	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	-0.8 dBf 65.2 dBf	-6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

• Abbreviations

Equipment	Others
AM FM Generator Oscilloscope . . . . .	Genescope . . . . . ANT.
AM Standard Signal Generator . . . . .	AM SSG . . . . . MOD.
FM Standard Signal Generator . . . . .	FM SSG . . . . . T.H.D.
FM Stereo Generator . . . . .	Stereo SG . . . . .
Oscilloscope . . . . .	Scope . . . . .
Audio Oscillator . . . . .	Audio Osc. . . . .
Distortion Meter . . . . .	Dist. Meter . . . . .

2-2. AM Adjustment (See Top View on Page 8)

Note: BAND SELECTOR . . . . . AM



(1) AM IF Adjustment & MW Dial Calibration

Note: BAND SELECTOR . . . . . MW <R-303L Only>

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 60dB	Point ⑥ (eTC3)	Point ④ (eR26) (See F-3746 on Page 6)	eCF1 eL2 F-3746	Max. Waveform	
2.	600kHz Dial Calibration	600kHz ANT Input 60dB 400Hz (30% MOD.) AM SSG	ANT terminal	Dial Pointer	Tuning Knob	600kHz	
				REC OUT L-CH or R-CH VTVM & Scope	eT3 F-3784	Max. Output	
3.	1400kHz Dial Calibration	1400kHz ANT Input 60dB 400Hz (30% MOD.) AM SSG	Same as above	Dial Pointer	Tuning Knob	1400kHz	
				REC OUT L-CH or R-CH VTVM & Scope	eTC3 F-3784	Max. Output	
4.	600kHz RF Adj.	600kHz ANT Input 50dB 400Hz (30% MOD.) AM SSG	Same as above	REC OUT L-CH or R-CH VTVM & Scope	eT1 F-3784	Max. Output	
5.	1400kHz RF Adj.	1400kHz ANT Input 50dB 400Hz (30% MOD.) AM SSG	Same as above	REC OUT L-CH or R-CH VTVM & Scope	eTC2 F-3784	Max. Output	

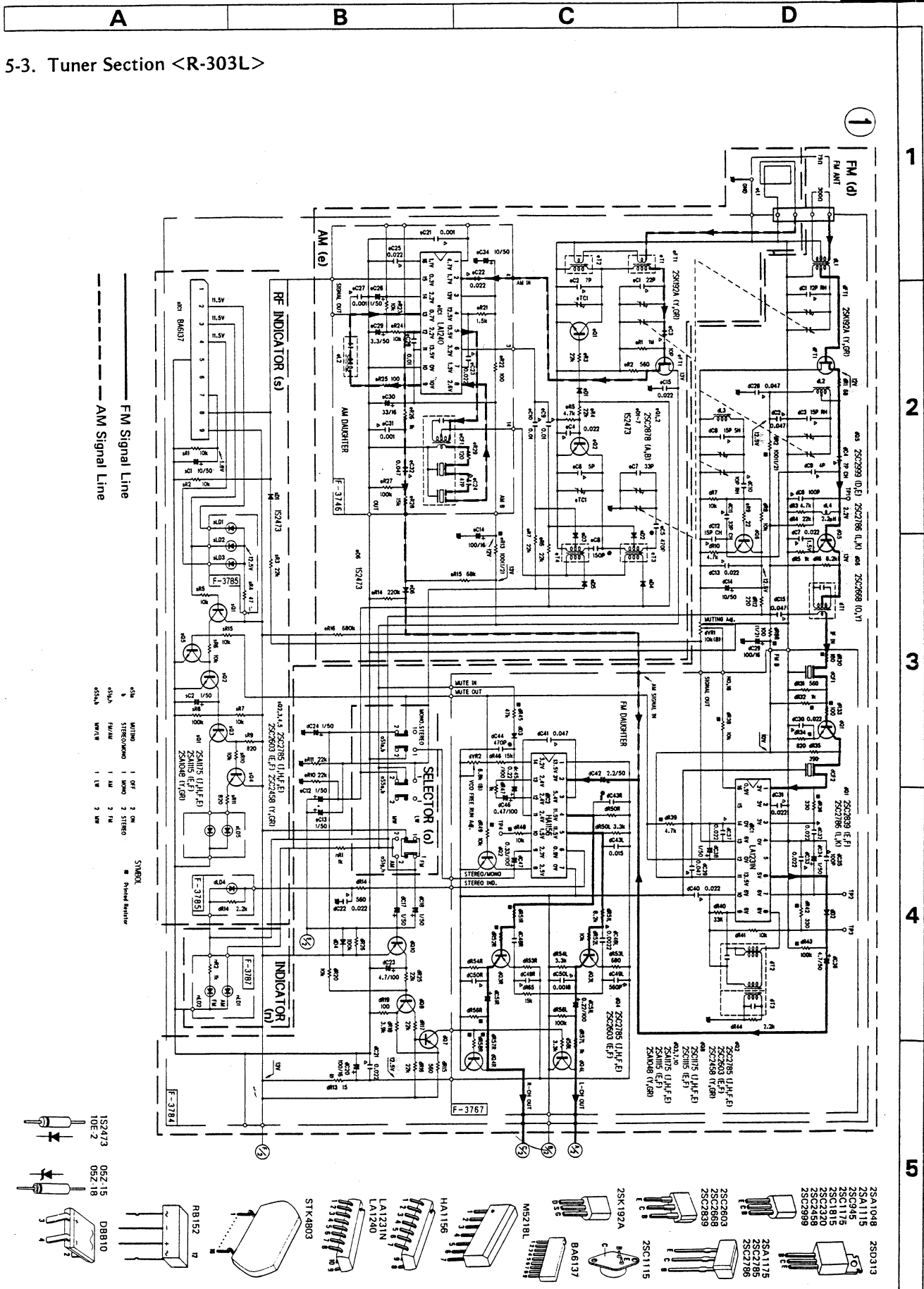
(2) LW Dial Calibration <R-303L Only>

Note: BAND SELECTOR . . . . . LW

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	170kHz Dial Calibration	170kHz ANT Input 60dB 400Hz (30% MOD.) AM SSG	ANT terminal	Dial Pointer	Tuning Knob	170kHz	
				REC OUT L-CH or R-CH VTVM & Scope	eT4 F-3784	Max. Output	
2.	300kHz Dial Calibration	300kHz ANT Input 60dB 400Hz (30% MOD.) AM SSG	Same as above	Dial Pointer	Tuning Knob	300kHz	
				REC OUT L-CH or R-CH VTVM & Scope	eTC1b F-3784	Max. Output	
3.	170kHz RF Adj.	170kHz ANT Input 50dB 400Hz (30% MOD.) AM SSG	Same as above	REC OUT L-CH or R-CH VTVM & Scope	eT2 F-3784	Max. Output	
4.	300kHz RF Adj.	300kHz ANT Input 50dB 400Hz (30% MOD.) AM SSG	Same as above	REC OUT L-CH or R-CH VTVM & Scope	eTC1a F-3784	Max. Output	



5-3. Tuner Section <R-303L>



5-4. Audio Section <R-303L>

