

INSTRUCTION MANUAL



MAJOR ACOUSTICS CORPORATION

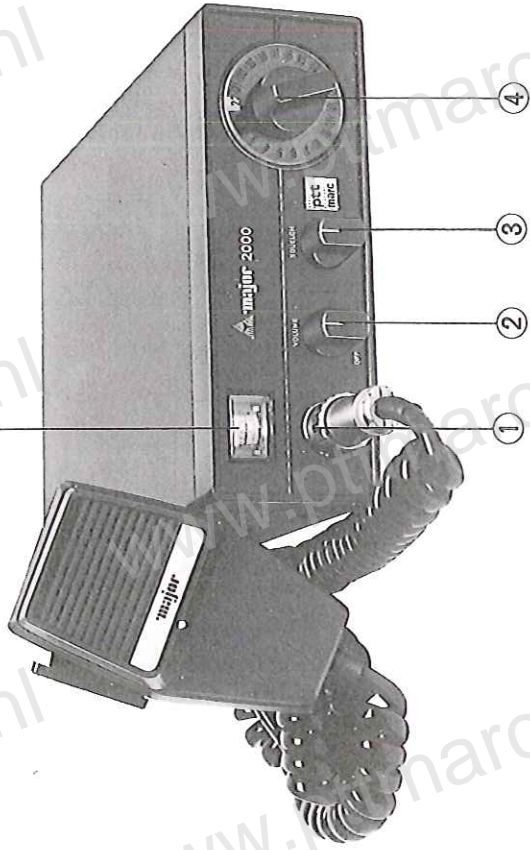
MODEL  
**2000**

PROFESSIONAL 27MC TRANSCIVER  
P.T.I. APPROVED



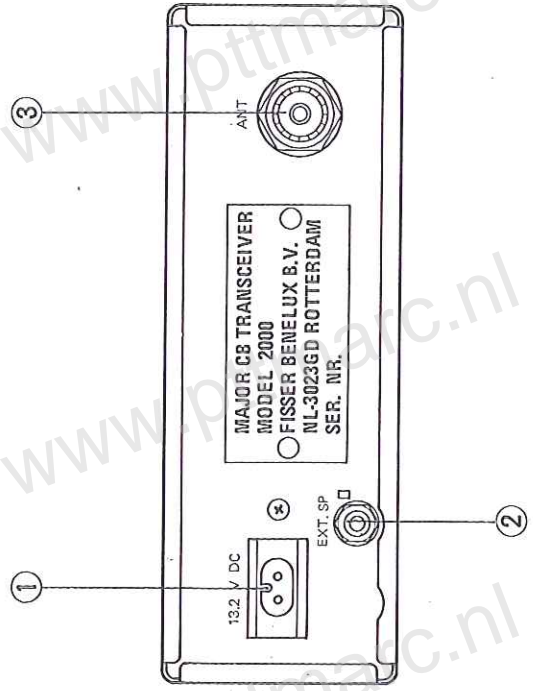
## Front View

See page 6



## Rear View

See page 6



## Technical Specifications

### General

Power Source: 13.2V DC.  
Frequency stability:  $\pm 1.5$  kHz.  
Temperature range:  $-10^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ .  
Frequency composition: PLL synthesizer.  
Mode of operation: F3.

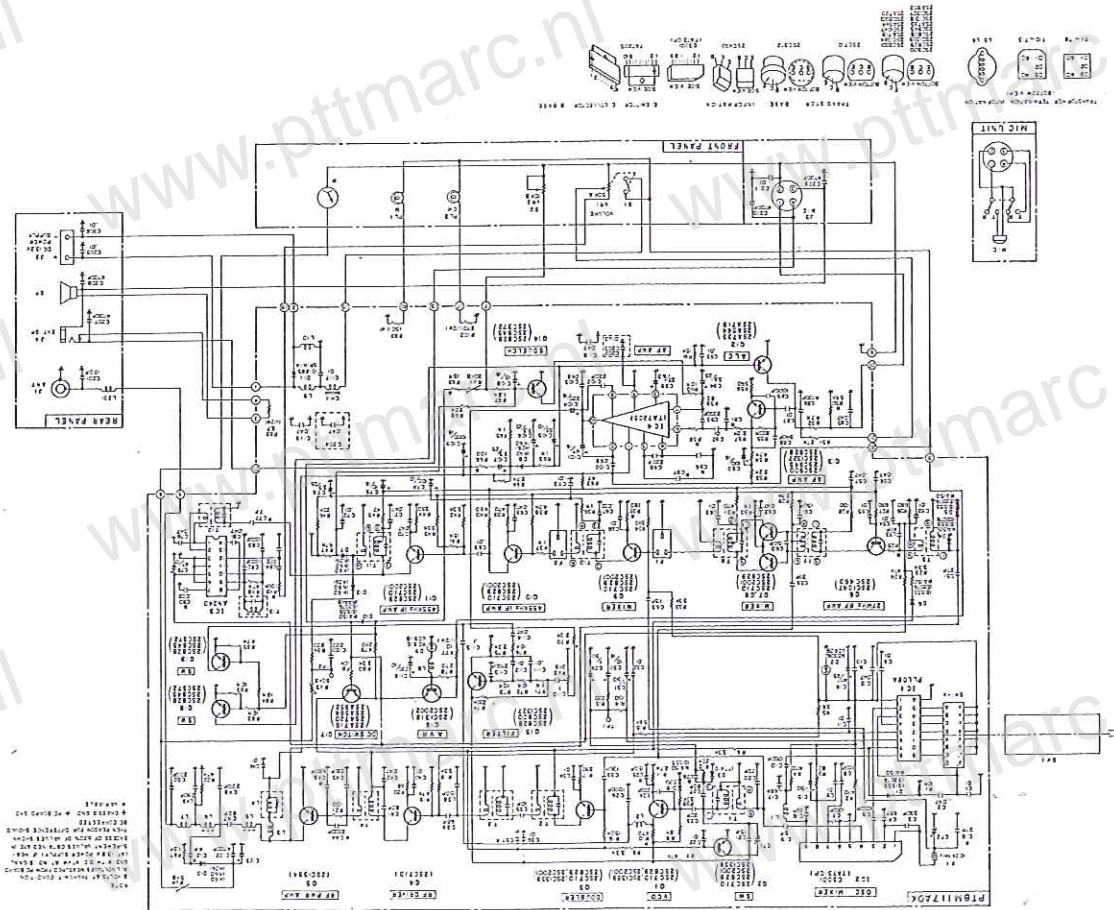
### Receiver

Sensitivity for 20 dB S/N:  $0.5 \mu\text{V}$ .  
Squelch threshold sensitivity:  $0.2 \mu\text{V}$ .  
Squelch tight sensitivity:  $3 \mu\text{V}$ .  
Adjacent channel selectivity: 60 dB.  
Spurious response attenuation: 45 dB.  
Audio power output @10% THD into 8 Ohm: 2 Watt.  
Image rejection: 55 dB.

### Transmitter

RF power: 500 mW.  
Radiated spurious emission:  $> 81$  dB.  
FM Deviation @1250 Hz 20 mV audio:  $\pm 1.5$  kHz.

# Schematic Diagram



# General Description

The Major model 2000 is an advanced mobile FM CB radio designed exclusively for the Dutch CB band operation. It employs the very latest technology to provide 22 channels of operation by means of digital frequency synthesis with Phase Lock Loop [PLL] circuitry. The use of PLL circuitry assures a precise on-frequency operation on every channel in both transmit and receive modes that is unmatched by conventional crystal frequency synthesis. This transceiver also includes many features which will provide greater operating convenience and assure optimum communications under a wide range of conditions. The transceiver also features the following:

- Illuminated meter to indicate S units and RF power output.
- In line-fused DC power cable.
- Variable squelch control.
- Built-in ceramic filter to help prevent adjacent channel interference.
- Built-in automatic modulation control circuit.
- Reversible ground polarity.
- External speaker jack.
- Floating chassis for either negative or positive ground operation.
- Push-to-Talk dynamic mic with coiled cord.
- Mounting bracket and all hardwares equipped.



## Front Panel

- [1] **Microphone Jack**  
4-Pin socket for push-to-talk microphone [supplied].
- [2] **Volume/On-Off**  
Varies the sound output from the speaker. Also incorporates an on-off power switch at the extreme counter-clockwise position.
- [3] **Squelch Control**  
This control is used to eliminate any annoying background noise when no signals are present. The degree of sensitivity to incoming signals is adjustable. When the Squelch control is rotated to the fully clockwise position, it provides maximum squelch; in the fully counter-clockwise position, it provides minimum squelch.

[4] **Channel Selector Switch**  
Rotary switch selects one of 22 channels for transmit and receive operation. Window above switch indicates the channel selected.

[5] **S-PRF Meter**  
2-function meter indicates relative incoming signal strength in S units on upper scale when receiving, lower scale marked **POWER** indicates the relative RF power output when transmitting.

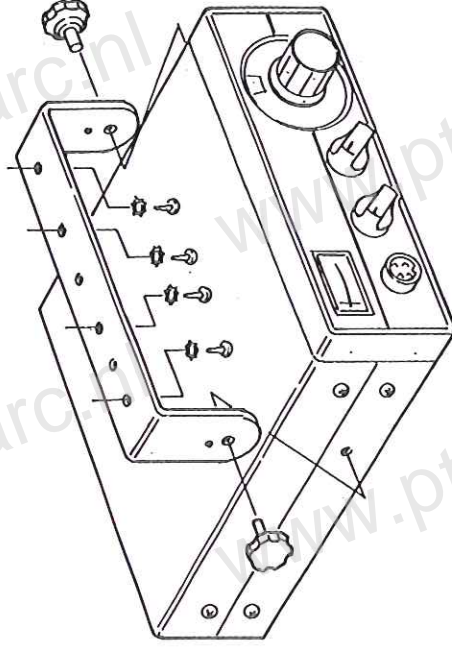
## Rear Panel

- [1] **DC Power Socket**  
13.2V DC power for the transceiver supplied through this socket using DC power cable supplied.
- [2] **External Speaker Jack**  
The impedance of earphones or speakers connected to this jack should be 8 to 16 ohms. Insertion of a plug into this jack automatically silences the internal speaker.
- [3] **Antenna Receptacle**  
For antenna lead-in cable [RG-58/U] or [RG-8U] with matching PL-259 type coaxial connector.

## Mobile Installation

### Transceiver Mounting

Before installing the transceiver in a car, truck, boat, etc., be sure to choose a location which is convenient to the operating controls and will not interfere with the normal functions of the driver. The transceiver may be mounted to the underside of the instrument panel or dashboard of a car, truck, etc., by means of the special bracket that is supplied with the transceiver. Attach the bracket to the underside of the instrument panel or dashboard of the vehicle using the self-tapping screws supplied. Then attach the transceiver to the bracket by means of the two knurled securing screws at the sides. Tilt the unit upward or downward to the desired angle before tightening the securing screws.



### DC Power Connections

The transceiver is designed to operate from a battery source of 13.2 volts DC, in vehicle [or boats] employing either negative or positive ground electrical system. The fused DC power cable supplied is used



to make the necessary power connection to the transceiver. The *red* [fused] lead is connected in the *positive* [+] side of the electrical system in the vehicle, and the *black* lead is connected to the *negative* [-] side of the system. Proceed as follows:

A suitable point in the vehicle for connection to the hot battery side can usually be found on the fuse block. Since the transceiver draws a maximum of only 1.6 amperes of current, you can use a terminal which supplies power to the Radio or other accessory [use the unfused input side since the DC power cable is equipped with its own fuse]. To simplify connection to this terminal, attach an alligator [spring] clip to the power lead first and then clamp it onto the terminal selected. Note that the connection to this point will ensure that DC power to the transceiver is automatically cut off when the vehicle ignition is turned off.

In a negative ground vehicle, connect the red lead to the hot point in the electrical system [battery positive], and the Black lead to the metal firewall or any other point that is connected to the vehicle chassis [battery negative].

In a positive ground vehicle, connect the black lead to the hot point in the electrical system [battery negative], and the red lead to the metal firewall or any other point that is connected to the vehicle chassis [battery positive].

#### **Antenna Connection**

The lead-in cable from the CB antenna should be terminated with a PL-259 type male connector. Attach to the matching antenna input connector at the rear of the transceiver.

#### **Microphone Bracket**

The small size of the transceiver prohibits mounting a microphone bracket directly to the chassis. We recommend, therefore, that the microphone bracket be attached to the dashboard of the vehicle or in any other convenient location. If one desires to do this without drilling holes, a magnetic mounting plate may be used and the microphone bracket attached to it.

#### **CB Antennas**

The results obtained with your transceiver will be greatly determined by the efficiency of the antenna system used. Due to the complexity of the subject, it is not within the scope of this manual to provide

detailed information on antenna systems. We suggest that you purchase one of the numerous books available which cover this subject in greater detail.

#### **Antenna Cable**

RG-58/U cable is generally used to connect the CB antenna to the transceiver. The cable should be terminated with a PL-259 connector for connection to the antenna input on the transceiver.

In a base station installation, an exceptionally long lead-in cable may be required. When lengths of over 50 feet [15 meters] are necessary, RG-8/U coaxial cable is more suitable than RG-58/U since it offers lower loss.

## **Operation Instructions**

Make sure the transceiver is properly installed as indicated previously, and that the antenna and power source are connected. If you have not already done so, plug in the microphone.

#### **Receiving**

- 1) Rotate the *Squelch* control to about 9 o'clock position initially.
- 2) Select desired channel by rotating the *Channel Selector* switch as indicated.
- 3) Rotate the *Volume/On-Off* switch clockwise to apply power to the transceiver. Since the transceiver is fully transistorized, operation will be instantaneous.
- 4) Continue rotating the *Volume/On-Off* control clockwise to provide a comfortable listening level.

#### **Transmitting**

**Warning: Never attempt to transmit without an antenna or load.**

To transmit, simply depress the push-to-talk bar on the microphone. Hold the microphone 3 to 4 inches from the mouth and slightly to one side so that the voice does not project directly into the microphone. Speak at a normal level — there is no need to shout. A designed feature of this transceiver is that high average modulation can be achieved easily at normal voice levels.