

# ENGINEERING



## THE NOVA CB



The *Nova CB* is an excellent portable receiver which covers the beacon (190-400 KHz), the AM broadcast (550-1600 KHz), the marine (1.6-4.5 MHz) and the citizens (26.965-27.255 MHz) bands. It is small, light and gives excellent performance.

With it, you can tune in marine and aviation weather and beacon broadcasts within the 190-400 KHz range, AM broadcasting stations, marine and aviation communications in the 1.6-4.5 MHz range, including the 80- and 160-meter amateur bands, and CB stations. It covers the citizens band in two ranges (two sweeps of the tuning dial).

The *Nova CB* can be used as a radio direction finder and radio interference locator as well as a communications and entertainment receiver. In addition to its rotatable ferrite loop antenna, two short plug in whips or a telescoping whip antenna can be plugged in for CB reception. It can also be used with an external CB antenna, mobile or fixed.

For CB reception, the receiver functions as a dual-conversion superheterodyne. The front end consists of two TRF stages, a mixer and a crystal controlled local oscillator. These stages are all fixed tuned except that the oscillator has two crystals that can be

selected individually, one at 26.765 MHz, the other at 26.915 MHz.

Tuning through the citizens band is divided into two ranges, high and low, depending upon which crystal is selected. The output of the CB front end mixer (See Fig. 1) is fed to the RF amplifier used for all other bands and then through two IF amplifier stages to a diode detector which feeds audio through a squelch to a two-stage AF amplifier whose output stage is push-pull.

Tuning through the citizens band is accomplished by tuning the RF stage, mixer and variable local oscillator, used for the other bands. Thus, the CB front end is essentially a fixed-tuned converter and tuning is achieved by varying the first IF of this dual-conversion arrangement.

When the CB range switch is set to the "low" position, the 26.765-MHz crystal is used and the reception of CB channels within the 26.965 to 27.110 MHz range is achieved by tuning the first IF through the 200-345 KHz range. When set to the "high" position, the 26.915-MHz crystal is cut in and the receiver tunes through the 27.115-27.260 MHz range by tuning the first IF through the same range as before.

The input to the main IF amplifier (second

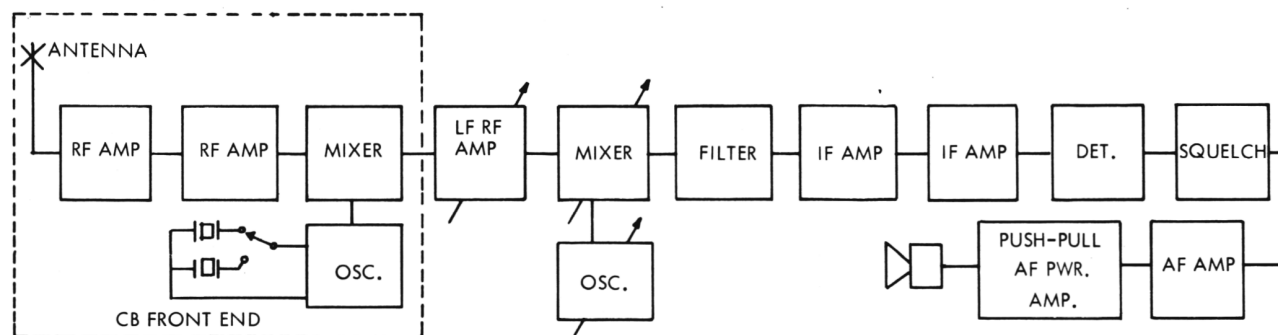
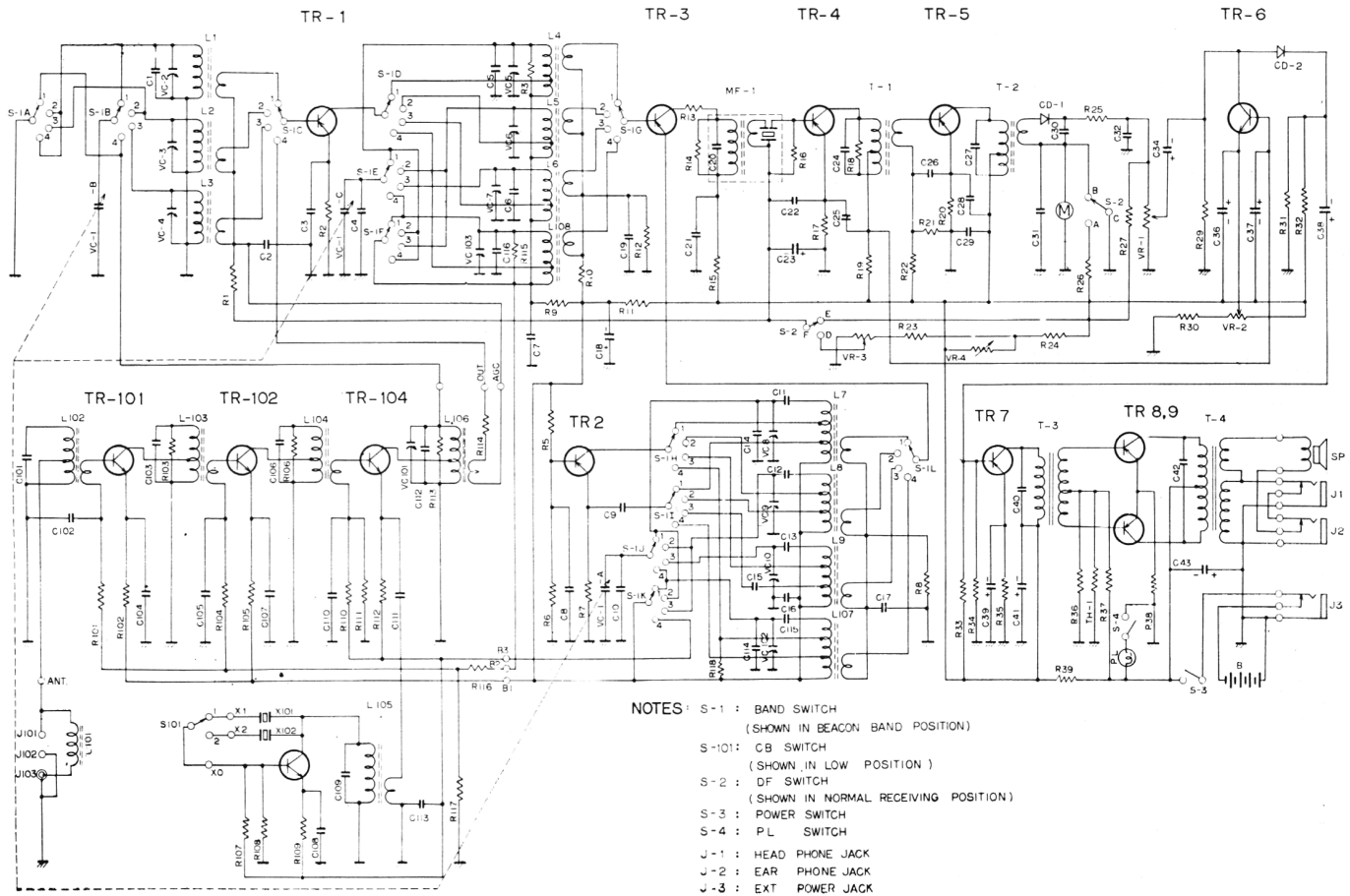


Figure 1

# SCHEMATIC DIAGRAM



**Figure 2**

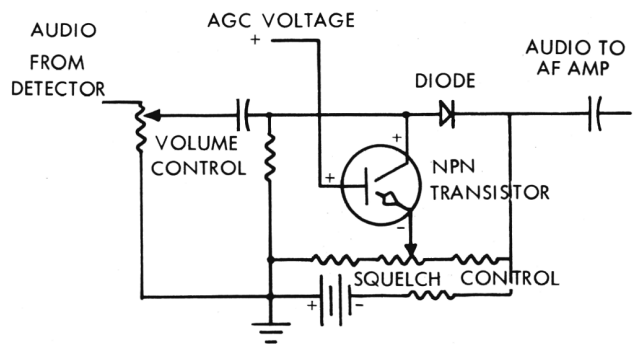
IF when used for CB reception) is fed through a 455-KHz mechanical filter (MF-1 in Fig. 2) to provide greater selectivity. The null meter is actually a signal strength meter, connected at the output of the diode detector. Unlike an S meter, it is used when AGC is turned off and receiver sensitivity is controlled manually with the DF level control.

The squelch employs a diode which passes audio signals when it is forward biased and blocks signals when reverse biased. Figure 3 shows the functional circuitry of the squelch.

Two headphone jacks are provided, one for standard phone plugs, the other for the miniature type. A jack is also provided for connecting an external AC adaptor when using the set at a fixed location.

Another of its applications is as a high sensitivity CB, marine or ham *field strength meter*. It should be an invaluable tool for CB and marine radio repair shops. But, most buyers will probably use it as a *direction finder* on a boat and as an auxiliary CB

receiver. It would be great for monitoring HELP Channel 9 while operating on another channel.



**Figure 3**

We have tried it and are most enthusiastic about the Nova CB. It has our recommendation. It is a product of *Nova-Tech, Inc.*, 630 Meyer Lane, Redondo Beach, California. □