MODEL 34-PNB PLUG-IN NOISE BLANKER

GENERAL DESCRIPTION.

The 34—PNB Noise Blanker is a solid-state unit designed for use with the TR—4C and TR—4 Transceivers. Unlike noise clippers or limiters commonly found in communications equipment, this is an advanced noise blanker which mutes the receiver for the duration of the noise pulse. Between noise pulses full receiver gain is restored. Receiver AGC is affected only by the desired signal and not by noise. The 34—PNB is most effective on strong, periodic noise impulses such as automobile ignition noise.

INSTALLATION.

Disconnect the power connector from the TR—4C or TR—4. Remove the top half of the transceiver cabinet. Remove the 7 pin jumper plug located in front of the power amplifier cage. With the printed circuit side of the 34—PNB facing the outside of the transceiver chassis, carefully plug in the 34—PNB. After it is correctly seated in the socket, install a number 4 self-tapping screw in each corner of the 34—PNB bracket to secure it to the transceiver chassis. Replace the cabinet top.

OPERATION.

The BLANKER switch on the transceiver is used to turn the accessory 34—PNB Noise Blanker on and off. The Noise Blanker may be left on except when there is a strong signal within 5 kHz of the received signal. A strong signal which falls within the 10 kHz wide crystal filter in the Noise Blanker, and outside the 2.1 kHz wide crystal filter in the transceiver, will operate the Noise Blanker gate circuit causing distortion products. This limitation in the Noise Blanker is caused by the necessity of having a bandwidth in the blanker wide enough to minimize stretching of noise pulses before blanking. Under normal operating conditions, this limitation is no problem.

CIRCUIT DESCRIPTION.

This noise blanker system is composed of the three major networks described below. Refer to the block diagram and schematic diagram to follow this circuit description.

TRANSMITTING PATH.

The transmitting path consists of a single RC coupled 9 MHz amplifier which passes the transmitter signal through the blanker. The signal then passes through the crystal filter passband and into the transmitter mixer.

RECEIVER PATH.

The signal first passes through a crystal filter with a bandwidth wide enough to pass most of the noise frequency components but narrow enough to keep strong adjacent signals from overloading the noise blanker amplifier. The signal simultaneously enters the noise processor and the delay circuit, a reactive network which compensates for the inherent phase-shift of the noise processing section. The 9 MHz receive amplifier provides an overall system gain for the receive path. The balanced gate is an electronic series switch that opens for noise pulses but closes to allow the signal to pass.

NOISE PROCESSOR.

The signal passes through the tuned 9 MHz amplifier and into the balanced mixer. This mixer converts the 9 MHz noise pulses to 2150 kHz and prevents the high level 6.85 MHz oscillator signal from reaching the amplifier strip. The 2150 kHz noise pulses pass through the two amplifiers, the detector and into the gate driver. The driver reverse-biases the gate at the instant a 9 MHz noise pulse enters on its way to the receiver IF. The gate then is controlled by the same pulse it is blanking, enabling it to respond automatically to pulses of varying width.

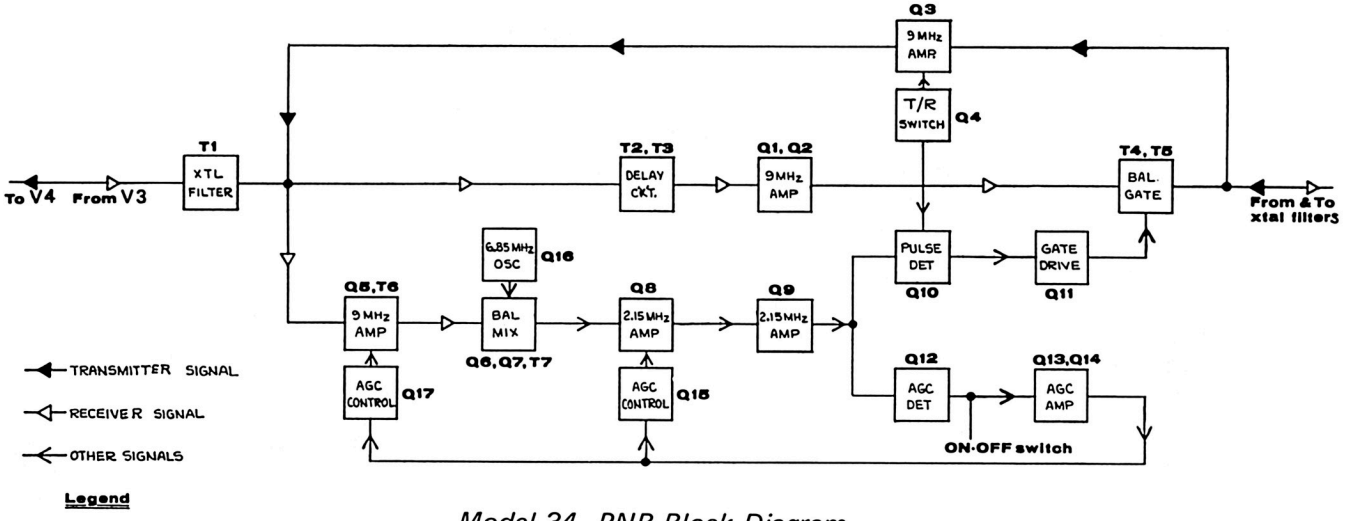
ALIGNMENT.

Refer to the component location illustration to locate the alignment points.

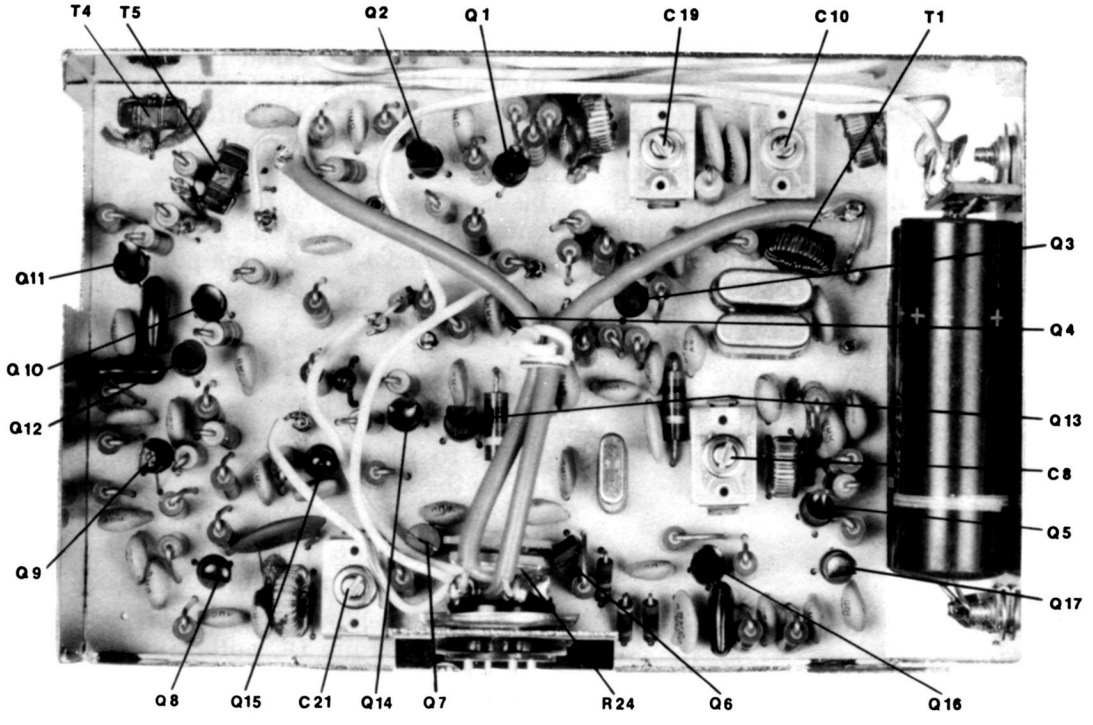
a. With the noise blanker turned on, adjust capacitor trimmers C10 and C19 for maximum S meter reading on calibrator signal.

b. With the calibrator turned off, connect a VTVM (set to measure DC voltage) to terminal 4 of the 34—PNB board and ground (terminal 4 being plus). Adjust R24 for maximum positive voltage.

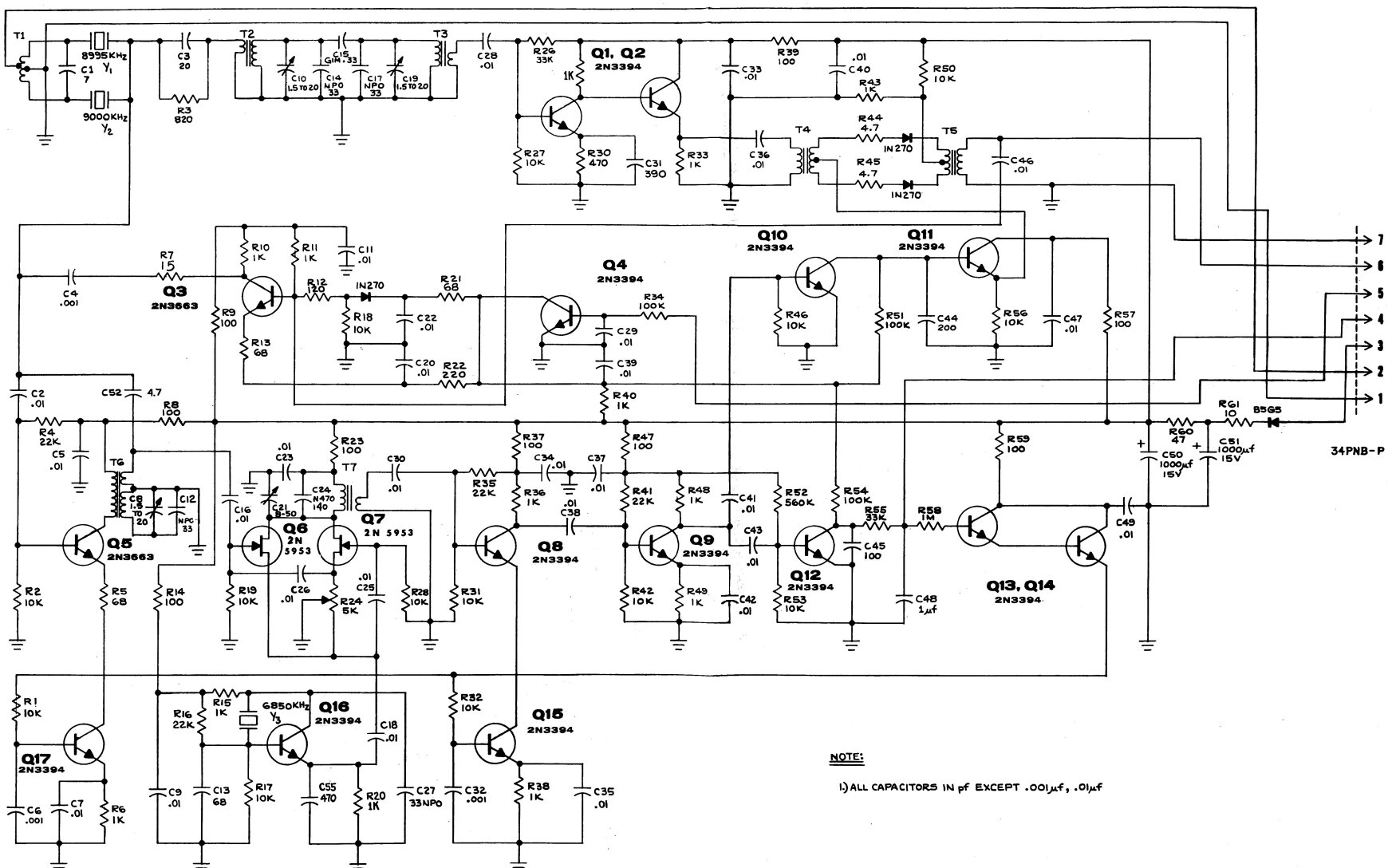
c. Turn the calibrator on and adjust the two remaining trimmers C21 and C8 for minimum positive voltage.



Model 34–PNB Block Diagram



Model 34–PNB Alignment Locations



NOTE:

1) ALL CAPACITORS IN pf EXCEPT .001µf, .01µf

Model 34—PNB Schematic Diagram