SPECIFICATIONS

FM SECTION

Tuning Range	87.8 to 108MHz (U)(C)	
	87.4 to 108.1MHz (G)(A)(B)	
	87.8 to 108 or 87.4 to 108.1 (R)	
50dB Quieting Sensitivity		
Mono (IHF)	3μV (14.7dBf)	
Stereo	32μV (35.3dBf)	
Usable Sensitivity		
Mono		
(30dB Quieting)	1.2μV (300Ω) 6.8dBf	
	0.6μV (75Ω) 6.8dBf	
DIN Mono (S/N 26dB)	1.2μV (G)(A)(B)	
DIN Stereo (S/N 46dB)	35μV (G)(A)(B)	
Image Response Ratio		
(98MHz)	85dB	
IF Response Ratio		
(98MHz)	100dB	
Spurious Response Ratio		
(98MHz)	100dB	
AM Suppression Ratio		
(IHF)	65dB	
Capture Ratio (IHF)	Local 1.2dB, DX2.5dB	
	Local 2.5dB, DX2.5dB (G)(A)(B)	
Alternate Channel	Local 25dB, DX85dB	
Selectivity (two signals)	Local 15dB, DX70dB (G)(A)(B)	
Signal to Noise Ratio		
(at 85dBf)		
Mono	88dB	
Stereo	83dB	
(DIN UN Weighted)	Mono	74dB (G)(A)(B)
	Stereo	72dB (G)(A)(B)
(DIN Weighted)	Mono	80dB (G)(A)(B)
	Stereo	76dB (G)(A)(B)
Distortion		
Mono 100Hz	Local 0.02%, DX 0.05%	
1kHz	Local 0.03%, DX 0.3%	
6kHz	Local 0.05%, DX 0.8%	
Stereo 100Hz	Local 0.04%, DX 0.6%	
1kHz	Local 0.04%, DX 0.6%	
6kHz	Local 0.06%, DX 1.2%	
(40kHz Dev.)6.3kHz	Local 0.08%, (G)(A)(B)	
Intermodulation Distortion (IHF)		
Mono	Local 0.03%, DX 0.3%	
Stereo	Local 0.04%, DX 0.6%	
Stereo Separation		
50Hz	Local 60dB, DX 28dB	
1Hz	Local 60dB, DX 28dB	
10kHz	Local 50dB, DX 25dB	
Frequency Response		
50Hz to 10kHz	±0.3dB	
30Hz to 15kHz	+0.3, −0.5dB	
Subcarrier Product Ratio	65dB	
Auto-DX Switching Threshold		
	40μV (37.3dBf)	

AM SECTION

Tuning Range	516 to 1614kHz (U)(C)
	518 to 1615kHz (G)(A)(B)
	516 to 1614kHz or
	518 to 1615kHz (R)
Usable Sensitivity (IHF)	10μV
Selectivity	Local 17dB, DX 27dB
Signal to Noise Ratio	50dB
	48dB (G)(A)(B)
Image Response Ratio	45dB
Spurious Response Ratio	Better than 50dB
Distortion	0.3%
	0.4% (G)(A)(B)

AUDIO SECTION

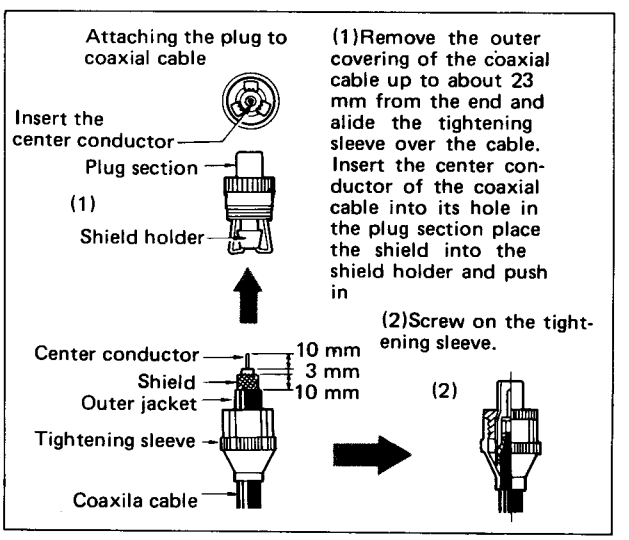
Output Level/Impedance	
FM (100% mod. 1kHz)	500mV/2.2kΩ
AM (30% mod. 1kHz)	150mV/2.2kΩ
Rec Cal Signal (333Hz: Corresponding to 50% FM modulation)	250mV/4.7kΩ

GENERAL

Semiconductors	74 Transistors, 16 ICs, 2 FETs, 25 Diodes, 1 Degital Display, 20 LEDs, 6 Varicap Diodes
Power Supply	
U.S. & Canadian Models	120V, 60Hz
General Model	110–130V/220–240V, 50/60Hz
North European Model	220V, 50Hz
British & Australian Models	240V, 50Hz
Power Consumption	12W
Dimensions (W x H x D)	435 x 72 x 320.5mm
	(17-1/8 x 2-7/8 x 12-5/8)"
Weight	4.0 kg (8 lbs.)

(G) . . . . . North European model
(A) . . . . . Australian model
(B) . . . . . British model
(U) . . . . . U.S.A. model
(C) . . . . . Canadian model
(R) . . . . . General model

Specifications subject to change without notice.



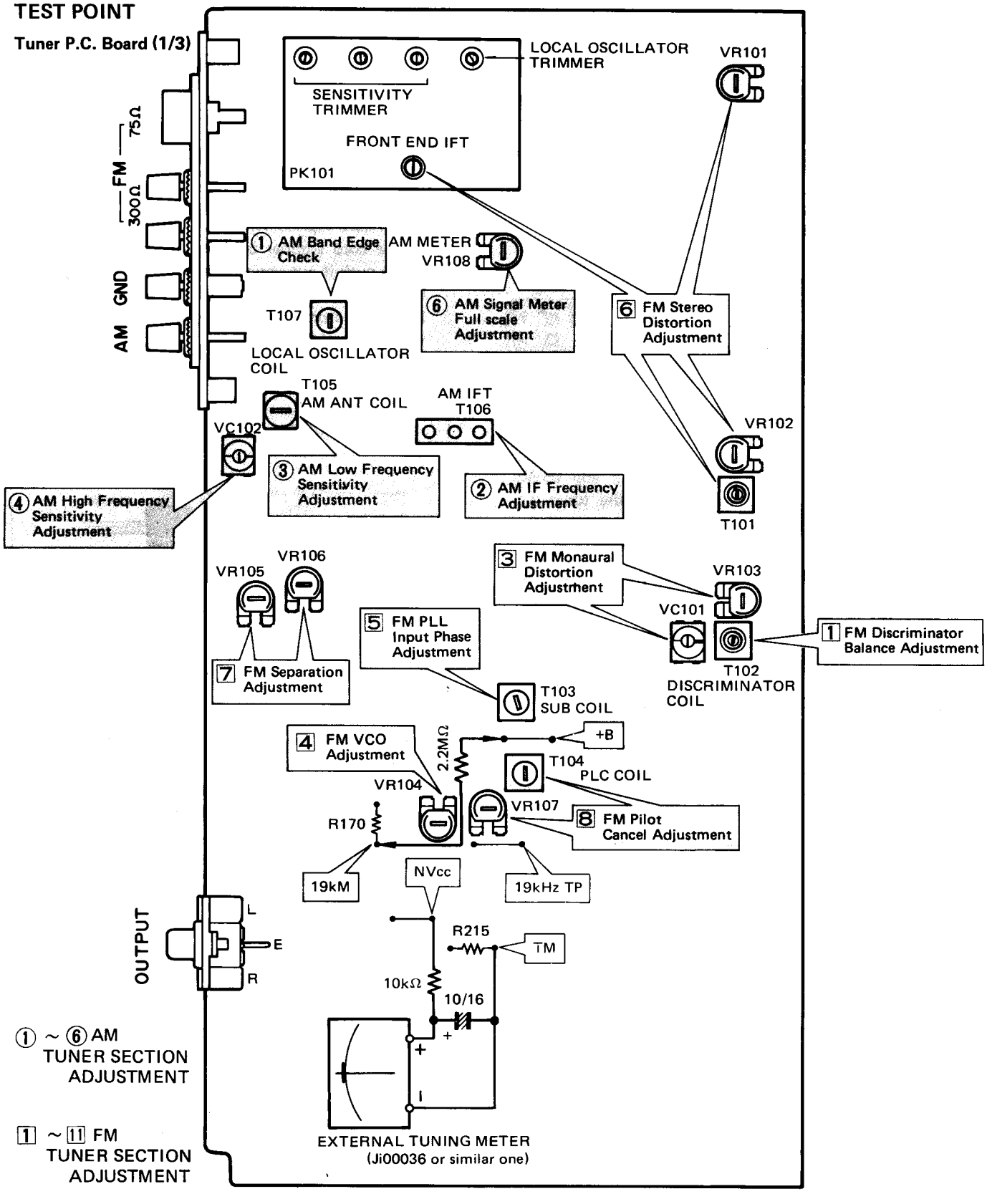

TEST POINT
Tuner P.C. Board (1/3)
LOCAL OSCILLATOR TRIMMER
VR101
SENSITIVITY TRIMMER
FRONT END IFT
PK101
FM 75Ω
300Ω
AM GND
① AM Band Edge Check
AM METER
VR108
⑥ AM Signal Meter Full scale Adjustment
⑥ FM Stereo Distortion Adjustment
T107
LOCAL OSCILLATOR COIL
T105
AM ANT COIL
AM IFT
T106
VC102
VR102
T101
③ AM Low Frequency Sensitivity Adjustment
② AM IF Frequency Adjustment
④ AM High Frequency Sensitivity Adjustment
VR105
VR106
③ FM Monaural Distortion Adjustment
VR103
VC101
⑤ FM PLL Input Phase Adjustment
① FM Discriminator Balance Adjustment
⑦ FM Separation Adjustment
T103
SUB COIL
T102
DISCRIMINATOR COIL
④ FM VCO Adjustment
2.2MΩ
+B
T104
PLC COIL
VR104
VR107
⑧ FM Pilot Cancel Adjustment
R170
19kM
NVcc
19kHz TP
OUTPUT
L
E
R
R215
TM
10kΩ
10/16
+
EXTERNAL TUNING METER
(Ji00036 or similar one)
① ~ ⑥ AM TUNER SECTION ADJUSTMENT
1 ~ 11 FM TUNER SECTION ADJUSTMENT

Fig. 8

1. AM TUNER SECTION

- Proceed with these adjustments before FM tuner section adjustments.
- Connect the AM loop antenna to the AM ANT terminals.
- Proceed with the adjustments about 5 minutes after the power has been switched on.
- Set the FUNCTION to AM.
- Measuring instrument abbreviation
  AM S.G. : AM signal generator (with 0.1kHz accuracy)

Step	Adjustment item	Terminals to be connected	Required instrument	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	Band edge confirmation			T107 (local osc. coil)	Operate the tuning button.	Confirm coverage of AM band at indicators indicated frequency.	Tuning mode switch → AUTO
2.	IF frequency adjustment	Connect a dummy antenna to the AM S.Gs ANT terminals output L or R.	AM S.G. (450kHz 100dBμ ~ 120dBμ) Level meter	T106 (AM IFT) (three cores)	Adjust so that the detector output is at maximum.	Set the RX MODE switch to AUTO DX.	Tuning MODE switch → MAN'L detuned point.
3.	Sensitivity adjustment (low frequency range)	Same as step 2	AM S.G. (600kHz 50dBμ)	T105 (AM ANT coil)	Adjust for maximum sensitivity.		Recommended that preset be performed at 600kHz and 1450kHz in advance.
4.	Sensitivity adjustment (high frequency range)	Same as step 2	AM S.G. (1450kHz 50dBμ)	VC102	Same as step 3		
5.	Sensitivity difference adjustment	Adjust by repeating steps 3 and 4.					
6.	Signal indicator full scale adjustment	Same as step 2	AM S.G. (1450kHz 80dBμ)	VR108	Adjust so that all LEDs of the signal indicator light up. (Front panel)		Confirm that the signal indicator goes out when detuned.
7.	Auto search reception confirmation	Same as step 2	AM S.G. (600kHz 1450kHz 80dBμ)		Confirm the auto search reception with the tuning button.		Tuning MODE switch → AUTO
8.	IF frequency range switching confirmation (search levell switching)	Same as step 2	AM S.G. (60dBμ)	Tuning button RX MODE switch (search level)		Confirm that DX-LOCAL indicator switches. Comfirm that the frequency range switches at LOCAL position.	Confirm that auto search level switches.

2. FM TUNER SECTION

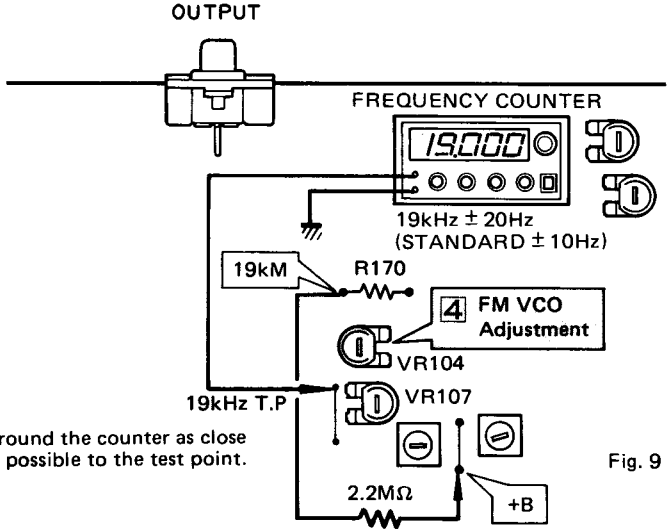
- Proceed with the FM section adjustments after having finished the AM section adjustments.
- Set the switches to the following positions.
  FUNCTION → FM
  REC CAL → OFF
- During adjustments, use a low pass filter.
- Do not forget to keep the bottom cover on.
- Measuring instrument abbreviations
  FM S.G. : FM signal generator
  SSG : Stereo signal generator
- During adjustments, connect the external tuning meter and confirm the optimum tuning point.

Step	Adjustment item	Terminals to be connected	Required instruments	Adjustment locations	Adjustment method	Rating or standard	Remarks
1.	Discriminator balance	Connect a external tuning meter in series with 10kΩ between 300Ω ANT terminals and ut. NVcc-TM terminal output.	FM S.G. Distortion meter Oscilloscope	T102 (discriminator coil). Confirm that VR103 is about at center.	Confirm that the external tuning meter deflects to 0 at the detuned point.		Tuning MODE switch → MAN'L
2.	Tuning point adjustment	Same as step 1	FM S.G. antenna input; 70dBμ 90MHz	Tuning button	Confirm that the external tuning meter deflects to 0 and the set receives at LOCAL position.		Tuning MODE switch → AUTO
3.	Monaural distortion adjustment	Same as step 1	Same as step 2 Monaural 400Hz 100% modulation	VC101 VR103	Reduce distortion to minimum.	Less than −70dB	To be LOCAL mode
4.	VCO adjustment	FM ANT terminal output 19kHz T.P.	FM S.G. 98MHz nonmodulation frequency counter	VR104	Connect 2.2MΩ between 19kM and +B and force the set in stereo mode. Set to 19kHz. (Refer to Fig. 9)	19kHz ± 10Hz	To be LOCAL mode
5.	PLL input phase adjustment	FM ANT terminal output	FM S.G. SSG Antenna input; 70dBμ 98MHz Stereo L, R; 1kHz 100% modulation level meter	T103 SUB coil	Adjust for maximum output for L and R		To be LOCAL mode
6.	Stereo distortion adjustment	FM ANT terminal output	FM S.G. SSG Antenna input; 70dBμ 98MHz Stereo L, or R; 1kHz 100% modulation Oscilloscope Level meter Distortion meter	Front end IFT T101 VR101 VR102	Reduce distortion to minimum.	Less than −70dB	To be LOCAL mode
7.	Separation adjustment	Same as step 6	Same as step 6	VR105 (Lch) VR106 (Rch)	Adjust so that the leakage level of the opposite channel comes to minimum.	More than 55dB	To be LOCAL mode
8.	Pilot cancel adjustment	Same as step 6	Same as step 6 Pilot 9% modulation	T104 (PLC coil) VR107 (PLC)	Observe waveform on the oscilloscope and adjust for minimum level.	Less than −65dB	To be LOCAL mode
9.	Signal indicator confirmation	Same as step 6	Same as step 6 1kHz 30% modulation		Confirm that all LEDs of the signal indicator light up.		Confirm that LEDs go out at the detuned point.
10.	S curve offset confirmation	Same as step 1			Confirm that the external tuning meter to deflects 0.		If found to be off the specified range, adjust again.
11.	Frequency display adjustment	Same as step 2 Connect a diode to FM FINE terminals in the control p.c. board. (Refer to Fig. 10)	FM S.G. Antenna input; 70dBμ 98MHz Stereo frequency accuracy; less than ± 5kHz	Control p.c. board VR401	By connecting a diode to FM FINE terminals, the counter shifts by one digit, then adjust so that the lowest effective digit comes to 9, or 0. Example : 88.0MHz ➡ 80.0MHz When slifting ← This figure		
12.	Auto reception confirmation	Same as step 1	Same as step 1 98MHz 20dBμ 1kHz 100% modulation		Confirm that auto reception is possible with the TUNING button. AUTO DX Sw → AUTO		

Step	Adjustment item	Terminals to be connected	Required instrument	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	REC CAL output confirmation	Output L or R	Frequency counter Level meter			Frequency 333 ± 66Hz output −10 ± 2.5dBm.	Confirm that REC CAL indicator lights up.

4. DIGITAL CONTROL SECTION ADJUSTMENT

Step	Adjustment item	Terminals to be connected	Required instrument	Adjustment location	Adjustment method	Rating or standard	Remarks
1.	Confirmation of receiving frequency band	300Ω FM ANT terminal output L or R AM loop antenna	FM S.G. 70dBμ Oscilloscope Distortion meter	TUNING button TUNING MODE switch	1) AUTO search U.C.R models FM 87.9 ~ 107.9MHz 0.1MHz step AM 520 ~ 1610kHz 10kHz step G.B.A.R models FM 87.45 ~ 108.05MHz 0.05MHz step AM 522 ~ 1611kHz 9kHz step 2) Manual search U.C.R models FM 87.8 ~ 108.0MHz 0.1MHz step AM 516 ~ 1614kHz 1kHz step G.B.A.R models FM 87.4~108.1MHz 0.05MHz step AM 518 ~ 1615kHz 1kHz step		
2.	Preset confirmation	Same as step 1	FM/AM reception	MEMORY button PRESET STATION button	Receive with AUTO or MAN'L search and press the MEMORY button. Then within 1.5 second, press the PRESET STATION button.	Confirm that the display LED of the PRESET STATION button which was preset lights up. Confirm that the preset can be performed to all the PRESET STATION buttons.	
3.	Last memory channel indicator flashing confirmation	Same as step 1	Same as step 2	Repeat step 2 PRESET STATION button	Confirm that the display LED flashes at the channel preset last after the second presetting since the MEMORY button was pressed.		
4.	Memory A/B switching confirmation	Same as step 1	Same as step 2	A or B button	Press A and B buttons	Confirm that A-1 and B-1 channels are called.	
5.	Initial station set confirmation	Same as step 1	Same as step 2	MEMORY button	Press the MEMORY button until the indicator flashes (about 3 second) after having received a FM or AM reception with manual or preset of auto search.	Once set the power switch to OFF. → Again set the power switch to ON. Confirm that the frequency memorized as in the left column is called.	Confirm that the frequency as in the left column is always called with the power ON unless the MEMORY button is reset.
6.	CSL LOCK indicator confirmation	Same as step 1	Same as step 2	FM recepton . . . Confirm that the indicator goes out at the detuned point. AM reception . . . Confirm that the indicator goes out when each control switch is operated. (But it lights up even if no station is received.)			
7.	Muting confirmation	Same as step 1	Same as step 2	Confirm that muting is performed when the PRESET STATION buttons, band select buttons and the POWER switch are operated and that the CSL LOCK indicator and the signal quality indicator goes out during the above operation.			



* Ground the counter as close as possible to the test point.

Fig. 9

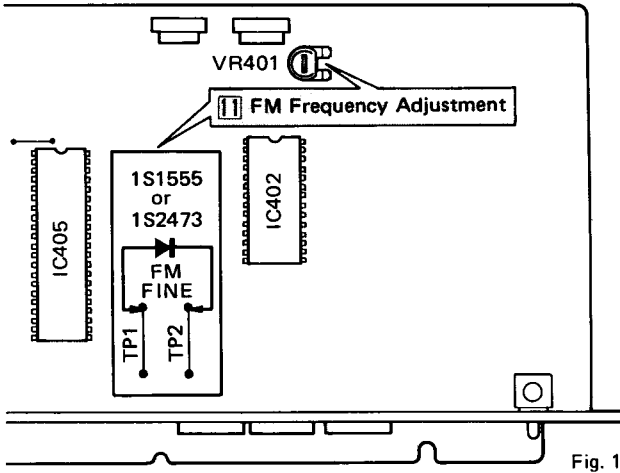


Fig. 1