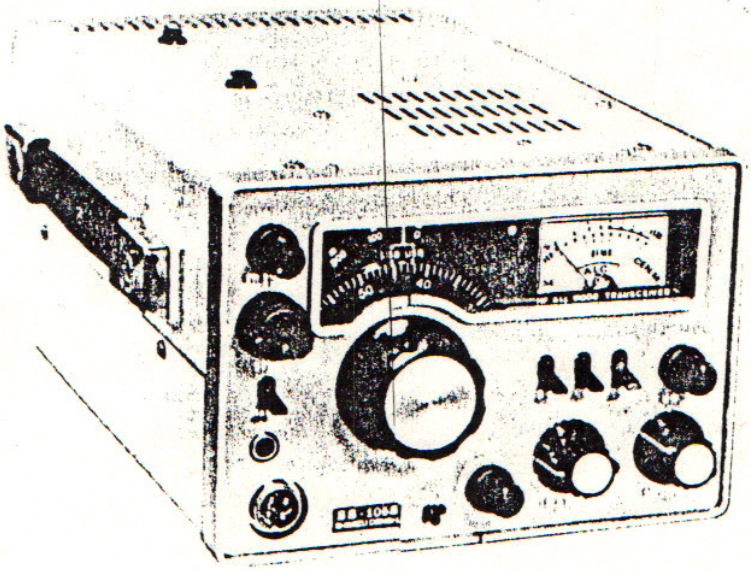
HF ALL MODE TRANSCEIVER

SS-105

ASSEMBLY MANUAL



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***** SPECIFICATIONS *****

TX & RX Frequencies	3.5MHz band 3.5MHz - 4.0MHz 7 MHz band 7.0MHz - 7.5MHz 10 MHz band 10.0MHz - 10.5MHz 14 MHz band 14.0MHz - 14.5MHz 18 MHz band 18.0MHz - 18.5MHz 21 MHz band 21.0MHz - 21.5MHz 24.5MHz band 24.5MHz - 25MHz 28 MHz band 28.0MHz - 30MHz
Type of Emmission	LSB, USB, CW, FM
Rated transmit Power Output	10W - S type 100W - D type (50W at 28MHz band)
Spurious rejection	-40 dB or better
Image ratio	Better than 50 dB
Antenna impedance	50 ohm
Receive sensitivity	SSB - better than 10 dB S/N at 0.25 μV FM - 20 dB QS at 0.5 micro V
Max. frequency deviation (FM)	±5KHz or ±10KHz, adjustable by VR
Modulation	SSB - Balanced modulation FM - Variable reactance direct modulation
Frequency stability	Less than ±1KHz 1-60 min. after warm up. Less than ±100KHz for each 30 min. thereafter
Mike impedance	500 ohm - 50 K ohm
Audio output	1.5W at 8 ohms
Power supply	DC 13.5V 3A - S type 20A - D type
Dimension	124(H) x 178(W) x 272(D) mm (protrusions not included) D-type - Linear amp is added to above. Amp - 120(H) x 110(W) x 87(D) mm
Weight	5 kgs. (Linear amp - 1.2 kgs.)

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SS-105 HF ALL MODE TRANSCEIVER

1. FEATURES

The model SS-105 is a single conversion premixing system equipped with a balanced mixer. A double tuning circuit coupled with a varicap provides very precise tuning in the RF stage. The RF-AGC (Radio Frequency Automatic Gain Control) automatically attenuates excessive input from a passing car or neighboring stations, giving the SS-105 an excellent S/N ratio and greatly reducing cross modulation and spurious emissions.

A product of the latest PCB technology, the transceiver is very compact. Components are connected to each other by 1P connectors, so the transceiver can easily be taken apart for maintenance and servicing.

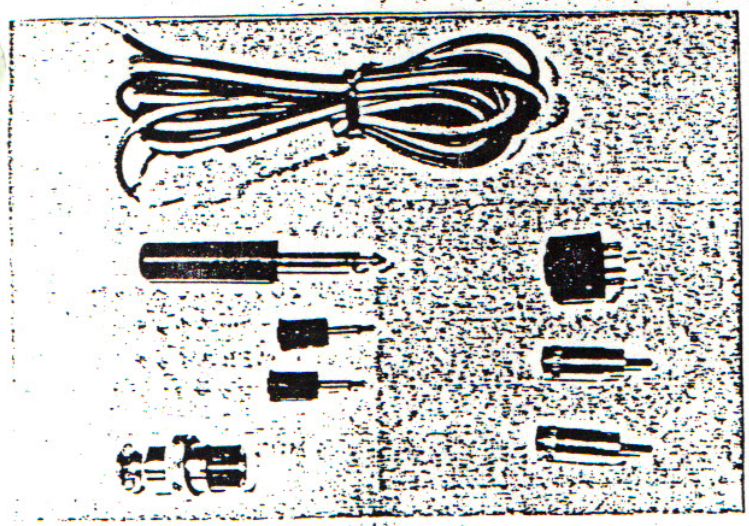
The PCB's consist of : SE-AF, SE-IF, SE-RF, SE-PA, SE-VF, SE-LO, SE-SW,SE-NB SE-FMT, SE-FMR, SE-LR, SE-LP and SE-MK.

Accessories Supplied

DC cord with a 5A fuse	1	6mm plug for monaural	11
4P micro-connector female	1	9P connector	1
36mm plugs for SP and KEY	2	RCA plugs	2

Optional Parts

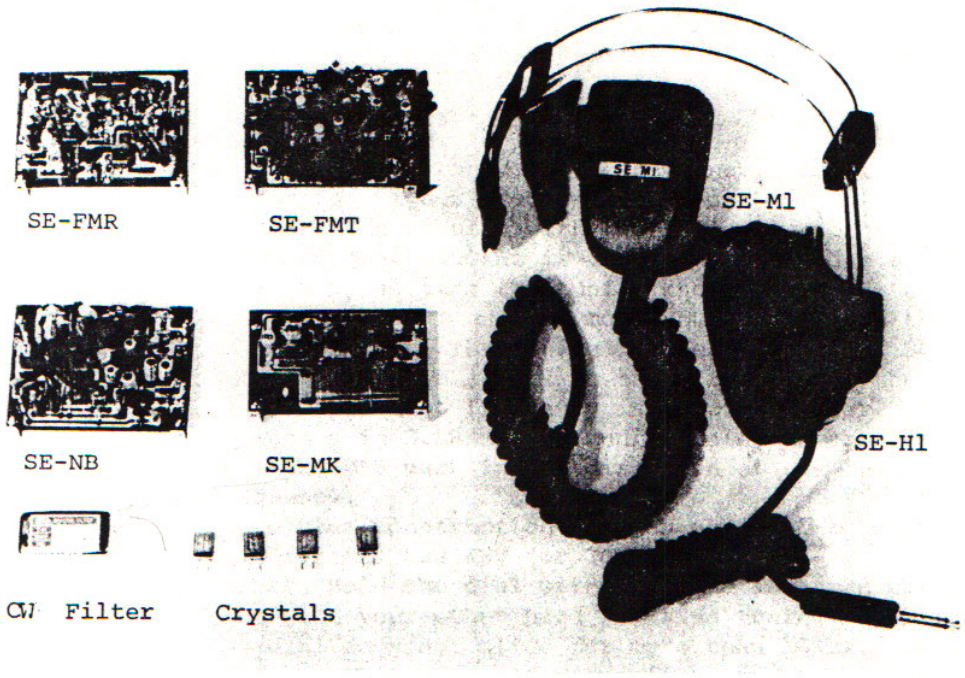
CW crystal filtor 8999.3 KHz
SE-NB unit Noise blanker and RFAGC- Highly recommended for maximum transceiver capability.
SE-FMT unit IF circuit for FM transmit, consisting of a modulation circuit and an IF amplifier.
SE-FMR unit FM receive circiut to convert 9 MHz to 455 KHz and amplify and detect signals ; equipped with a built-in squelch circuit.
SE-MK unit Circuit for 25KHz marker.
Crystal for receiving the 18 MHz Standard Wave WWV (JJY)
Crystal for 24.5 MHz, Crystal for 28.5 MHz,
Crystal for 29.0 MHz
Crystal for 29.5 MHz
Microphone : SE-M1
One-ear headphone SE-M1



Accessories Supplied

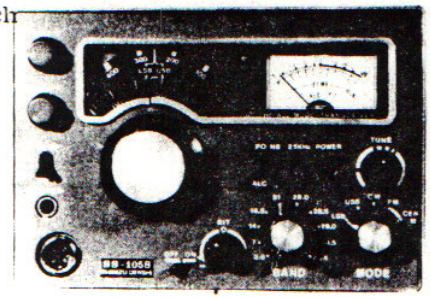
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Optional Parts



2 PANEL OPERATING CONTROLS

1) AF Gain
2) RF Gain Skeltch
3) TX-RX Switch
4) Phone Jack
5) Mic Connector
6) Name Plate
7) RIT Switch



8) Tuning Knob
9) TX-LED
10) Multi-meter
11) PO NB ALC Switch
12) Marker Switch
13) Power Switch
14) TX Tuning Knob
15) Mode Switch
16) Band Switch
17) RIT Knob

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(1) AF GAIN — The AF GAIN controls audio output. Turn it clockwise to increse volume.

(2) RF GAIN — The RF GAIN controls and IF gain in receive. *

(3) Standby Switch — Depress SEND for transmit and RECV for receive.

(4) PHONE Jack — Headphone Jack.

(5) MIC — Microphone connector. Use a 4P plug.

(6) Name Plate

(7) RIT Switch — At ON position the RIT (Receiving Incremental Tuning) circiut works. At OFF position the RIT circuit stops working, and the receive frequency is equalized to the transmit frequency.

(8) TUNING Knob — This knob selects the desired frequency. Tune it clockwise for higher frequencies.
The dial should be used with the following points in mind.

1) Assuming that 7100KHz is the legal band edge of the 7MHz band, setting the tuning knob to 7100KHz will not cause off-band in the LSB mode, but it will in the USB.
2) In the CW mode, the tuning frequency is about 800Hz from the LSB scale mark in the direction of the center frequency if the frequency is 7MHz or higher. If the frequency is 3.5MHz, the tuning point is about 800Hz from the USB mark in the direction of the center frequency.
3) The clutch construction enables the dial to slide for calibration. Use WWV (or JJY) and a well-calibrated marker. Hold the dial with one hand and turn the tuning knob with your other hand for fine tuning. Note that the dial does not slide for more than 10KHz.

(9) LED — Red for transmit. Green for receive.

(10) Meter — The meter functions as an S meter (single strength indicator) in the receive mode. In the FM mode, it also functions as a center meter. In the transmit mode, it has the functions of an RF voltage meter and an ALC (Automatic Level Control) meter.

(11) PO/NB/ALC SW — In the receive function, the up position activates the NB (Noise Blanker) circuit and the down position turns off the NB.
In the transmit function, the up position makes the meter an RF power output voltage meter.
The meter becomes an ALC meter when the switch is in the down position.

(12) MARKER SW — With this switched to the up (ON) position, the marker produces a beat tone for each 25KHz step-up or step-down. For instance, the dial can be calibrated at 0,25,50,75 and 100KHz. The criterion should be the 15.0MHz standard wave of the WWV (or JJY). The optional 29.0MHz crystal is needed for marker calibration.

(13) POWER SW — This is an ON (up)/OFF (down) switch.

(14) TX TUNE — Tune clockwise for higher frequencies. The panel meter indicates the lower band edge.

(15) MODE SW — This knob is used to select LSB, USB, CW, FM, FM-cnter-meter. Use LSB for 3.5MHz and 7.0MHz. And Use USB for 14, 21 and 28MHz. Note that FM operation generates 3 times as much heat as SSB operation. You should provide sufficient cooling.

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(16) BAND SW — This knob is used for band switching. In the AUX position, you can operate on any frequency you have the crystals for. **

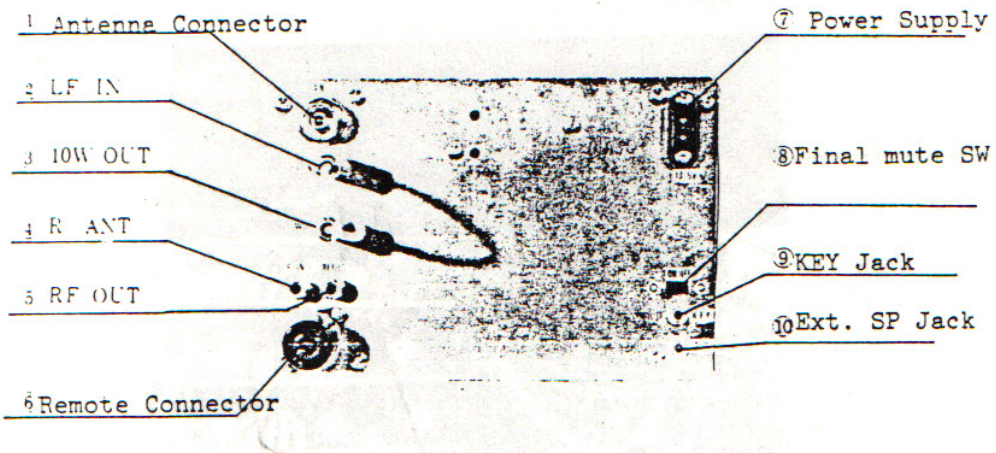
(17) RIT — In receive mode only, you can shift the frequency a few Kilo hertz to that of the station with whom you communicate.

*(2) RF GAIN SKELTCH — Turn it clockwise, then S meter swing. Sound become lower for the signal under S.

**(16) — At 10 MHz band, turning to counter-clockwise, and down the frequency, then hauling is made, but it is not defective.

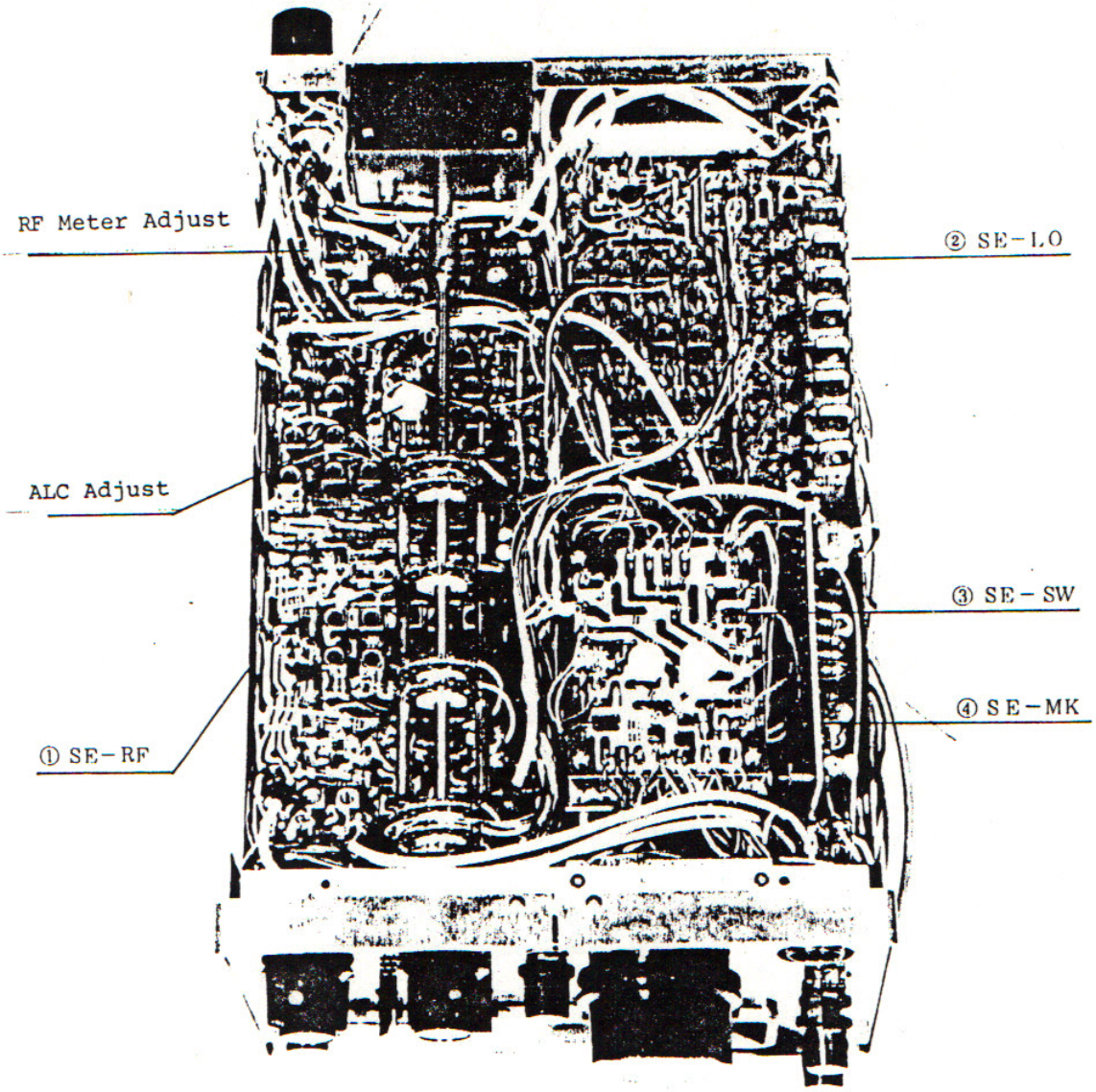
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REAR PANEL



(1) ANTENNA CONNECTOR	This is the antenna connector. Use an M type plug. It is a terminal for 10W transmit output, but can also be used with a linear amplifier for 100W output.
(2) LF IN	The low pass filter can handle up to 100W.
(3) 10W OUT	When the transceiver is used for 10W output, connect (2) and (3) with a coaxial cable.
(4) RECV ANT	This terminal is used only for receive.
(5) RF OUT	The transmit output at this terminal is about 100mW. Use (4) and (5) for a transverter. In this case, the Final Mute Switch should be turned OFF.
(6) REMOTE CONNECTOR	Socket for remote controlling the transceiver. For normal operation, keep the 9P plug plugged in the socket. See the circuit diagram.
(7) DC Power Supply	There will be about 3A at this connector for the transmit output of 10W.
(8) Final Mute Switch	The OFF position will inactivate the muting circuit is in operation whether the output is 10W or 100W. However, there is still voltage applied to the collector.
(9) KEY Jack	Connect your key to this Jack with a 3.6mm plug. A tone of about 800Hz will be genarated regardless of MODE when the key is depressed.
(10) EXT.SP Jack	This is a terminal for an external speaker.

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4. PRE-ASSEMBLY INSTRUCTIONS.

Assembly and tuning are needed for the SE-IF and SE-LO units only.
All other units have been pre-assembled and pre-tuned at the factory.
Do not attempt to tune or reassemble.

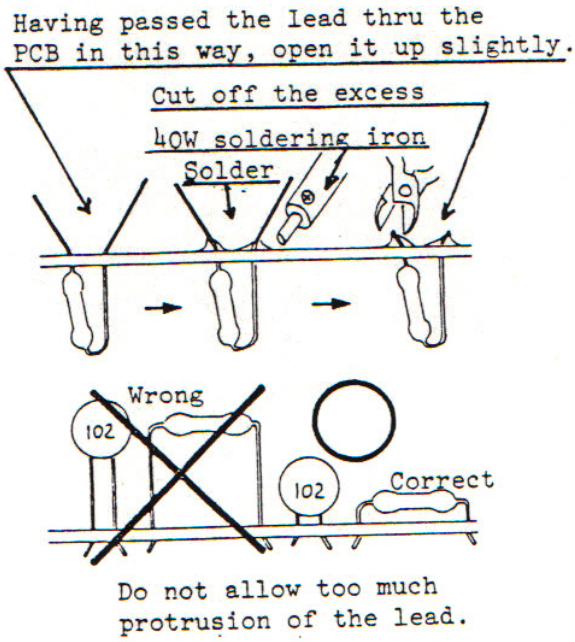
Tools and Materials Needed

1) Long-nosed plier
2) Wire-cutter
3) Tweezers
4) A soldering iron for 30-40W
5) Solder(60%) Solder carefully. Good soldering will provide good performance.

**Note: Be sure to use lockwashers or split washers for attaching PCB's. Otherwise the unit may become rickety.

General Precautions

* The 1P connector must be inserted into its mating connector lengthwise and straight. Do not twist connectors, or the spring may be damaged and cause contact noise. If the connection becomes loose, calk the part with long-nosed pliers.
* Take care in mounting transistors and diodes. If a semiconductor is mounted in the wrong place, it may not only disable the unit but also damage it. Note that an electrolytic capacitor has distinct polarization.
* It is a good idea to check off a part on the parts list or circuit diagram after you solder it.
* The heavy red wire is for the 13.5V line +B
* The heavy green wire has 13.5V in receive RB
* The heavy orange wire has 13.5V in transmit TB
* The heavy white wire is the 9V line. Actually the voltage is 8-8.4V. The power is supplied from the SE-AF Unit.

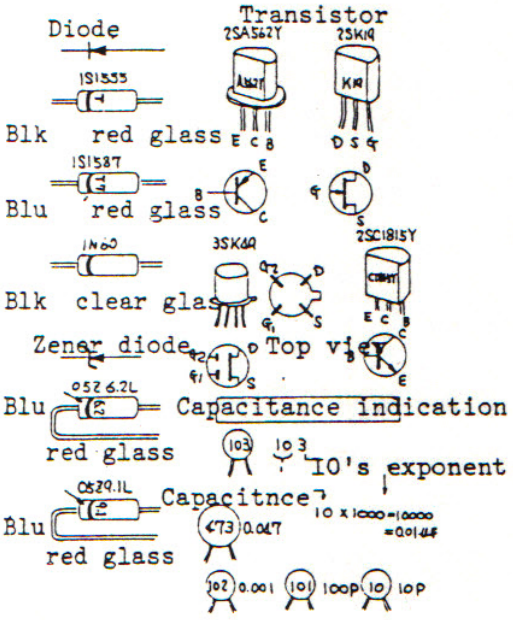


* Fitting hole of base plate or chrysanthemum base of earth should be soldered correctly.

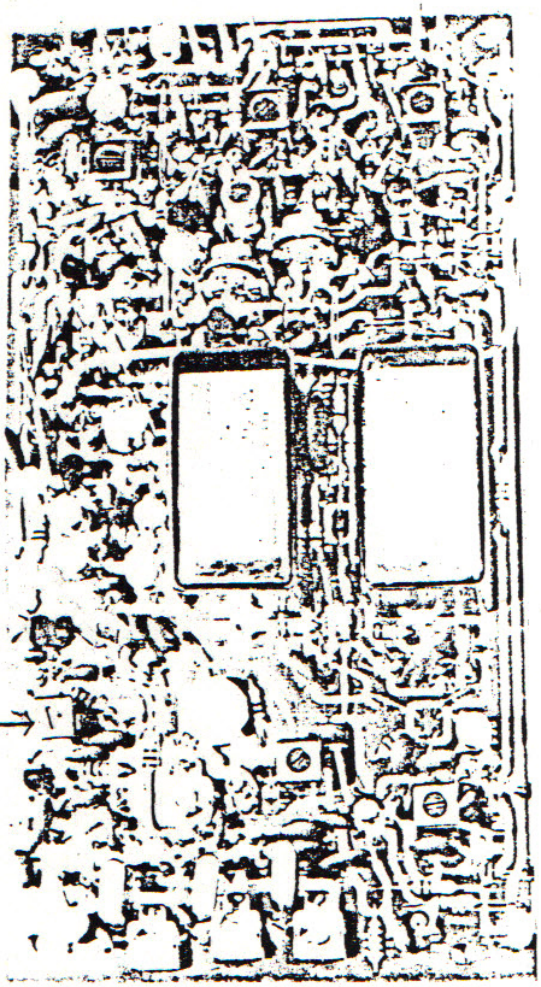
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5. ASSEMBLY OF SE-IF UNIT.

■ Parts



*Bend diode lead on the plus side with colored mark.



- ☐ YEL 8998.5
- ☐ GRN 8999.3
- ☐ BLU 9001.5
- ☐ WHT 9V line
- ☐ ORG CW filter
- ☐ BRN SSB filter
- ☐ RED 13.5 V
- ☐ RED 13.5 V
- ☐ Yel/Grn AGC
- ☐ PNK ALC
- ☐ BLK ①RF GAIN
- ☐ PUR ②RF GAIN
- ☐ GRY ③ "
- ☐ ORG TB

Shielded cable?GRY — AF IN

Shielded cable/BLU — AF OUT

Coaxial cable — TX OUT

Coaxial cable — RX IN

Shielded cable — FM AF IN

Note; Use the red coil for Q3 collector

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PARTS LIST SE-IF

Parts			Parts		
R_1	1 K	BRN BLK RED	R_{29}	1 K	BRN BLK RED
R_2	150 K	BRN GRN YEL	R_{30}	1 K	BRN BLK RED
R_3	1 K	BRN BLK RED	R_{31}	1 K	〃
R_4	22 K	RED RED ORG	R_{32}	100 K	BRN BLK YEL
R_5	22 K	〃	R_{33}	1 K	BRN BLK RED
R_6	220 Ω	RED RED BRN	R_{34}	1 K	〃
R_7	1 K	BRN BLK RED	R_{35}	1 K	〃
R_8	10 K	BRN BLK ORG	R_{36}	220 Ω	RED RED BRN
R_9	150 Ω	BRN GRN BRN	R_{37}	220 Ω	〃
R_{10}	150 Ω	〃	R_{38}	1 K	BRN BLK RED
R_{11}	470 Ω	YEL PUR BRN	R_{39}	1 K	〃
R_{12}	100 K	BRN BLK YEL	R_{40}	100 K	BRN BLK YEL
R_{13}	100 Ω	BRN BLK BRN	R_{41}	1 K	BRN BLK RED
R_{14}	100 Ω	〃	R_{42}	18 K	BRN GRY ORG
R_{15}	1 K	BRN BLK RED	R_{43}	5.6 K	GRN BLU RED
R_{16}	33 K	ORG ORG ORG	R_{44}	1 K	BRN BLK RED
R_{17}	10 K	BRN BLK ORG	R_{45}	100 Ω	BRN BLK BRN
R_{18}	1 K	BRN BLK RED	R_{46}	2.2 Ω	RED RED GLD
R_{19}	3.3 K	ORG ORG RED	R_{47}	2.7 K	RED PUR RED
R_{20}	3.3 K	〃	R_{48}	2.7 K	〃
R_{21}	3.3 K	〃	R_{49}	27 K	RED PUR ORG
R_{22}	100 Ω	BRN BLK BRN	R_{50}	5.6 K	GRN BLU RED
R_{23}	5.6 K	GRN BLU RED	R_{51}	470 Ω	YEL PUR BRN
R_{24}	18 K	BRN GRY ORG	R_{52}	2.7 K	RED PUR RED
R_{25}	330 Ω	ORG ORG BRN	R_{53}	100 Ω	BRN BLK BRN
R_{26}	1.8 K	BRN GRY RED	R_{54}	27 K	RED PUR ORG
R_{27}	100 Ω	BRN BLK BRN	R_{55}	5.6 K	GRN BLU RED
R_{28}	5.6 K	GRN BLU RED	R_{56}	470 Ω	YEL PUR BRN

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Parts			Parts	
R_{57}	2.7 K	RED PUR RED	R_{86}	4.7 K YEL PUR RED
R_{58}	100 Ω	BRN BLK BRN		
R_{59}	4.7 K	YEL PUR RED		
R_{60}	150 K	BRN GRN YEL	C_1	0.047
R_{61}	100 Ω	BRN BLK BRN	C_2	33μ16 V
R_{62}	1 K	BRN BLK RED	C_3	4.7μ25V
R_{63}	2.7 K	RED PUR RED	C_4	〃
R_{64}	1 M	BRN BLK GRN	C_5	〃
R_{65}	10 K	BRN BLK ORG	C_6	0.01
R_{66}	1 K	BRN BLK RED	C_7	0.01
R_{67}	470 K	YEL PUR YEL	C_8	15 P
R_{68}	56 K	RGN BLU ORG	C_9	100 P
R_{69}	15 K	BRN GRN ORG	C_{10}	220 P
R_{70}	5.6 K	GRN BLU RED	C_{11}	0.01
R_{71}	470 Ω	YEL PUR BRN	C_{12}	30 P
R_{72}	470 Ω	〃	C_{13}	3 P
R_{73}	5.6 K	GRN BLU RED	C_{14}	0.01
R_{74}	10 K	BRN BLK ORG	C_{15}	220 P
R_{75}	4.7 K	YEL PUR RED	C_{16}	220 P
R_{76}	10 K	BRN BLK ORG	C_{17}	0.01
R_{77}	5.6 K	GRN BLU RED	C_{18}	0.01
R_{78}	220 Ω	RED RED BRN	C_{19}	10 P
R_{79}	1 M	BRN BLK GRN	C_{20}	0.01
R_{80}	10 K	BRN BLK ORG	C_{21}	10 P
R_{81}	1 K	BRN BLK RED	C_{22}	0.01
R_{82}	2.2 K	RED RED RED	C_{23}	10 P
R_{83}	470 K	YEL PUR YEL	C_{24}	0.01
R_{84}	470 K	〃	C_{25}	3 P
R_{85}	8.2 K	GRY RED RED	C_{26}	100 P

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Parts		Parts	
C_{27}	0.01	C_{56}	100 P
C_{28}	0.01	C_{57}	0.01
C_{29}	0.01	C_{58}	10 μ 25 V
C_{30}	4.7 μ 25 V	C_{59}	〃
C_{31}	0.01	C_{60}	0.01
C_{32}	0.01	C_{61}	0.01
C_{33}	0.01	C_{62}	0.01
C_{34}	0.047	C_{63}	0.047
C_{35}	0.047	C_{64}	1 μ 50 V
C_{36}	0.01	C_{65}	10 μ 25 V
C_{37}	0.047	C_{66}	1 μ 50 V
C_{38}	0.01	C_{67}	0.01
C_{39}	0.047	C_{68}	0.01
C_{40}	0.01	C_{69}	0.01
C_{41}	0.01	C_{70}	0.01
C_{42}	0.01	C_{71}	0.01
C_{43}	0.01		
C_{44}	0.01	Coils	
C_{45}	30 P	L_1	1 mH BRN BLK RED
C_{46}	0.01	L_2	1 mH BRN BLK RED
C_{47}	0.01		
C_{48}	0.01		
C_{49}	30 P	VR_1	200 Ω For balancing carrier
C_{50}	0.01	VR_2	10 KΩ For S-meter zero adjustment
C_{51}	0.01	VR_3	500 KΩ For S-meter sensitivity adjust
C_{52}	0.01		
C_{53}	10 P	Trimmer Caps	TC_1 , TC_2 , TC_3 , TC_4 , 30 P
C_{54}	0.047		
C_{55}	47 P		

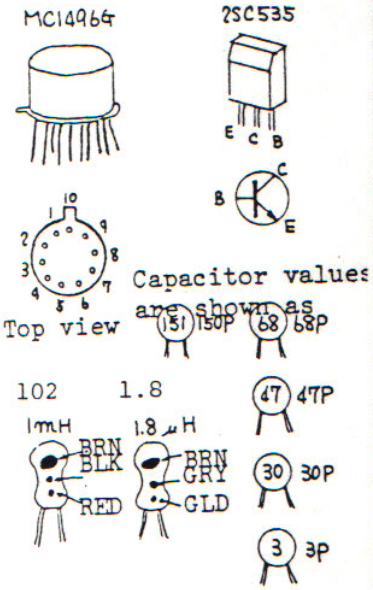
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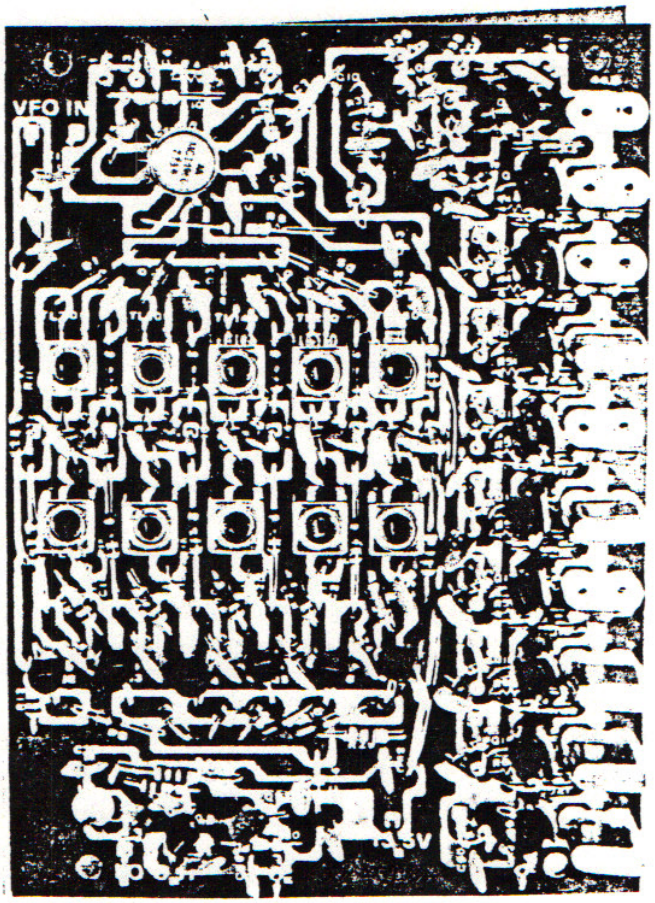
Parts		Parts	
Diodes		Transistors	
D_1	1N60	Q_1	2SC1815Y
D_2	〃	Q_2	〃
D_3	〃	Q_3	〃
D_4	〃	Q_4	〃
D_5	1S1555	Q_5	3SK49
D_6	〃	Q_6	〃
D_7	〃	Q_7	〃
D_8	1S1587	Q_8	〃
D_9	〃	Q_9	2SC1815Y
D_{10}	〃	Q_{10}	〃
D_{11}	〃	Q_{11}	〃
D_{12}	1S1555	Q_{12}	2SK19GR
D_{13}	〃	Q_{13}	2SA562Y
D_{14}	〃		
D_{15}	〃		
D_{16}	1N60		
D_{17}	〃	Crystal filter for SSB 1	
D_{18}	0.5Z6.2L (6V zener)	Transformer IFT 6 (1 x RED and 5 x BLK)	
D_{19}	1S1555		
D_{20}	〃	Crystals	
D_{21}	1N60	8998.5 MHz	HC18U
D_{22}	〃	8999.3 MHz	〃
D_{23}	〃	9001.5 MHz	〃
D_{24}	〃		
D_{25}	1S1555		
D_{26}	〃		
D_{27}	〃		
D_{28}	05Z9.1L		

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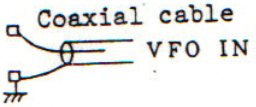
6. ASSEMBLY OF SE-LO UNIT

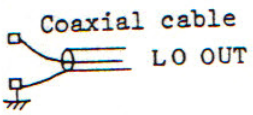
■ Parts Illustration





- ☐ BRN 3.5MHz Band
- ☐ RED 7MHz Band
- ☐ ORG 10MHz Band
- ☐ YEL 14MHz Band
- ☐ GRN 18, 21MHz
- ☐ BLU 24.5, 28MHz
- ☐ RED 7MHz Band
- ☐ ORG 10MHz Band
- ☐ YEL 14MHz Band
- ☐ GRN 18MHz Band
- ☐ BLU 21MHz Band
- ☐ PUR 24.5MHz Band
- ☐ GRY 28.0MHz Band





☐ RED 13.5V line

◎Use 8.5cm of the RED lead for the 13.5V line.

WHITE 28.5 MHz Band
BLACK 29.0 MHz Band
PINK 29.5 MHz Band

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PARTS LIST SE-LO

Parts			Parts		
R_1	33 K	ORG ORG ORG	R_{29}	10 K	BRN BLK ORG
R_2	330 Ω	ORG ORG BRN	R_{30}	100 Ω	BRN BLK BRN
R_3	33 K	ORG ORG ORG	R_{31}	330 Ω	ORG ORG BRN
R_4	330 Ω	ORG ORG BRN	R_{32}	220 Ω	RED RED BRN
R_5	470 Ω	YEL VIO BRN	R_{33}	100 Ω	BRN BLK BRN
R_6	1 K	BRN BLK BRN	R_{34}	220 Ω	RED RED BRN
R_7	820 Ω	GRY RED BRN	R_{35}	200 K	RED BLK YEL
R_8	10 K	BRN BLK ORG	R_{36}	470 Ω	YEL PUR BRN
R_9	100 Ω	BRN BLK BRN	R_{37}	100 Ω	BRN BLK BRN
R_{10}	1.2 K	BRN RED RED	R_{38}	2.7 K	RED PUR RED
R_{11}	100 Ω	BRN BLK BRN	R_{39}	5.6 K	GRN BLU RED
R_{12}	10 K	BRN BLK ORG	R_{40}	100 Ω	BRN BLK BRN
R_{13}	100 Ω	BRN BLK BRN	R_{41}	2.7 K	RED PUR RED
R_{14}	10 K	BRN BLK ORG	R_{42}	5.6 K	GRN BLU RED
R_{15}	100 Ω	BRN BLK BRN	R_{43}	100 Ω	BRN BLK BRN
R_{16}	100 Ω	BRN BLK BRN	R_{44}	2.7 K	RED PUR RED
R_{17}	10 K	BLU BLK RED	R_{45}	5.6 K	GRN BLU RED
R_{18}	100 Ω	BRN BLK BRN	R_{46}	100 Ω	BRN BLK BRN
R_{19}	100 Ω	BRN BLK BRN	R_{47}	2.7 K	RED PUR RED
R_{20}	10 K	BRN BLK ORG	R_{48}	5.6 K	GRN BLU RED
R_{21}	100 Ω	BRN BLK BRN	R_{49}	100 Ω	BRN BLK BRN
R_{22}	100 Ω	BRN BLK BRN	R_{50}	2.7 K	RED PUR RED
R_{23}	10 K	BRN BLK ORG	R_{51}	5.6 K	GRN BLU RED
R_{24}	100 Ω	BRN BLK BRN	R_{52}	100 Ω	BRN BLK BRN
R_{25}	100 Ω	BRN BLK BRN	R_{53}	2.7 K	RED PUR RED
R_{26}	22K	RED RED BRN	R_{54}	5.6 K	GRN BLU RED
R_{27}	100 K	BRN BLK YEL	R_{55}	100 Ω	BRN BLK BRN
R_{28}	100 Ω	BRN BLK BRN	R_{56}	2.7 K	RED PUR RED

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Parts			Parts	
R_{57}	100Ω	BRN BLK BRN	C_{17}	0.01
R_{58}	5.6K	GRN BLU RED	C_{18}	0.01
R_{59}	2.7K	RED VIO RED	C_{19}	0.01
R_{60}	100Ω	BRN BLK BRN	C_{20}	20P
R_{61}	5.6K	GRN BLU RED	C_{21}	20P
R_{62}	2.7K	RED VIO RED	C_{22}	0.01
R_{63}	100Ω	BRN BLK BRN	C_{23}	0.01
R_{64}	5.6K	GRN BLU RED	C_{24}	0.01
R_{65}	2.7K	RED VIO RED	C_{25}	30P
R_{66}	100Ω	BRN BLK BRN	C_{26}	47P
R_{67}	5.6K	GRN BLU RED	C_{27}	0.01
R_{68}	2.7K	RED VIO RED	C_{28}	0.01
			C_{29}	0.01
C_1	0.01		C_{30}	30P
C_2	68P		C_{31}	47P
C_3	47P		C_{32}	0.01
C_4	0.01		C_{33}	0.01
C_5	0.01		C_{34}	20P
C_6	0.01		C_{35}	5P
C_7	0.01		C_{36}	0.01
C_8	0.01		C_{37}	0.01
C_9	0.01		C_{38}	0.01
C_{10}	20P		C_{39}	0.01
C_{11}	30P		C_{40}	3P
C_{12}	0.01		C_{41}	47P
C_{13}	0.01		C_{42}	0.01
C_{14}	0.01		C_{43}	68P
C_{15}	20P		C_{44}	0.01
C_{16}	20P		C_{45}	68P

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Parts		Parts	
C_{46}	0.01	D_4	ISI555
C_{47}	68P	D_5	"
C_{48}	0.01	D_6	"
C_{49}	68P	D_7	"
C_{50}	0.01	D_8	"
C_{51}	68P	D_9	"
C_{52}	0.01	D_{10}	"
C_{53}	100P	D_{11}	"
C_{54}	0.01	D_{12}	"
C_{55}	100P	D_{13}	"
C_{56}	0.01	D_{14}	"
C_{57}	150P	D_{15}	"
C_{58}	0.01	D_{16}	"
C_{59}	150P	D_{17}	"
C_{60}	0.01	D_{18}	"
C_{61}	150P	D_{19}	"
C_{62}	0.01	D_{20}	"
C_{63}	0.01	D_{21}	"
COIL		D_{22}	05Z91(9V zener)
TL700 TL701 TL140			
TL141 TL210 TL211		TRANSISTER	
TL280 TL281 TL100		Q_1	MC1496G
TL101		Q_2	2SK19GR
L_1 1.8μH	BRN GRY GOLD or 1.8	Q_3	"
		Q_4	"
DYORD		Q_5	"
D_1	ISI555	Q_6	"
D_2	"	Q_7	"
D_3	"	Q_8	2SC535

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Q9 2SC535 Q10 2SC1815Y Q11 " Q12 " Q13 " Q14 " Q15 " Q16 " Q17 " Q18 " Q19 " Q20 " CRYSTAL for 7 MHz 21.5MHz HC25U 10 MHz 24.5MHz JJY 14 MHz 28.5MHz 18 MHz 32.5MHz option 21 MHz 35.5MHz 24.5MHz 39.0MHz option 28.0MHz 42.5MHz 28.5MHz 43.0MHz option 29.0MHz 43.5MHz option 29.5MHz 44.0MHz option 41.0	

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7 PRE ADUSTMENT INSTRUCTIONS

Items Required

1) A power supply unit is needed. We recommend our Model SP-1504S.
2) A silk-cord bakelite bar will help in adjusting coil cores, trimmers, etc. A meter bar will damage the coil core. See that the core is inside the coil.
3) A 50 ohm dummy-load of more than 10 watts.
4) A tester.
5) A receiver unit.
6) Using an RCA plug and a coaxial cable of about 10 cm, assemble a cord that connects LF IN to 10W out. Short circiut between pin No.8 and No.9 of the remote connector.
7) Assemble a probe for measuring RF voltage. Do not attach an alligator clip. It is not necessary to ground the probe.
8) Before wiring, check to see that no terminal is short-circuited.
9) See that pressing the key connected to the KEY jack produces a tone and that tuning the AF GAIN to the right causes a weak noise.

8 ADJUSTMENT OF THE SE-LO UNIT

1) Check the input level of VFO IN. It should be about 0.1V.
2) Set the BAND Knob to 7 MHz, 14 MHz, 21 MHz, 28 MHz respectively, and check to see that the crystal oscillation circuit works properly each time by applying the probe to the cross section between R36 and C35, The voltage should be about 3V.
3) Set the BAND knob to 7 MHz. Place the probe on LO OUT. Turn the cores of coils TL700 and TL701 alternately unit tuning the main tuning dial from 0 to 500 KHz does not cause fluctuations of the output voltage.
4) Set the BAND knob to 14 MHz. Place the probe on LO OUT. Ajust the cores of the TL140, TL141 in the same way.
5) Repeat the same procedure for 21 MHz and 28 MHz with the TL210 and TL211 coils and the TL280 and TL281 coils respectively.
6) In each case, the stabilized output should be approximately 0.6V.

9 ADJUSTMENT OF THE SE-IF UNIT

Adjustment of the Receiver Section

1) Connect your antenna to the ANT terminal. If possible, use a doublet for 7 MHz, otherwise a vinyl-coated wire of about 10 meters will do.
2) Check to see that there is 13.5V at the 13.5V terminal as well as at the RB terminal.
3) Touch the AF OUT terminal with your finger, there should be some noise.
4) Check to see that the colckwise and counterclockwise rotation of RF GAIN causes the S meter indicator to move.

Subcarrier Output Adjustment

1) Switch MODE to LSB.
2) Place the probe on the Q4 emitter and turn the IFT core (Intermediate Frequency Transformer) connected to Q3 for maximum output voltage. The more you push the core into the recess, the weaker will be the output. Adjust it to about 0.4V. (The red coil)
3) Repeat the same procedure for USB and CW.
   *Note : All the IFT's are identical.

IF Adjustment

1) Set BAND to 7 MHz. Switch MODE to LSB.
2) Adjust the IFT cores connected to the drains of Q3, Q6, Q7 and Q8 to obtain the maximum S meter reading.

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Subcarrier Position Adjustment

1) Tune subcarrier to 8998.5KHz while listening to a powerful station, either an amateur station or a broadcasting station, that uses the A3 wave. Adjust the TC2 trimmer and the main dial gradually for the best tone quality. The more remote the frequency of the 8998.5KHz crystal from 9MHz, the more high-pitched will be the tone. The pitch becomes more nasal closer to the 9MHz center frequency. The frequency obtained will be approximately the 30 dB attenuater point.
2) Switch MODE to USB and adjust the TC4 trimmer for 9001.5KHz in the same way. If the carrier frequency is too far from the 9MHz center, the tone will be high-pitched. If it is too near the center, the tone will be low and rumbling. The optimum tone is between the two extremes.

S Meter Adjustment

Use VR3 for sensitivity adjustment. Turn it counter-clockwise for greater deflection. VR2 is for zero adjustment. Align S Meter Deflection with the control of RF GAIN. Check to see that the S meter reads S9 when the knob is in the middle with 40 dB input.

Adjustment of the Transmitter Section

1) Slide the Final Mute Switch (#8) on the rear panel to the OFF position and mute the 10W final. Set the PO NB ALC switch (#11) on the front panel to ALC and transmit.
2) Check to see that there is no voltage on RB and 13.5V on TB.
3) Connect the microphone to MIC and turn about 1/3 of MIC GAIN on the SE-AF unit. Adjust the IFT core connected to G1 of Q5 to obtain the maximum ALC meter reading.

Carrier Balance Adjustment

An extra receiver is needed for this adjustment. Disconnect the microphone and transmit. Receive the carrier by the other receiver. Adjust VR1 (200 ohm and TC1 30P) alternately to suppress the carrier till you obtain the lowest reading on the S meter of the receiver.
If the receiver is not sensitive enough, attach a short lead to the RF OUT terminal of the SW-RF unit.

CW Tone Adjustment

In the CW mode, use 8998.5KHz for receive and 8999.3KHz for transmit regardless of the band. The slide-tone for CW monitoring is set at about 800Hz. Adjust the 8999.3KHz crystal through TC3 unit the tone is identical to the side-tone.

1) First, transmit on 7MHz in the LSB mode. Use the supplementary receiver to receive the output, which should be a howling sound. Adjust TC3 till the howl is changed in to a singing sound, indicating that your SS-105 and the receiver have been zeroed in. Next, Leave the main tuning knob as it is, switch the MODE to CW and operate the key. Again, adjust TC3 to match the monitor tone and the tone from the supplementary receiver. Double beat zero-in is thus obtained.

2) If you do not have the CW crystal filter (optional), place the pin (orange) for the CW crystal filter flush against the pin (brown) for the SSB crystal filter to obtain the CW mode. When the CW crystal is used, the ALC meter will not deflect if the 8999.3KHz is too far from its position, because of the filter's extremely sharp resonance. Optimum tuning is obtained at the peak of the ALC meter.

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Adjustment of RIT

1) Set the RIT knob on the front panel to the 0 (zero) position.
2. While repeatedly switching the RIT switch on and off, adjust VR2 of the SE-SW unit until a stable receive frequency is obtained.
3) Adjust VR1 of the same PCB in the same way to obtain a stable receive frequency. The use of supplementary receiver to obtain howl and zeroing in is also recommended for this adjustment.

This completes all the necessary adjustments.
After connecting a power meter, switch MULT on the rear panel to ON and transmit. You will get 10 W output with minor variations depending on the bands you use.

Note : The transceiver will not work unless uou short-circuit the No.8 and No.9 pins of the 9 pin socket and connect LFIN and 10W out with a coaxial jamper cable.

10. OPERATIONAL PRECAUTIONS

1) It is important to thoroughly tune your antenna for optimum impedance match. Check to see that the VSWR is less than 1.3 : 1.
   Do not forget to use the ALC meter for the adjustment of the transmitter section.
2) If the clutch of the 1KHz dial has become loose, remove the main tuning knob and tighten the nut on the shaft.
3) If you remove the ALC, you can get more than 10W of output. But for protection purposes, the SS-105 is designed to deliver distorted signals when in such a condition.
4) With RIT switched OFF, there will be no slippage of transmit and receive frequencies. But while it is switched ON, if there is slippage of VR1 and/or VR2 of the SE-SW unit, the receive frequency will also deviate.
5) The front pannel is laid out to allow you to handle knobs with your left hand and take notes with your right hand.

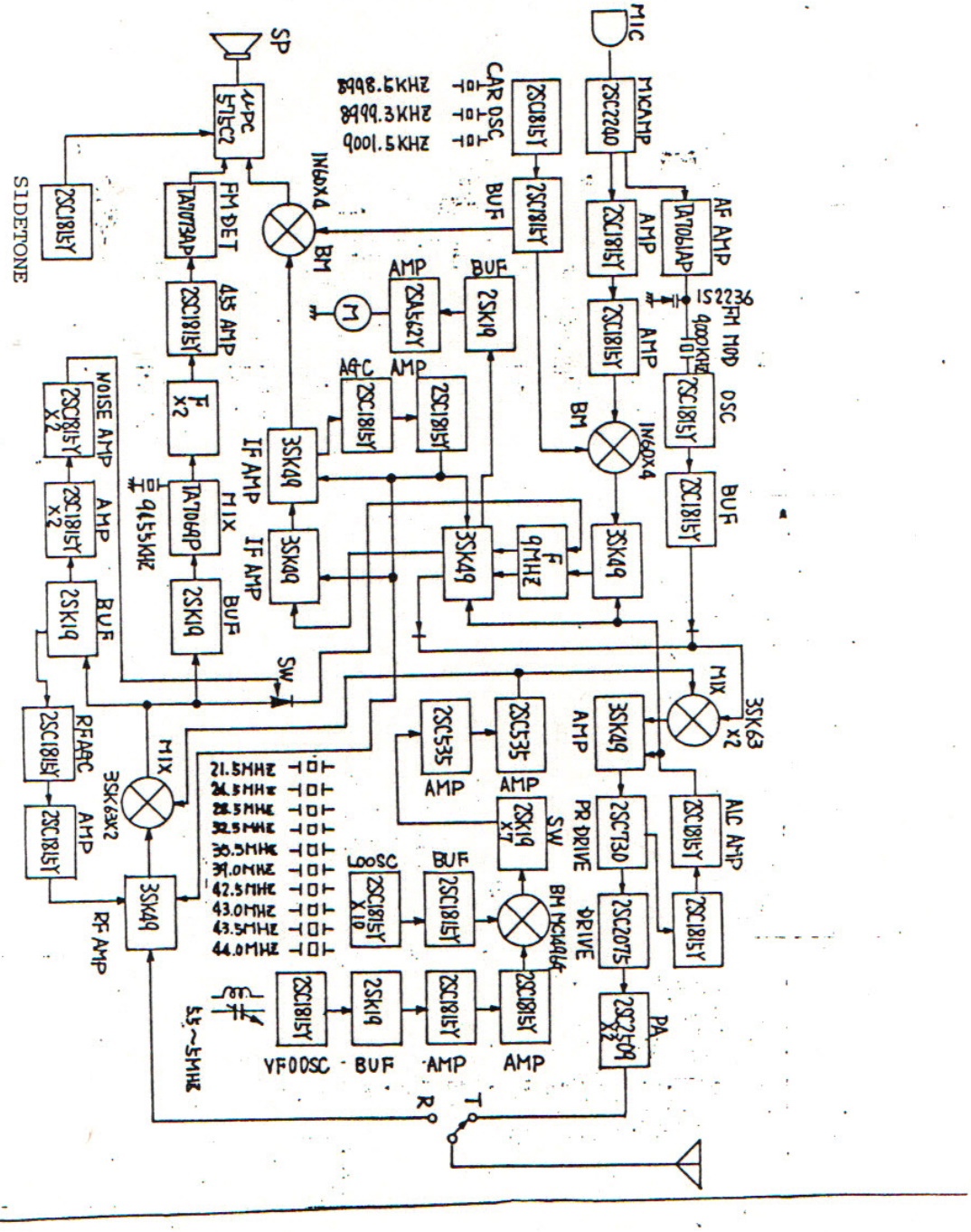
Some notes on the Use of a Transverter

The final stage has to be muted when a transverter is used.

1) Use the X-260 for both the 50MHz and 144MHz bands. If the SS-105 is used as a generator, power can be supplied from the X-260.
   Use the following pins for 9-pin socket :
   (1) Remote Control Line
   (2) 13.5V line
   (3) Grounding line
2) Use the X-407 for the 430MHz band.
   If the driving power is insufficient, replace the R1 (47 ohm) resistor of the X-407 with a 470 ohm resistor.

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BLOCK DIAGRAM



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