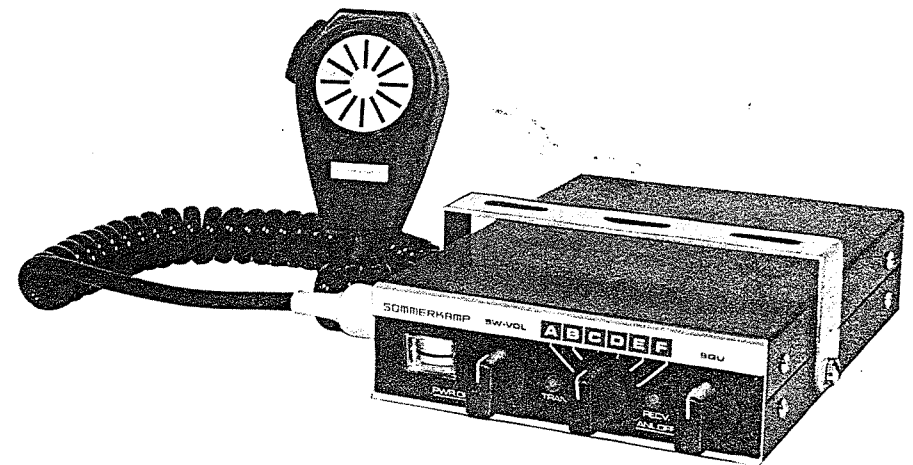


# SOMMERKAMP<sup>®</sup>

## CITIZENS BAND TRANSCEIVER INSTRUCTION MANUAL



MODEL: TS-727G

FTZ APPROVAL NO. K 98/70

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MODEL: TS-737

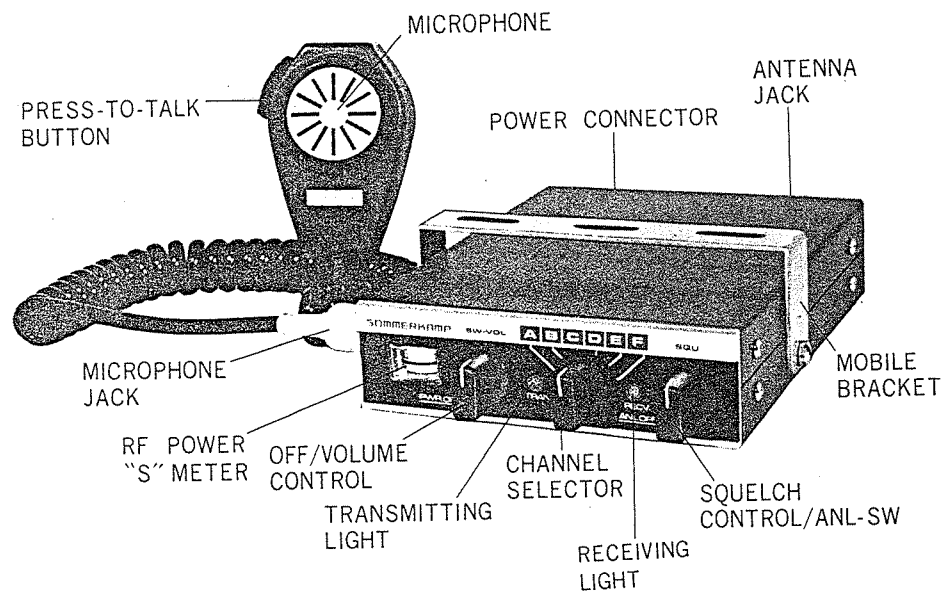
**SOMMERKAMP ELECTRONIC**

CH-6815 LUGANO BOX 130

SWITZERLAND

TEL. 091 688543 TELEX: 79314

## CONTROL LOCATIONS:



## PACKING LIST:

Beside this manual, the carton shall contain the following items:

- 1 Transceiver TS-727G
- 1 Mounting bracket
- 2 Screw for Mounting bracket
- 1 Microphon hanger
- 1 Microphone
- 1 DC Cable with Fuse

## GENERAL DESCRIPTION

Your SOMMERKAMP TS-727G transceiver has been designed for continuous heavy duty mobile and base station application. It can be operated with a microphone and internal speaker or headset, speaker/microphone combination, telephoneset incorporating automatic voice operated transmit/receive switching, external selective calling with automatic answerback and many more.

## GENERAL:

The transceiver is designed to operate from 12 Volt DC powersupply as a mobile station. Its straight forward 6 channel capability allows it to operate on any combination of frequencies within 26.5 and 29.7 MHz by inserting the corresponding Xtals and retuning the transceiver if required. The Xtals in the transceiver are standard 27 MHz CB Xtals with plus or minus 455 KHz receiver offset. No special synthesiser or IF Xtals are required.

## RECEIVER SECTION

The receiver section is designed to receive amplitude modulated (AM/A3) signals in the 26.965 to 27.275 MHz. (11 meter) citizens band. The unique combination of low noise Field Effect Transistors (FET), single conversion, a combination of mechanical ceramic, and L/C filters, fully automatic noise limiter and a hifi quality speaker amplifier will give you exceptional reception quality in this fine piece of equipment.

In addition, the above combination of the latest technology provides you with a sensitivity and unwanted signal rejection and noise suppression available previously only in space and military communication equipment.

The power supply of the receiver RF, IF and oscillator section is stabilized by an extreme sharp cut-off Zener diode to obtain the high sensitivity and unwanted signal rejection. The fully automatic series gate noise limiter, which virtually cuts off the audio output during ignition noise pulses, is defeatable to make even the weakest signal audible which otherwise would be cut off by the threshold level of the ANL switching diode.

The high squelch sensitivity is achieved by using a separate squelch detector and switching circuit with a carefully balanced hysteresis. The transformerless hifi quality audio power amplifier will drive any load between 8 ohms and indefinite such as internal speaker or external speaker/microphone or headset combinations having the above impedances.

The meter indicates the field strength during reception of a signal.

## TRANSMITTER & MODULATOR SECTION:

The transmitter section is designed for continuous heavy duty transmission of amplitude modulated (AM/A3) signals in the 26.965 to 27.275 MHz. (11 meter) citizens band.

The transmitter consists of a crystal controlled oscillator. The output of this oscillator is followed by a tuned filter, and a highly efficient collector-modulated class C driver and power output stage, coupled by series and pi-matching filters to the antenna jack.

The modulator consists of an input audio filter, integrated pre-and power amplifier and modulation transformer. This gives you the lowest possible modulation distortion and up to 100% modulation. The input is designed for 500 to 10K ohm dynamic microphone or 8 ohm speaker/microphone combination with a 1K ohm resistor in series.

## RECEIVE/TRANSMIT SWITCHING:

The receive/transmit switching is done by a single pole, single throw switch in the microphone and a combination of NPN and PNP switching transistors.

## METER:

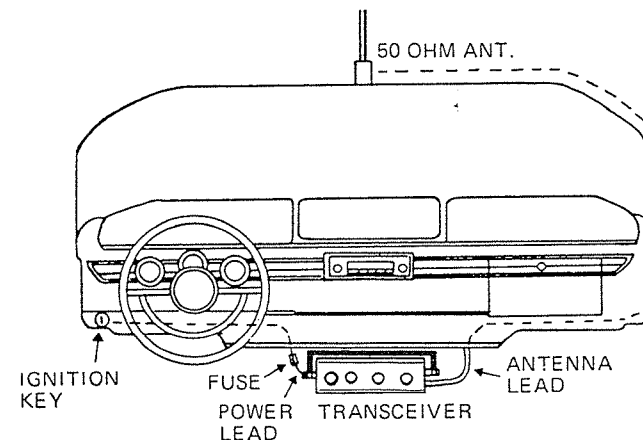
The combination meter provides you with the following functions:  
During receive mode.....it indicates the incoming signal strength.  
During transmit mode...it indicates the output power.

## MOBILE INSTALLATION

Mounting bracket and screws are supplied for mounting the transceiver underneath the dashboard. Microphone hanger and screws are also supplied.

For electrical connection, first make sure that the transceiver is turned off. Connect the red wire to the ACC terminal of the ignition switch or + terminal of battery and ground the red and white or black wire to the chassis of the vehicle. The black wire should be grounded as short as possible to minimize noise interference.

This transceiver is designed for use with the negative ground system.



Connect the antenna plug to the antenna jack with an SWR-Meter inserted into the antenna cable.

Connect the microphone to the microphone jack.

Switch the transceiver ON.

The receiving, meter and the channel lamp shall light up.

Turn the Squelch control to min. (ANL OFF)

Turn the Volume control to max. until you hear a rushing sound from the speaker.

Switch the channel selector to CH 1.

Push the transmit button on the microphone and check with the SWR-Meter immediately the SWR of your antenna. The SWR must be less than 1 to 2. Do this within 3 seconds, because if the SWR is higher than 1 to 2 it is very likely that the transmitting transistors will be damaged if you operate the transmitter too long with an antenna having a too high SWR. Also read carefully the recommendations on antennas.

If the SWR is less than 1 to 2 continue checkout. If it is more than 1 to 2 repair or replace your antenna.

Check that the meter needle is near the red mark during transmitting.

Talk into the microphone. The meter needle shall move a little.

Release the transmit button and switch the channel selector to channel 1, 2 ectr, until you receive a station.

Wait until this station stops to transmit and turn the Squelch control slowly to max. until the background noise just disappears. When the station starts to transmit again, you will hear this station, but you will not hear the background noise during non transmitting periods.

## OPERATING INSTRUCTIONS

The transceiver is ready to operate when it is installed with an antenna properly connected. Note that the communication range differs depending upon the environment where the transceiver is operated. You may reach 30 or 40 kilometers where no obstacle exists, but the range may be limited to 5 or 6 kilometers in cities where many high buildings disturb the communication.

- 1) Turn the set on by switching the ON-OFF snap switch to ON and the channel dial will be lighted. Turn the volume control clockwise to increase the audio sound. Note that the volume control knob is only for adjusting the audio volume, not to increase the transmitting power.
- 2) Turn the squelch control clockwise until incoming noise is eliminated. Do not turn it excessively as the sensitivity may be reduced.
- 3) Turn the squelch control counter-clockwise to switch off the ANL (Automatic Noise Limiter)
- 4) Turn the channel selector knob to the desired channel.
- 5) For transmitting, press the button on the microphone and speak into it normally. Release the button for receiving.

## METER

The meter reading indicates the signal strength at receiving, and functions as an output indicator at transmitting, and the meter pointer should be within the Red zone under the normal conditions.

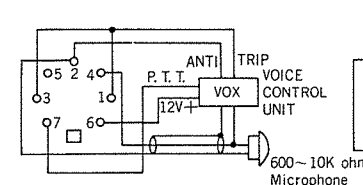
## MICROPHONE JACK

The 7-pin DIN standard accessory jack has the following internal connections:

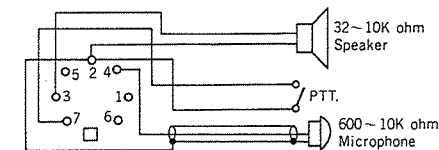
1. Microphone input ( $Z$  600-10K ohm)
2. Transmit/Receive switching.
3. Internal microphone output ( $Z$  1K ohm)
4. Internal speaker ( $Z$  8 ohm)
5. Audio output ( $Z$  8 ohm-10K ohm)
6. +12V for VOX unit etc.
7. Ground return for 1-6.

Always operate the transceiver with the microphone plug inserted in the microphone jack, or with the following external connections:

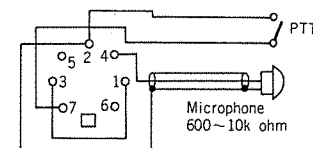
### 1. Microphone with VOX.



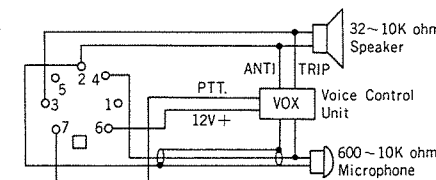
### 2. Headset or Telephoneset with PTT.



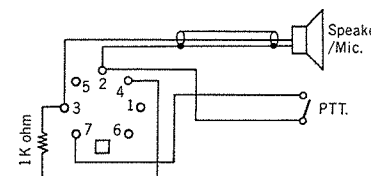
### 3. External microphone



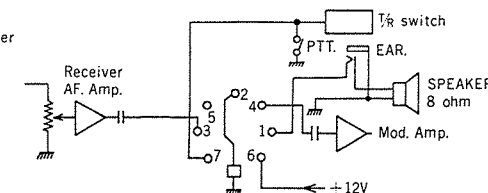
### 4. Headset or Telephoneset with VOX



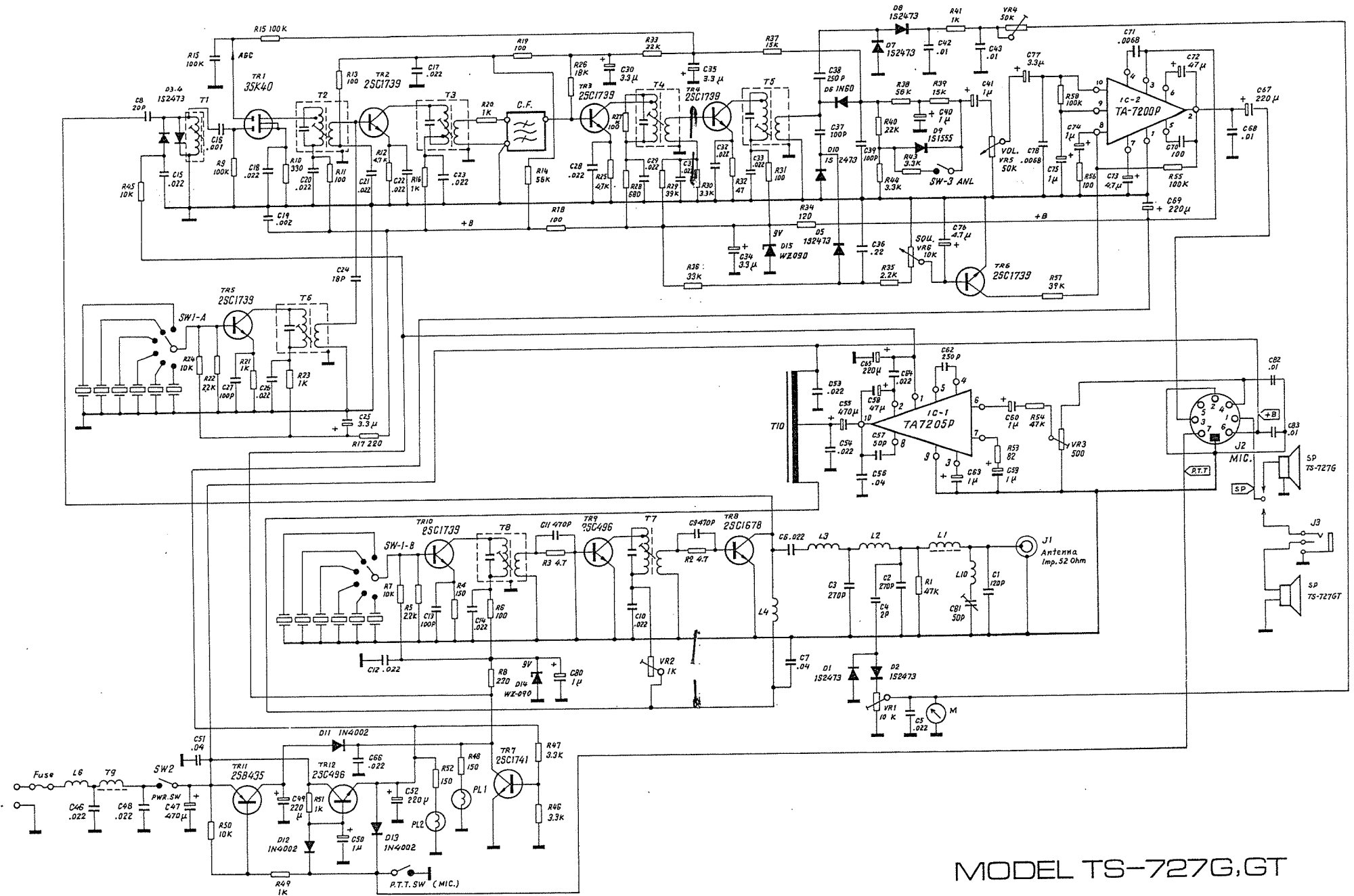
### 5. External microphone/speaker with PTT.



### 6. Internal connection



# SCHEMATIC DIAGRAM



MODEL TS-727G,GT

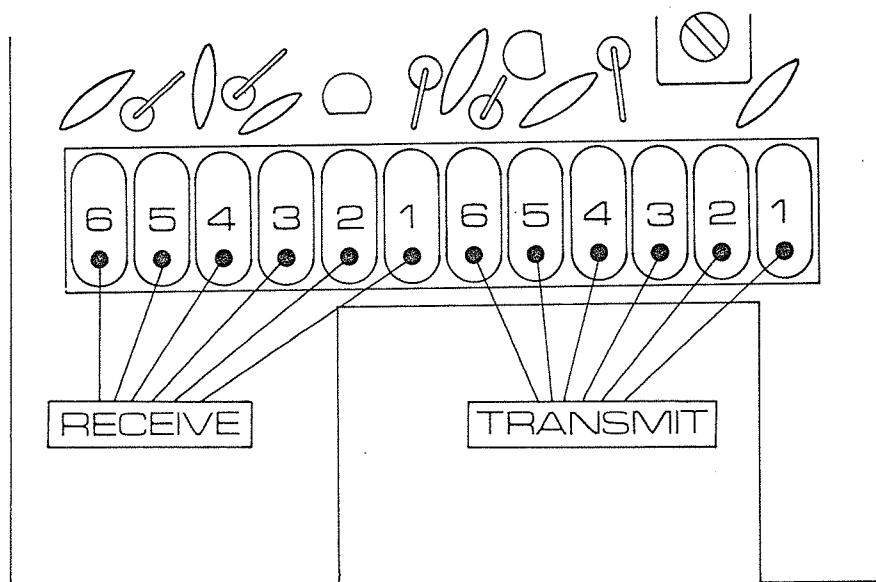
## CRYSTAL INSTALLATION

1. Remove the unit from its mount, disconnect the power lead and antenna cable at the rear of the unit.
2. Remove four screws of the side of the bottom-cabinet. (Speaker mounted side). Carefully disassembled the cabinet. Remove speaker leads form the P.C. board.
3. The crystal socket are marked as 1. 2. 3. 4. 5. & 6.....for "RECEIVE" (Receiving crystals) and 1, 2, 3, 4, 5 & 6 for "TRANSMIT" (Transmitting crystals.) (See Figure below)
4. Be careful when installing additional crystals, using too much pressure may collapse the crystal case and ruin the crystal element contained therein.
5. When all adjustments are made, re-install the chassis in the cabinet and tightening the cabinet screws. Connect the antenna wire and power lead in the same manner as previously connected. Now the unit is ready for operation. Remember to avoid operating the unit on channel position which have no crystals inserted.

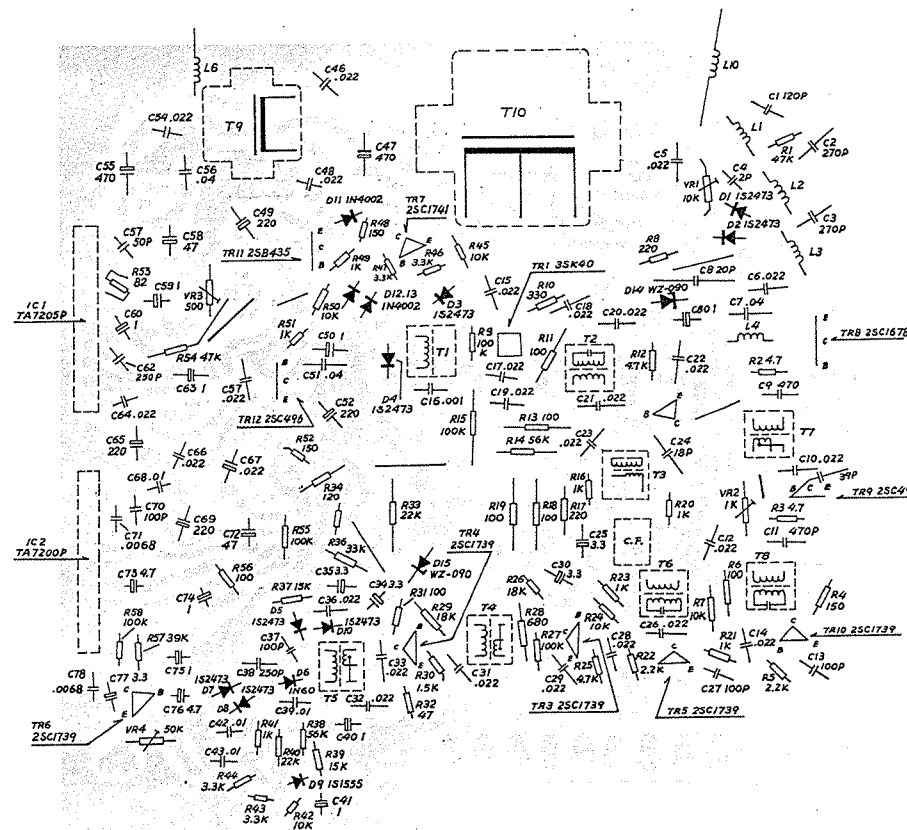
Note: Frequency of the receiving crystals are lower frequency of the transmitting channels.

Example: Tx: 27. 275 MHz.

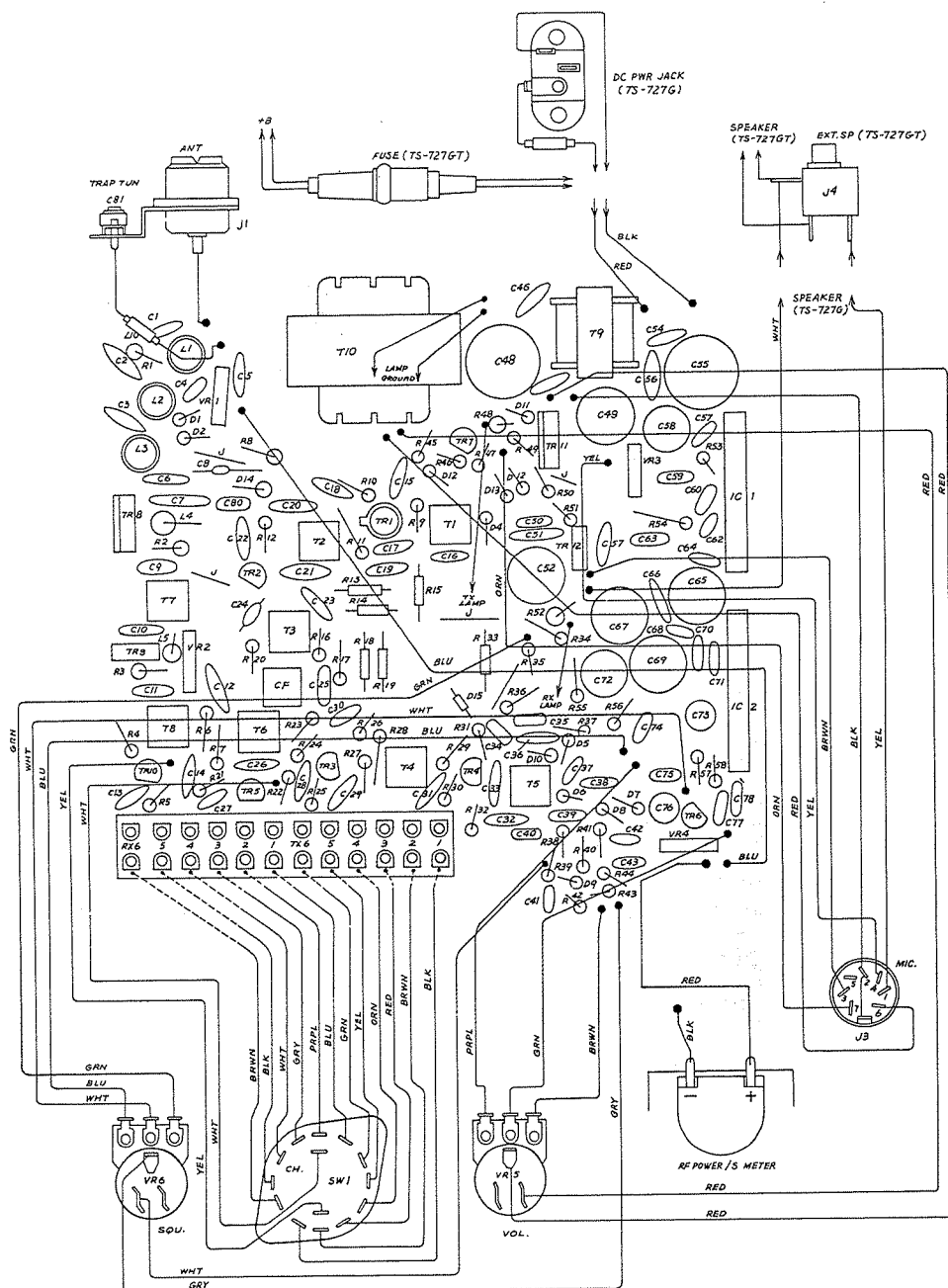
Rx: 26. 820 MHz.



## PRINTED CIRCUIT BOARD PARTS LAYOUT (SOLDERED SIDE)



# PARTS & WIRING LAYOUT (COMPONENT SIDE)



## PARTS LIST for TS-727G

DESIGNATION	PARTS NAME	PARTS NO.
MP 22	Chassis Frame	502033
MP 2	Chassis Frame Front	474035-2
MP 3	Cabinet Cover (Upper)	473008
MP 4	Cabinet Cover (Lower)	473009
MP 5	Mounting Bracket for Speaker	474038
MP 6	Mounting Bracket for Trimmer	474037
M11	Microphone Hanger	484056
MP 12	Mounting Bracket	474040
MP 13	Screw for Mounting Bracket	474034
MP 14	Front Panel	504271
MP 15	Front Plate	504286
MP 23	Back Plate	494246
MP 17	Knob	474011
MP 18	Washer for Mounting Bracket	474033
MP 19	Lamp Lens (Red)	M40024R
MP 20	Lamp Lens (Green)	M40024G
MP 21	Washer for knob	484058
J1	Antenna Jack	MRM/INCH
J2	Microphone Consent DIN Type 7P	SJ-296
J4	Power Jack	SJ-342
EP-1	Power Cord with Fuse Holder	W-001
F1	Fuse 2A	F-2A
M1	Meter	D08A86R
SP	Speaker	66P15-1
PL1/PL2	Pilot Lamp	PL-7371
SW1/SW2	Channel Selector Switch	M26S-B
M/C	Microphone Complete	12-31019
EP-503	Crystal Socket 12P	XS-12P
IC1	Integrated Circuit	TA7205P
IC2	Integrated Circuit	TA7200P
TR1	FET	3SK40
TR2, 3, 4	Transistor	2SC1739 (P)
TR5, 6, 10	Transistor	2SC1739 (Q)
TR7	Transistor	2SC1741 (P)
TR8	Transistor	2SC1678
TR9	Transistor	2SC496 (O)
TR12	Transistor	2SC496 (Y)
TR11	Transistor	2SB435

# PARTS LIST for TS-727C

DESIGNATION	PARTS NAME	PARTS NO.
D14, 15	Zener Diode	WZ-090
D9	Silicon Diode	1S1555
D1~8	Silicon Diode	1S2473
D11, 12, 13	Silicon Diode	1N4002
D6, 16	Germamium Diode	1N60
C81	Trimmer	ECV-1ZW50P
T10	Modulation Transformer	TS-727GE
T9	Power Choke Transformer	TC-1001
CF	Ceramic Filter	CFU-455H
L4, 6	RF Choke Coil	010-907
L5, 7, 8, 9	RF Choke Coil	005-903
L10	54 MHZ Trap Coil	005-901
VR1	Semi Variable Resistor 10K ohm	SVR10K3
VR3	Semi Variable Resistor 50K ohm	SVR50K3
VR2	Semi Variable Resistor 50K ohm	SVR005K2
VR4	Semi Variable Resistor 50K ohm	SVR50K2
T1	RX Antenna Tuning Coil	011-901
T2	RX RF Amp Output tuning Coil	5Z-345
T8	TX OSC Tuning Coil	5Z-345
T3	IFT. Coil (Yellow)	011-905
T4	IFT. Coil (White)	011-906
T5	IFT, Coil (Black)	011-907
L1, 2	TX Filter Coil	011-917
L3	TX RF Output Tuning Coil	134-901
T6	RX Local OSC. Tuning Coil	5Z-373
T7	TX Driver Tuning Coil	011-902
VR6-SW3	Squelch Control Variable Resistor	VM11A-5M1112 10KB
VR5-SW2	Volume Control Variable Resistor	VM11A-5M1112 50KA

## SPECIFICATION for TS-727G(TS-737)

Semiconductors	: 2 IC, 12 transistor, 15 diode.
Transmitter System	: Triple stage, crystal controlled, Collector modulation AM.
Frequency	: 6 channels on 27 MHz.
Frequency Tolerance	: Within 0.005% (-10°C to 50°C).
Output Power	: 0.5 watts (3 watts).
Band Width	: 8 KHz (max).
Antenna Impedance	: 50—52 ohms.
Receiver System	: Single superheterodyne, crystal controlled.
Sensitivity	: 1μV or better for 500mW output, 10 dB signal to noise ratio.
Intermediate Frequency	: 455 KHz.
Receiver Selectivity	: 30 dB down at 10 KHz.
Squelch Sensitivity	: 1μV.
Audio Output Power	: 0.4 watts in 10% distortion.
Power Source	: 11~16 volts D. C. Neg. Ground.
Power Consumption (Tx)	: 0.18A (0.75A) at no modulation.
Power Comsumption (Rx)	: 0.1A at no signal.
Microphone	: Dynamic type with press-talk switch.
Speaker	: Dynamic type 8 ohms V. C.
Size	: 121×35×160
Weight	: 1.12kg
Accessories	: Mounting bracket, Mounting hard ware Power Cord.