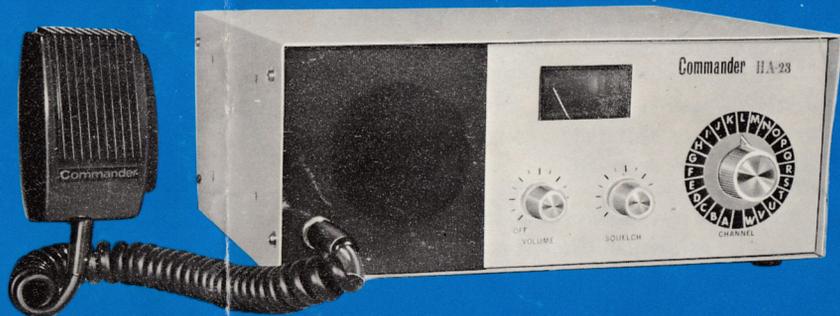


Commander



23 CHANNEL 5 WATTS SOLID STATE TRANSCEIVER



**OWNER'S
GUIDE**

MODEL HA-23

INTRODUCTION

Your new COMMANDER HA-23 5 watt transceiver is an ultracompact transistorized 2-way radio suited for base operation, from a 220 volt AC power source and 13.8V DC.

It features up to 23 crystal-controlled transmit-receive channels, automatic noise limiter, ceramic filters, adjustable squelch, mobile mounting bracket, connector for selective-call device, and push-to-talk dynamic microphone.

CHANNELS AVAILABLE

A set of crystals are required for each operating channel; one for transmitting and one for receiving.

The remaining channels will not operate until additional sets of crystals are installed. The crystals supplied with this transceiver are precision ground to a close-tolerance, thereby satisfying quality control standards for frequency accuracy. Your Distributor, or Agent can supply you with additional sets of crystal made especially for the Model HA-23.

OPTION

1. ANTENNA:
50 ohm mobile or Base Antenna is available;
For mobile use, various (Whip, loading type) Antenna with 5 meter cable
For base use, various (Ground plane, vertical type)
2. EXTERNAL SPEAKER:
Various 8 ohm speakers for your appropriate use are available.

SPECIFICATIONS

1. GENERAL

Circuitry	: 15 transistors, 15 diodes
Frequency Control	: $\pm 0.005\%$ crystal
Channels	: 23 channel capability
Controls	: Volume, squelch, channel selector knobs
Jack & Connections	: 50Ω antenna, EXT. speaker
Power Source	: 12-16V DC (12V DC auto battery) 13.8V nominal, 220V AC.
Microphone Impedance	: 600 - 2,000 Ω
Speaker Impedance	: 8 Ω
Size	: 110m/m (H) \times 250m/m (W) \times 180m/m (D)
Weight	: 2.5Kg
Accessories	: Microphone and cord, mobile mounting bracket, microphone hook, fused DC auto cable, AC cord.

2. RECEIVER

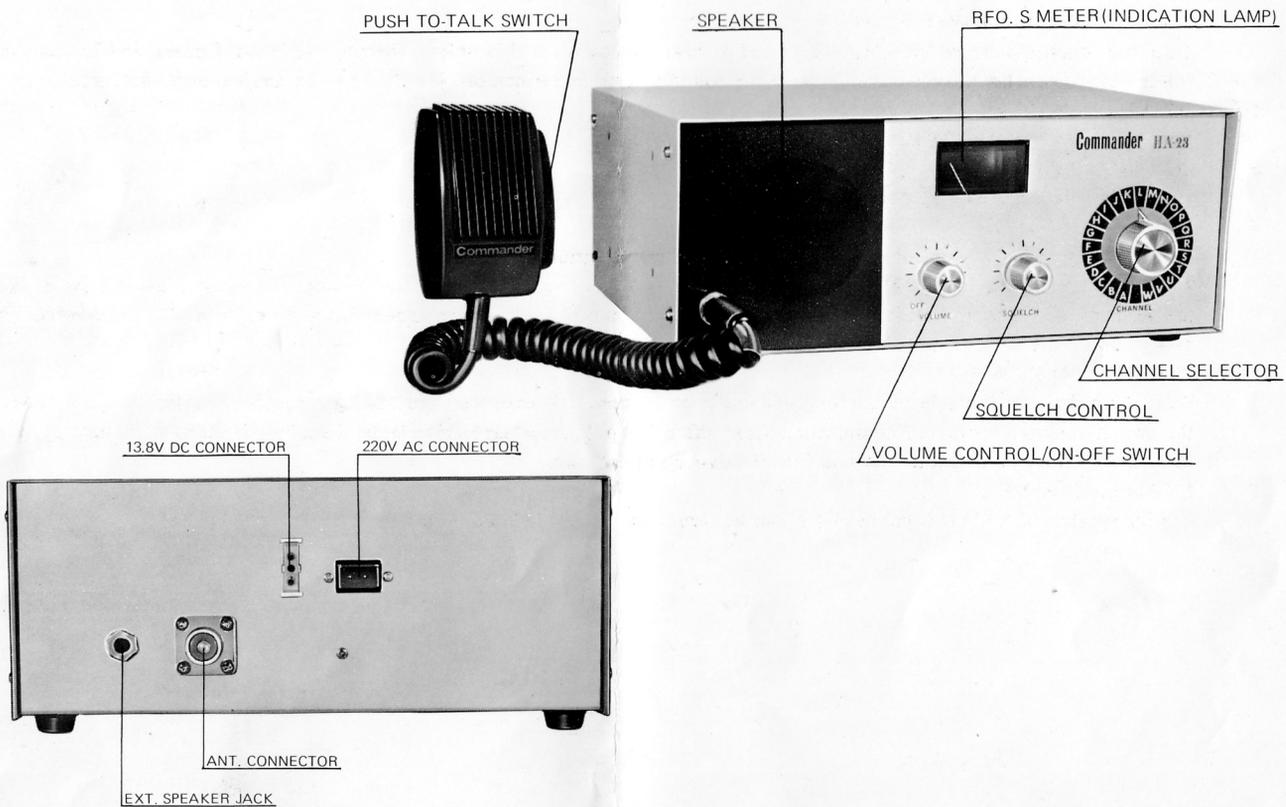
Sensitivity	: Less than $1\mu\text{V}$ at 10dB S+N/N
Squelch Sensitivity	: Threshold: less than $1\mu\text{V}$
Selectivity	: 50dB down at $\pm 10\text{KHz}$
AGC (Figure of merit)	: More than 60dB

Image Rejection	: Greater than 10dB
Spurious Radiation	: Less than 0.2 μW
Noise Limiter	: Automatic
Audio Output	: More than 1.5 Watt
Audio Distortion	: Less than 10% at 0.5 Watt output
Intermediate Frequency	: 455KHz
Current Drain	: Less than 200mA with no signal (13.8VDC)

3. TRANSMITTER

Total Power Input	: Less than 20 Watt.
Power Output	: 13W <i>UP 13 WATT</i>
Frequency Tolerance	: 0.005% (-20°C - $+50^\circ\text{C}$)
Spurious Radiation	: Less than 0.2 μW
Harmonics Radiation	: Less than 20 μW
Modulation Capability	: Greater than 90%
Modulation Limiter	: 100% limiting by ALC circuit
Modulation Distortion	: Less than 10% at 60% modulation
Current Drain	: Less than 900mA with no modulation

OPERATION OF CONTROLS



OPERATING CONTROLS

1. VOLUME CONTROL/ON-OFF SWITCH
Turn this knob clockwise until a click sound is heard to turn on this unit. Turning the knob further will increase the volume of the speaker output. To decrease the sound volume or to turn off the set, turn the knob counterclockwise.
2. POWER-ON INDICATOR
Meter scale is illuminated by lamp.
3. CHANNEL SELECTOR
Selects the channel operating position.
4. SQUELCH CONTROL
Adjust the squelch threshold to mute the built-in speaker background noise.
Turn this knob fully in counterclockwise direction and increase the volume by turning the volume control knob until the background noise is heard. Then turn the squelch control knob slowly clockwise and set it at the point where the background noise is blanked out.
5. PRESS-TO-TALK SWITCH
Press the switch on the side of microphone and keep it depressed while you are talking through the microphone. Reverse the switch to listen to the communication from the other party. When talking, hold the microphone at a distance of about three inches from your mouth and talk into it in your normal tone.
6. EXT SPEAKER JACK
If a big speaker of 8 ohms is connected it, can be heard very clearly in good tone.

MOBILE INSTALLATION

Your HA-23 can be easily mounted under the dashboard or instrument panel or any place where you desired.

This transceiver mounting bracket is available for it.

The microphone bracket is used for holding the microphone when it is not being used. The bracket can be fit up right side of transceiver by using screws attached to. (See Figure 3)

Connect the end of Red-wire to the positive (hot) terminal at the 12 volt DC (negative ground) power source and the end of Black-wire to the body of mobile.

Connect a matched 50 – 52 ohm antenna to the antenna connector at the rear of the chassis.

MOBILE & BASE INSTALLATION

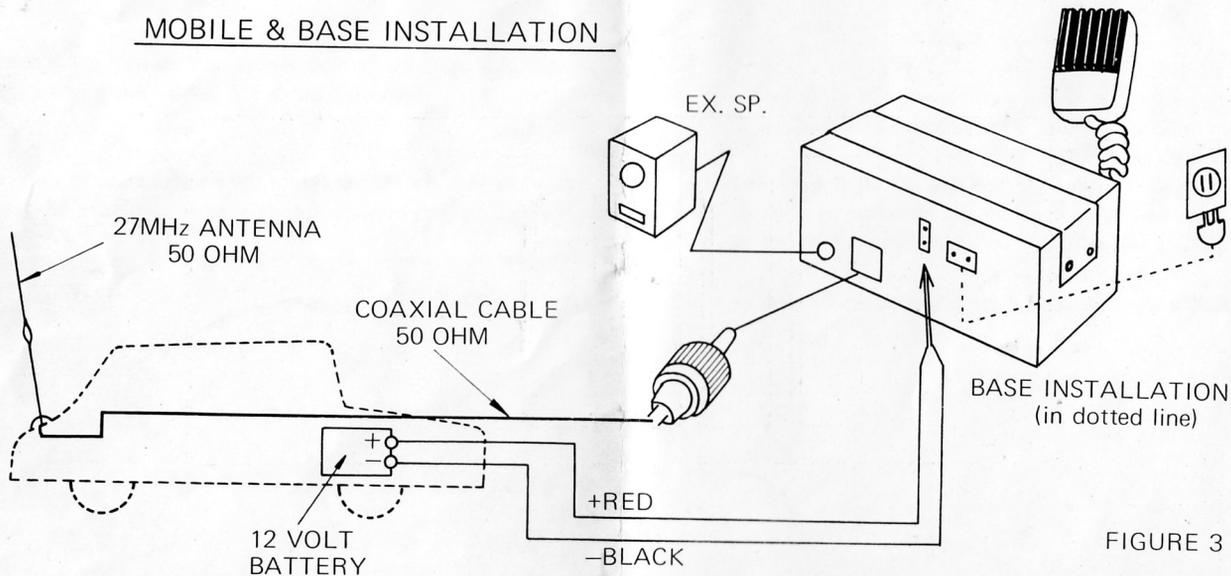
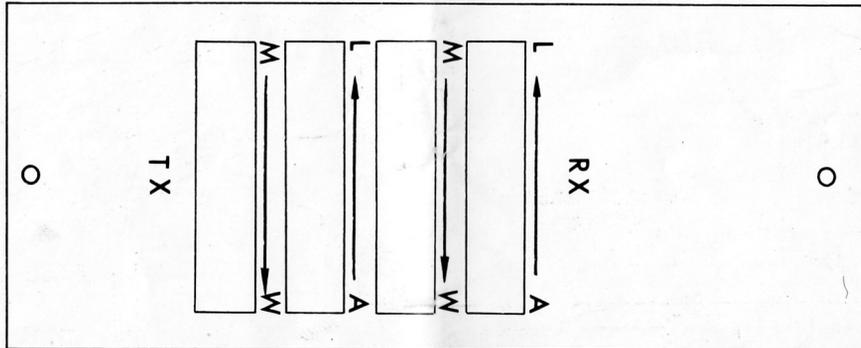


FIGURE 3

CRYSTAL INSTALLATION

A set of crystals are required for each operating channel, one for transmitting and one for receiving. Your transceiver is supplied with a set of crystals to channel selector position A. This remaining channels will not operate until additional sets of crystal are installed. To install crystals in the crystal socket, insert a set of transmit and receive crystals in the crystal sockets as shown in figure.



ANTENNA INSTALLATION

This transceiver will operate with any standard 50 ohm HF mobile whip antenna or ground plane antenna.

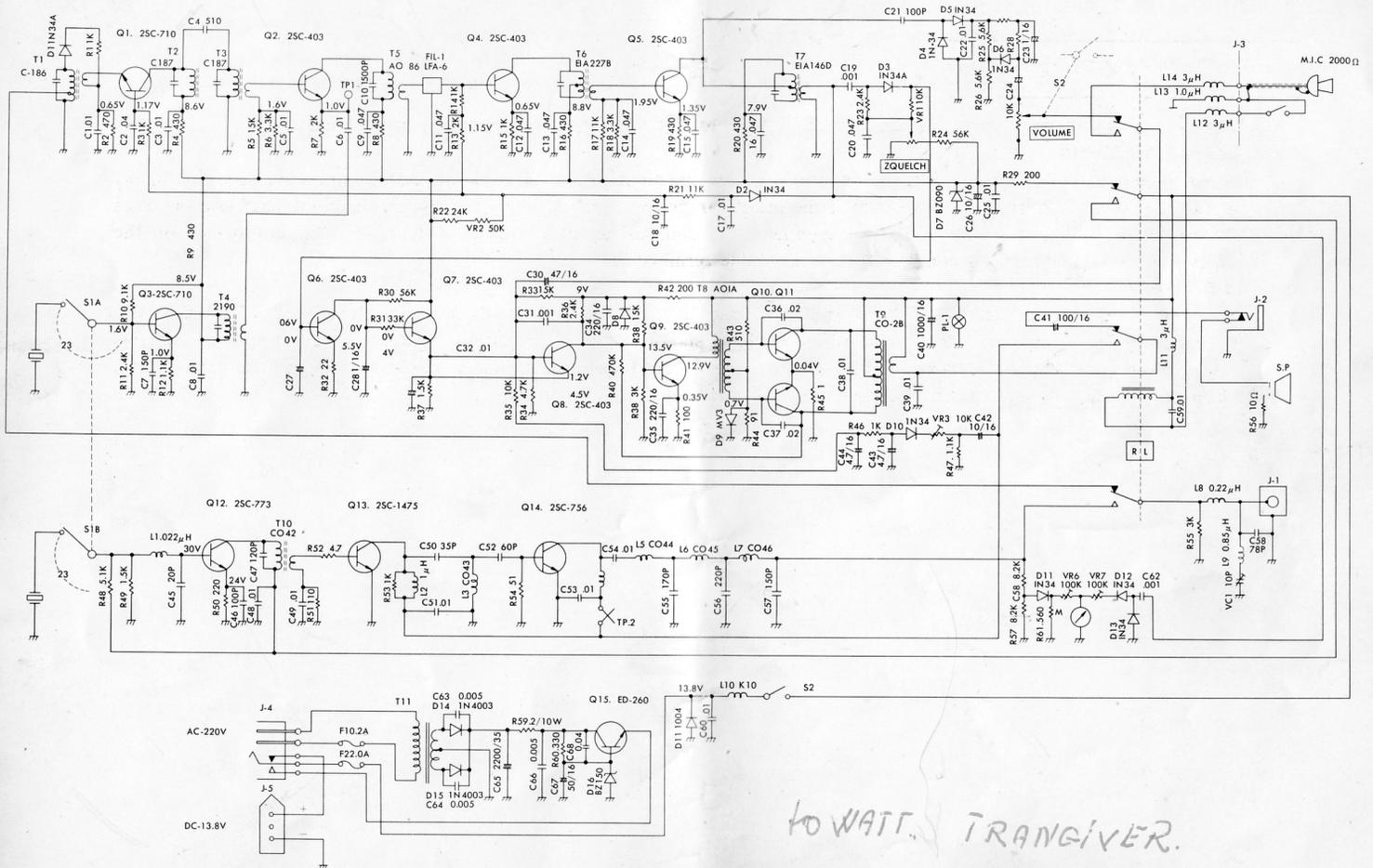
1. MOBILE ANTENNA

A whip antenna is best suited for mobile use. A non-directional Antenna must be used at optimum condition in any case. This antenna is to be established with the metal car body as ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO 239) is provided on the transceiver for easy connection to a standard PL 259 cable termination.

2. BASE ANTENNA

A ground plane antenna type will provided greater coverage and, since it is essentially non-point directional, it is ideal in base station to mobile operation. From base station to base station, or point operation, a directional beam antenna will give greater distance even under adverse condition. The range of the transceiver depend basically on the height of antenna and, whenever possible, select the highest location within 20 ft above an existing structure.

SCHEMATIC DIAGRAM



10 WATT TRANSIVER.
COMANVER HA 23. AM.

GARANTIBESTÄMMELSER

Lafa Radio AB garanterar att varje ny Commander HA-23, såld av oss enligt katalogpris är under 1 år från inköpsdatum fri från material- och fabrikationsfel och åtar oss att reparera eller utbyta ev. defekta delar enligt vår serviceavdelnings avgörande. Garantin gäller för första köparen vid normal användning och installation och det är vår serviceavdelnings avgörande om det är inom eller utom garantin.

Garantin gäller ej för tillbehör som användes i samband med apparaten eller om någon annan än vår service verkstad har företagit justeringar.

Aberopas garanti skall garantikort eller daterat inköpskvitto medfölja.

INSÄNDNING FÖR SERVICE:

I händelse av att reparation är nödvändig (både garantirep. och annan rep.) rekommenderar vi Er att lämna apparaten till den butik eller firma Ni köpt den ifrån. Detta vill i de flesta fall ge Er den snabbaste och mest effektiva service.

Om Ni vill sända den till vår serviceverkstad gör enligt följande instruktioner:

Packa apparaten omsorgsfullt för att undvika transportskador. Använd om möjligt originalemballaget. Om ej originalemballage finnes, använd en kraftig wellpappkartong med minst 10 cm skrynklad paper eller skumplast runt apparaten. Bifoga ett brev där Ni förklarar vilka fel Ni vill har åtgärdade.

Packa apparaten omsorgsfullt för att undvika transportskador. Använd om möjligt originalemballaget. Om ej Kom ihåg att skicka apparaten som bräckligt gods och märkt RADIO - BRÄCKLIGT. Glöm ej avsändare och adressera tydligt till:

Commander Radio AB

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Tel.040-9167 10

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Made Exclusively for Commander-Lafa Radio AB in Japan

