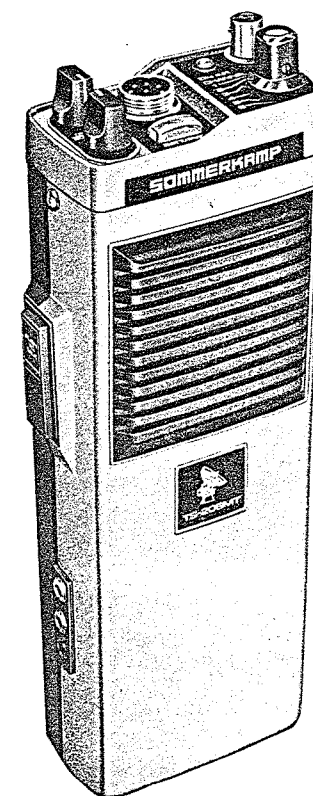


SOMMERKAMP

VHF/FM MARINE
2 WATT 6 CHANNEL
TRANSCEIVER

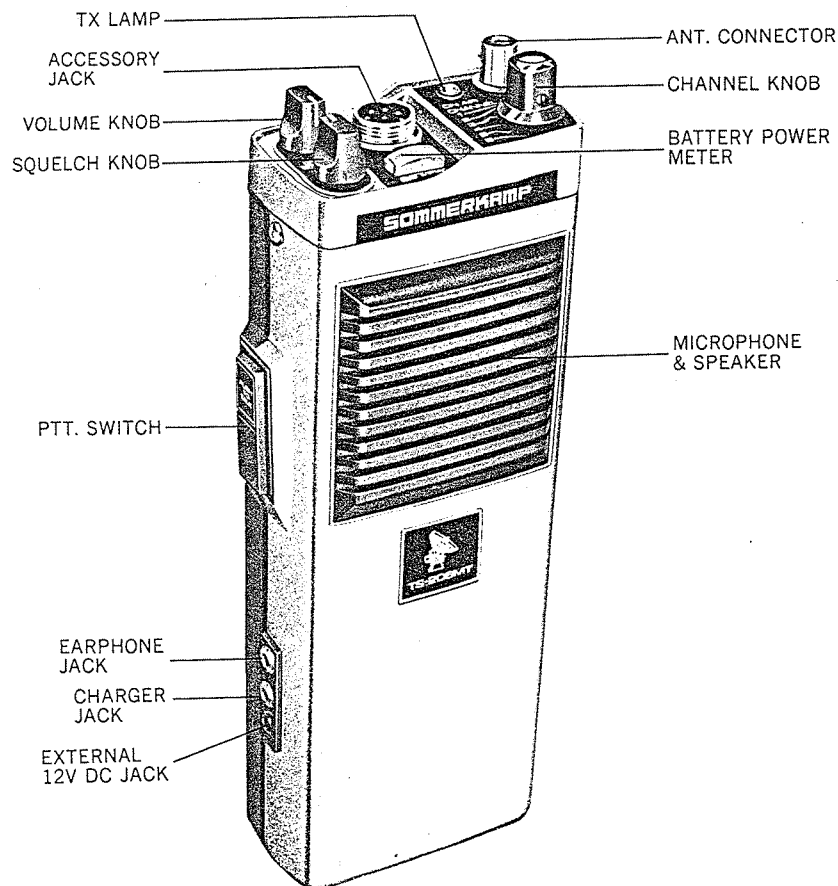
MODEL
TS-206MT



SOMMERKAMP ELECTRONIC SAS

CH-6903 LUGANO, P. O. BOX 176
SWITZERLAND
TEL.(91)688543 TELEX 79314

INSTRUCTION MANUAL



PACKING LIST:

Beside this manual, the carton contains the following items:

1. Transceiver TS-206MT
2. Carrying case with shoulder strap
3. Earphone case
4. 2 pcs. dummy batteries inside the battery case
5. Antenna

WHY VHF-FM?

The characteristics of radio transmission in the Very High Frequency band (VHF) and the significant reduction of noise with Frequency Modulated (FM) communication combine to result in a radically improved marine radio communication systems. You will find your TS-206MT virtually free of the annoying sound produced by long distance skip interference and man-made electrical noise.

VHF communication is basically limited to a "line of sight" transmission path. This characteristic often eliminates interference emanating from locations out of the area of interest.

The communication range increases rapidly as the height of either antenna increases. It is possible however to communicate at VHF over distances of 100km or more if one or both antennas are of adequate height.

Frequency modulation reduces the distracting speaker noise produced by interference emanating from most electrical equipment. In addition FM has the advantage of selecting the stronger competing signals and rejecting others. Because of this, you can communicate among each other without interfering with one another. This allows many simultaneous contacts to be carried on over one channel.

Because of the many advantages of VHF-FM, the services available from Coast Guard, Weather Bureau, marine telephones, yacht clubs, marinas and many others are rapidly expanding.

UNPACKING AND CHECKOUT

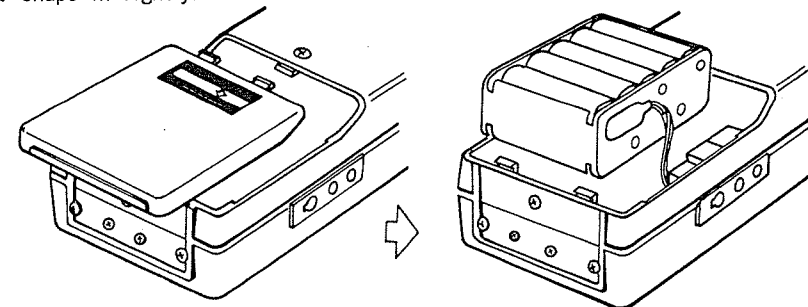
Unpack the carton carefully and check for exterior damages.

Check that the volume control is in the OFF position, the squelch control in the fully counter clockwise position.

Press the dent of the battery compartment lid and pull it out toward the bottom. Lift out the battery holder and insert 8 dry cells into the holder as indicated, \oplus to \oplus , \ominus to \ominus pole. Leave the 2 dummy batteries in the holder as they are. If you use rechargeable batteries, insert 10 pieces of them in the same manner as above but remove the dummy batteries.

Snap the battery holder onto the snap connector provided and reinsert the holder into the compartment.

Replace the compartment lid by inserting it straight from the bottom up until it snaps in rightly.



Connect the flexible antenna to the antenna jack.

Then switch the transceiver ON by rotating the volume control clockwise and check that the meter needle moves into the red field. If the meter needle does not move, open the battery compartment to remove the battery holder to ensure that the batteries are correctly inserted.

Now turn the volume control until noise is heard from the speaker.

Rotate the channel switch step by step and check that some noise and/or signal is heard.

Push the push-to-talk (PTT) switch and observe the meter needle. It shall move into the red field. Now whistle into the speaker/microphone. The needle shall move a little.

OPERATION

Switch the transceiver ON by rotating the volume control clockwise.

Rotate the channel switch to the desired channel.

Adjust the volume control to a comfortable level.

Press the PTT switch and talk with a normal voice into the speaker/microphone from a distance of 5-10 cm. After completing your transmission, release the PTT switch, and the transceiver is ready for reception. Always remember that your opposite party cannot hear you while he is transmitting.

Adjust the squelch control so that the background noise just disappears during non-transmitting periods of your opposite party.

To answer the received call, push the PTT switch and talk into the speaker/microphone.

To receive weak signals, turn the squelch control fully counter-clockwise.

To switch the transceiver OFF, turn the volume control fully counter-clockwise until a click is heard and the meter needle moves into the green field.

Important:

If you will not operate the transceiver for a long time, remove the batteries from the equipment so that they will not corrode and damage the transceiver.

SHIPBOARD OPERATING CONSIDERATIONS

While being operated, a licensed shipboard marine utility station must be under the control of an authorised person.

The operator, with the approval of the licensee, may permit an unlicensed person to speak into the microphone. Anyone permitted to use your TS-206MT should be advised of the following basic marine radio operating requirements and procedures. Remember, you, as the licensee and operator, are responsible for proper operation of your marine radio station.

1. Before using a particular channel, be sure it is designated for the use intended. A complete list of all marine radiotelephone channels and their intended use is found in the next page.
2. Listen first to be sure the channel is clear before operating the transmitter.
3. Keep your transmission short and to the point. Avoid unnecessarily long or superfluous transmissions.
4. Announce the correct call sign and vessel name at the beginning and end of each transmission: "Sea Roamer two—Sea Roamer two—Sea Roamer two. This is Sea Gypsy, Whiskey Kilo, one-two-zero-niner, calling Sea Roamer two, "This is Sea Gypsy, Whiskey Kilo, one-two-zero-niner, clear with Sea Roamer two."
5. Do not use profane or obscene language over the air.
6. After completing your call, return the station selector knob for reception on IMCO Channel 16 (156.8 MHz), the calling and distress channel as it should be at all times when you are not making a call.

ADDING CHANNEL CAPABILITIES

Your TS-206MT is equipped with crystals to provide operation on the following channels as required by the IMCO-Channel #6 (Intership Safety), Channel #16 (Distress, Safety & Calling).

From time to time it will become desirable to add additional channels. Consult your local SOMMERKAMP Communications dealer for the most desirable channels for your use. This dealer will provide and install the required crystals. Do not use substitute crystals. To assure that the unit will comply with IMCO requirement for frequency stability, it is necessary to procure these crystals from SOMMERKAMP Communications only.

INTERNATIONAL VHF MARINE FREQUENCIES

Channel Designation	Frequency (MHz)		Ship to Ship	Port Service		Ship Service		Public Correspond
	Ship	Coast		1 Freq.	2 Freq.	1 Freq.	2 Freq.	
60	156.025	160.625		17		9		25
01	156.050	160.650		10		15		8
61	156.075	160.675		23		3		19
02	156.100	160.700		8		17		10
62	156.125	160.725		20		6		22
03	156.150	160.750		9		16		9
63	156.175	160.775		18		8		24
04	156.200	160.800		11		14		7
64	156.225	160.825		22		4		20
05	156.250	160.850		6		19		12
65	156.275	160.875		21		5		21
06	156.300		1					
66	156.325	160.925		19		7		23
07	156.350	160.950		7		18		11
67	156.375	156.375	10	10		9		
08	156.400		2					
68	156.425	156.425		6		2		
09	156.450	156.450	5	5		12		
69	156.475	156.475	9	11		4		
10	156.500	156.500	3	9		10		
70	156.525		6					
11	156.550	156.550		3		1		
71	156.575	156.575		7		6		
12	156.600	156.600		1		3		
72	156.625		7					
13	156.650	156.650	4	4		5		
73	156.675	156.675	8	12		11		
14	156.700	156.700		2		7		
74	156.725	156.725		8		8		
15	156.750	156.750	12	14				
75	156.7625	156.7875 MHz						

ROUTINE MAINTENANCE AND CARE

The inherent life of the components in the TS-206MT allow many years of continuous use without failure if it is treated with reasonable care. Certain factors will reduce this life. The following abnormal conditions should be avoided to realize the inherent life capabilities.

1. Avoid excessive supply voltage. The maximum DC voltage should not exceed 15 volts DC for any appreciable period nor should the set be operated when the supply drops below 11 volts.
2. Do not energize the transmitter without the antenna connected to it or if the antenna is defective. Have the VSWR of your antenna system checked at least once every year. VSWR is a technical abbreviation standing for "voltage standing wave ratio." The VSWR ratio obtained is a measure indicating if your antenna and the cable connecting it to your radio telephone are performing properly.
3. Direct exposure to water should be avoided. If the set is accidentally subjected to heavy splash or immersion in salt water, permanent damage may be avoided if the following steps are taken.
 - a. Turn the set off immediately.
 - b. Inspect the set for the extent of water contact. If extensive exposure to salt water is indicated, flush the set with clean fresh water. Shake out all trapped water and dry thoroughly with a cloth.
 - c. Expose the openset to direct sunlight or the warmth of a heated room. Do not dry in an oven unless it can definitely be maintained at less than 70°C. A drying period of 4 hours should be sufficient.
 - d. After the set is completely dry, inspect for signs of salt deposits. If none are visible, cabinet and check for normal operation on both receive and transmit. This checking should be done by a technician. Repeat the washing procedure if salt deposits are detected before checking.

ACCESSORIES:

To install rechargeable nickel-cadmium batteries, follow the instructions under the Chapter UNPACKING AND CHECKOUT of this manual. Charge the nickel-cadmium batteries either by plugging an appropriate charger into the charger jack or by inserting the transceiver into a charger stand. Charge them for about 14 hours. It is not possible to operate the transceiver during charging.

To use the unit with an external power supply, plug it into the external power jack. It is recommended to select a low ripple stabilized supply delivering at least 1 ampere at 12V with a maximum output voltage of 16V DC. Consult SOMMERKAMP dealer for the appropriate battery charger, charger stand or external power supply.

Channel Designation	Frequency (MHz)		Ship to Ship	Port Service		Ship Service		Public Correspond
	Ship	Coast		1 Freq.	2 Freq.	1 Freq.	2 Freq.	
16	156.800	156.800						
76	156.8125	156.8375						
17	156.850	156.850	13	13				
77	156.875		11					
18	156.900	161.500		3		22		
78	156.925	161.525		12		13		27
19	156.950	161.550		4		21		
79	156.975	161.575		14		1		
20	157.000	161.600		16		23		
80	157.025	161.625		5		20		
21	157.050	156.050 or 161.650		15		10		28
81	157.075	161.675		2		24		
22	157.100	161.700		13		11		26
82	157.125	161.725						
23	157.150	156.150 or 161.750						5
83	157.175	156.175 or 161.775						16
24	157.200	161.800		24		12		4
84	157.225	161.825						13
25	157.250	161.850						3
85	157.275	161.875						17
26	157.300	161.900						1
86	157.325	161.925						15
27	157.350	161.950						2
87	157.375	161.975						14
28	157.400	162.000						6
88	157.425	162.025						18
WX	162.550	162.550	Receive Only					

To connect the transceiver to a 12V automobile battery, use an 1 ampere fuse in series with the positive wire.

Solder the positive wire to the center of the external power plug and the negative wire to its fin.

For private listening, plug the earphone into the earphone jack. The internal speaker will be disconnected.

To operate the transceiver with a 50 ohm external antenna, plug the coaxial connector into the external antenna jack and remove the rubber antenna.

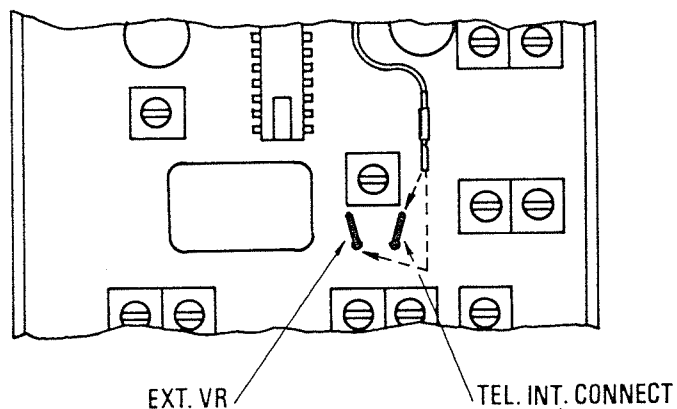
ACCESSORY JACK

The 8-pin accessory jack has the following internal connections:

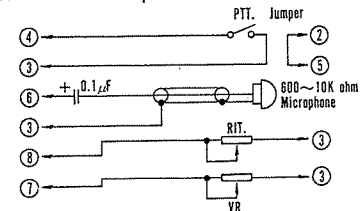
- | | |
|-------------------------------|-------------------------|
| 1. +12V for VOX unit etc. | 6. Condenser microphone |
| 2. Audio Output (Z=8-10K ohm) | 7. External Volume |
| 3. Ground | 8. Squelch |
| 4. Transmit/Receive switching | Case = Ground |
| 5. Internal speaker | |

Always operate the transceiver with accessory plug inserted in the accessory jack, or with the external connections illustrated on the next page.

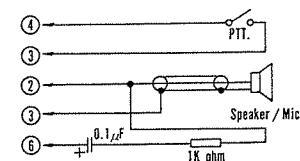
You can also connect the SOMMERKAMP telephone interconnect TS-851 through the accessory jack to enjoy the so called "Cityplex Autopatch". The SQ signal for the telephone interconnect shall be taken from the pin-7 and the internal connection of the pin-7 should be changed as illustrated below just plugging into the other pin:



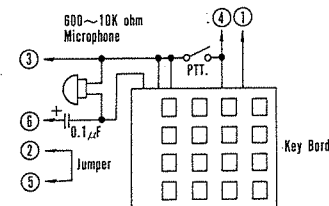
1. External Microphone



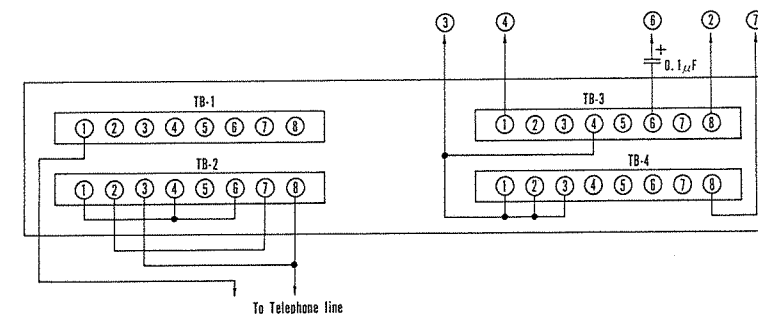
2. External Microphone Speaker with PTT.



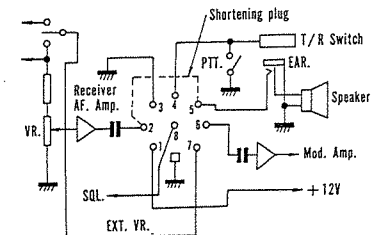
3. Telephone encoder Mic



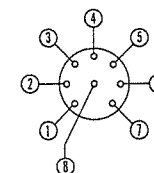
6. Telephone Interconnect



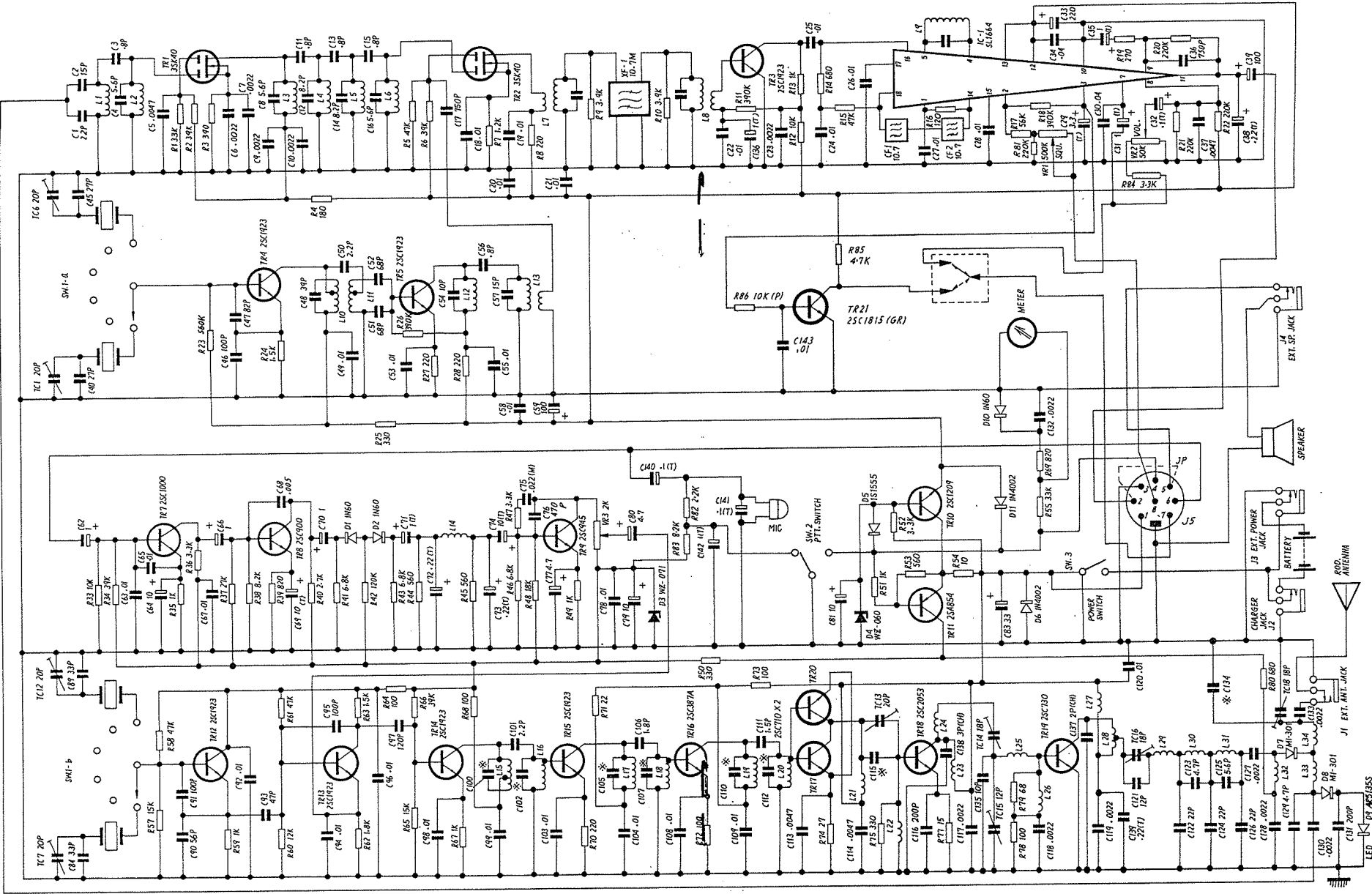
4. Internal connection



5. Connection number

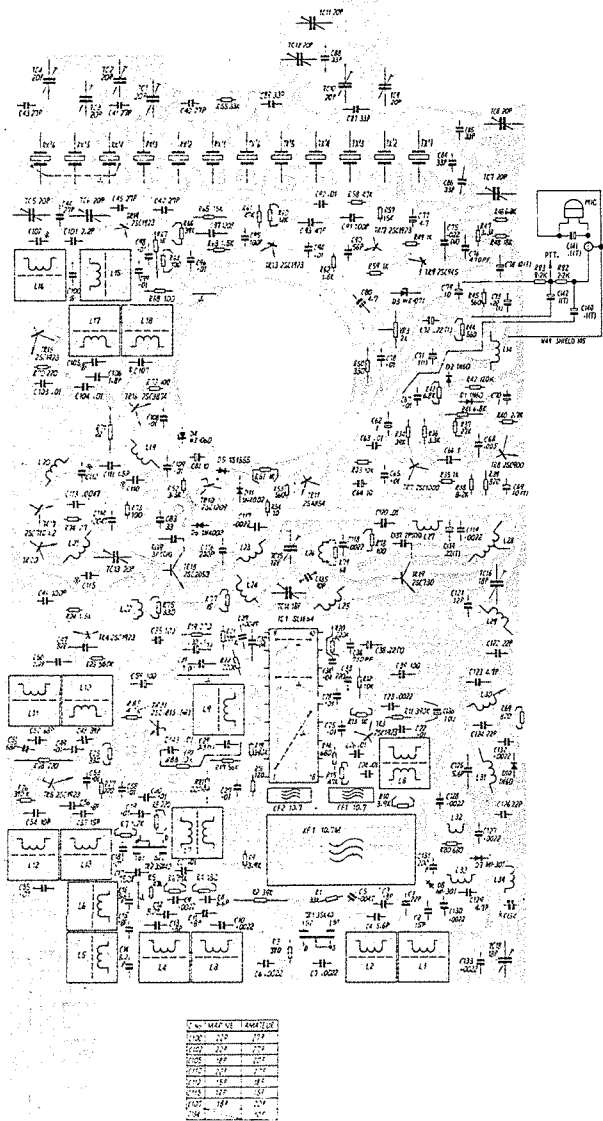


SCHEMATIC DIAGRAM

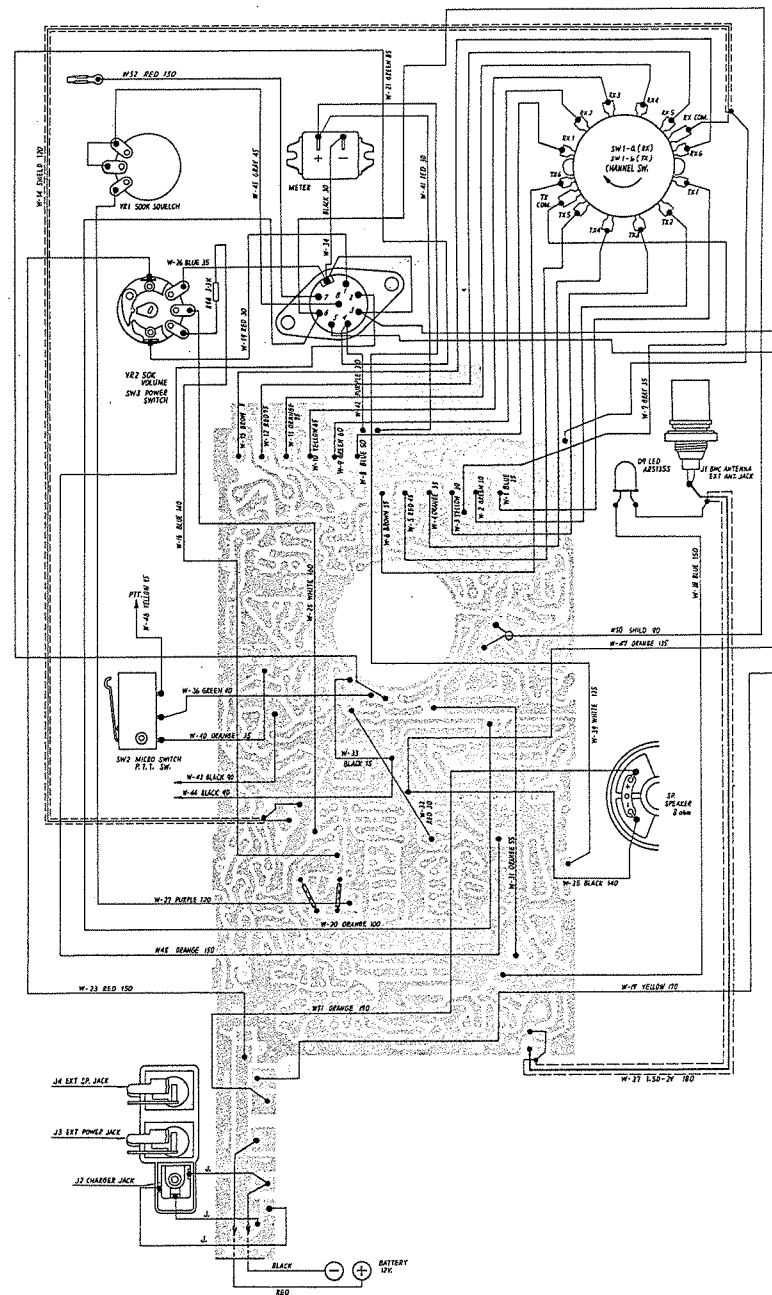


	C 100	C 102	C 105	C 110	C 112	C 115	C 134
MARINE	22 P	22 P	18 P	22 P	15 P	10 P	
AMATEUR	27 P	27 P	20 P	27 P	18 P	15 P	10 P

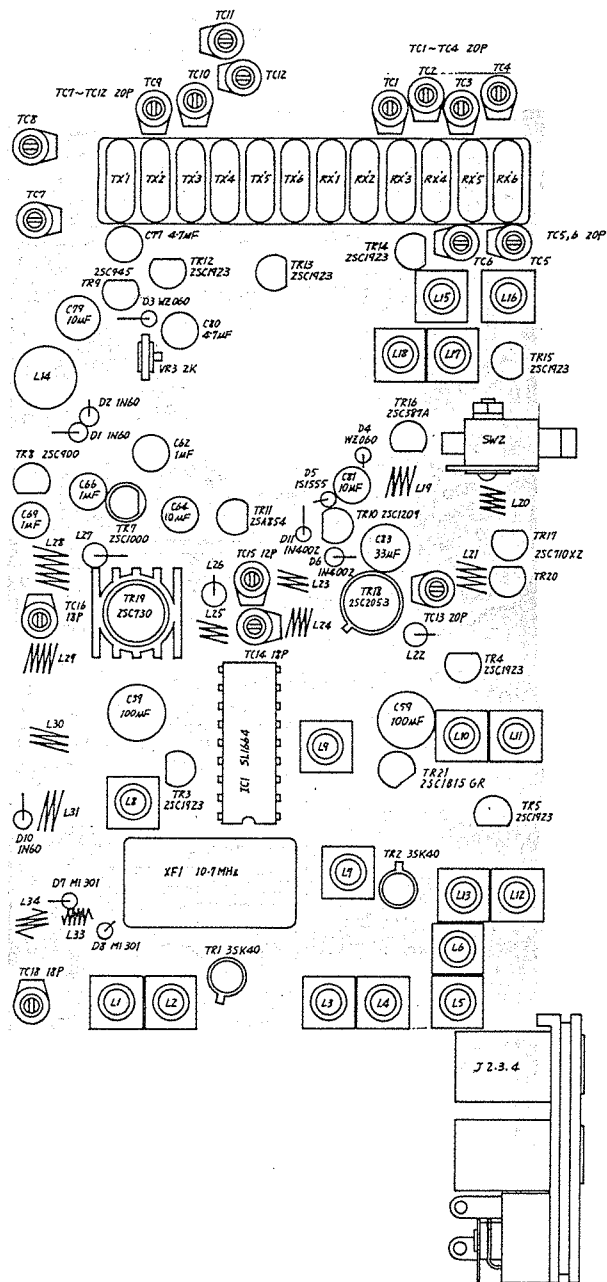
PRINTED CIRCUIT BOARD PARTS LAYOUT



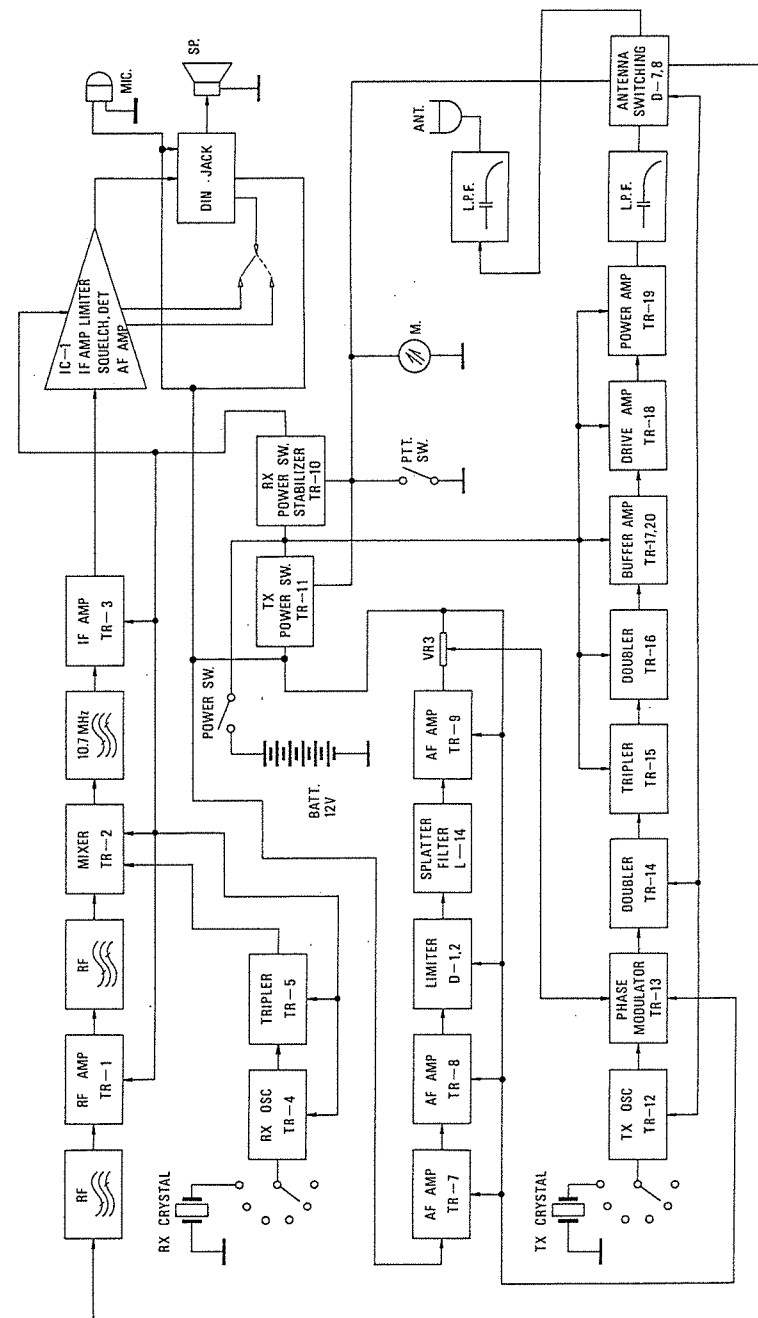
WIRING LAYOUT



MAIN PARTS LAYOUT



BLOCK DIAGRAM



PARTS LIST

DESIGNATION	PARTS NAME	PARTS NO.
MP-5601	Cabinet Front	492023
MP-5602	Cabinet Top	493037
MP-5603	Cabinet Back	492021
MP-5604	Cabinet Cover for BATT.	493039
MP-5605	Speaker Grill	493038
MP-5609	Cabinet Bottom Plate	494198
MP-5608	P. T. T. Button Assembly	494200
MP-556	Heatsink for 2SC730	203A820
MP-5607	Knob for VOL./SQU. Control	494199
MP-557	Knob for Channel Selector	TK-1147
MP-5612	Frame for P. C. B.	494196
MP-558	Supporter for P. C. B.	534579
MP-5614	Mounting Bracket for Microswitch	494216
MP-209	Mounting Bracket for Speaker	474009
MP-559	Battery Case Holder	494194
MP-560	Mounting Bracket for Channel Switch	534578
MP-5624	Speaker Net	494229
MP-5615	Brand Plate	494223
MP-561	Back Plate	534585
MP-5620	DIN Jack Plate	494220
MP-563	VOL./SQU. Plate	534583
MP-5616	Push Plate	494222
MP-564	SOMMERKAMP Mark Plate	534588
MP-565	Channel Plate	534589
MP-566	Printed Circuit Board	533074
MP-567	DIN JACK	534556
	PTT Button Spring	494206
MP-568	Screw for Chassis	534591
MP-569	Nut for Channel Switch, (A)	534580
MP-570	Nut for Channel Switch, (B)	534581
MP-571	Channel Frequencies Label No. 1	534493
MP-572	Channel Frequencies Label No. 2	534496
MP-573	Channel Frequencies Label No. 3	534594
MP-574	Channel Frequencies Label No. 4	534595
	Speaker Cover	484050

TS-206MT (MARINE)

DESIGNATION	PARTS NAME	PARTS NO.
D6, 11, 12	Silicon Diode	1N4002
D5	Silicon Diode	1S1555
D1, 2, 10	Germanium Diode	1N60
D3, 4	Zener Diode	WZ-060
D7, 8	RF SW. Diode	MI-301
D9	LED	AR5135S
XF1	Crystal Filter	781111
CF1, 2	Ceramic Filter	10.7MS
J1	BNC Antenna	
J2, 3, 4	Tri Jack	C-G0112-01
J5	DIN Type 8pin Socket	
	Shortening Circuit Plug for DIN Socket	TCP-1392
ANT	Rod Antenna Jack	WH-150S-BNC-159
SW1a, b	Channel Switch	MI206
SW2	Micro Switch (P. T. T.)	SS-5
SW3, VR2	Variable Resistor (Volume) 50K ohm	VR1350KAS
VR1	Variable Resistor (Squelch) 500K ohm	VR13500KB
VR3	Semi Variable Resistor 2K ohm	SVR002KS3
SP	Speaker	77-08
M	Meter	500UA
TC1~13	Trimmer Condenser	CV05-C2001
TC14, 16, 18	Trimmer Condenser	CV05-D180
TC15	Trimmer Condenser	CV05-C1201
L14	33mH Choke Coil	333J
L29	TX Final Tune Coil	SA3-763
L19, 21, 24	TX 150MHz (Doubler/Buffer/Drive) Coil	SA3-764
L34	L. P. F.	SA3-765
L20, 23, 25	TX 150MHz (Doubler/Drive) Coil, Choke Coil	SA3-766
L30, 31	L. P. F.	SA3-767
L28	TX Final Tune Coil	SA3-768
L33	L. P. F.	SA3-769
L26	R. F. C.	SA3-770
L22	R. F. C.	SA3-771
L32	R. F. C.	SA3-772
L27	TX Final Choke Coil	SA3-773
L7, 8, 9	10.7MHz Tune Coil	SA3-774
L15, 16	TX 25MHz Doubler	SA3-775
L10, 11, 17, 18	RX 45MHz Tripler/TX 75MHz Doubler Coil	SA3-776
L1, 2, 3, 4, 5, 6, 12, 13	RX RF IN/RX RF OUT/RX 135MHz Tripler Coil	SA3-777

PARTS LIST

DESIGNATION	PARTS NAME	PARTS NO.
IC1	Integrated Circuit	SL1664
TR1, 2	FET	3SK40
TR3, 4, 5, 12, 14, 15	Transistor	2SC1923-O
TR9	Transistor	2SC945-R
TR7	Transistor	2SC1000-E
TR8	Transistor	2SC900-E
TR10	Transistor	2SC1209-D
TR11	Transistor	2SA854-Q
TR16	Transistor	2SC387-A
TR17, 20	Transistor	2SC-710-D
TR18	Transistor	2SC-2053
TR19	Transistor	2SC730
EP-503	Socket for Crystal Unit 12P	XS-12P
MIC	Condenser Microphone	WM-065W

SPECIFICATIONS

GENERAL

Frequency Coverage	156.0—162.0 MHz
Frequency Control	6 Channel Crystal Controlled Multiplication System
Frequency Stability	3×10^{-6} at 25°C 8×10^{-6} at -20 to +50°C
Semiconductor Complement	18 Transistors, 2 FETs, 1 ICs, 11 Diodes
Modulation Type	Phase Modulation
Supply Voltage	12 Volt DC
Current Drain	Transmit 0.4A Receive 0.012A
Antenna Impedance	50 Ohm unbalanced
Size	230 mm × 78 mm × 43.5 mm

TRANSMITTER

Frequency Control	High Stability Crystal Multiplier
Modulation	Phase, with 6 dB/octave Preemphasis
Power Output	2 Watts
Spurious and Harmonic Output	less than -30 dBm (-70 dB below carrier)

RECEIVER

Frequency Scheme	Superheterodyne with 10.7 MHz
Sensitivity	0.5 μV for 12 dB sinad 0.5 μV squelch threshold
Spurious and Image Response	-60 dB
Selectivity	15 KHz -3 dB, 25 KHz -70 dB
Audio Output Power	250 mW /8 ohm 10% THD

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TR10	Transistor	2SC1209-D
TR11	Transistor	2SA854-Q
TR16	Transistor	2SC387-A
TR17, 20	Transistor	2SC-710-D
TR18	Transistor	2SC-2053
TR19	Transistor	2SC730
EP-503	Socket for Crystal Unit 12P	XS-12P
MIC	Condenser Microphone	WM-065W

CRYSTAL DATA

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Items	Mod. TS-206	Mod. TS-155M(DX)
Osc. Freq.	TX CH12 RX (CH-10.7)/9	TX CH9 RX (CH-10.7)/9
Load Capacit.:	TX 20pF+850Hz=0 RX 20pF+1,200Hz=0	TX 20pF+300Hz=0 RX 20pF+1,500=0
Drive Level:	TS-683/TSM 2mW	TS-683/TSM 5mW
Shunt Capacit.:	TX 13MHz 6pF+0.4 17MHz " " " RX Same as TX	Same as TS-206 " " " " " "
Freq. Toler.:	+20ppm at 25°C	" " "
Freq. Stabil.:	+30ppm -10 to +50°C	" " "
Equiv. Resist.:	13MHz 15ohm max. 17MHz 6ohm max.	" " " " " "
Operation Mode:	Fundamental	" " "