e of various types of antennas will have some ect on the antenna stage. The use of the an- er compensates the receiver to match the type which may be connected to it. It is normally set the ANTENNA control only once for each This is best accomplished by tuning the re- from any signal and adjusting the ANTENNA maximum background noise in the speaker or Normally, it should not be necessary to repeak trimmer for different settings on the same ama- lowever, if the BAND switch is used to change use, the antenna trimmer must be repeaked for ected frequency.

al appearing across the tuned circuit of the ge is coupled through a capacitor to the grid tube which operates as the RF stage of the eiver. Automatic gain control (AGC) volt- pplied to this grid to adjust the gain (of the to a level suitable for the strength of the received.

otentials for the plate circuit of the RF stage through the choke L1; and the RF signal to the primary of the mixer coil through 7. As in the case of the antenna stage, this ding of the mixer coil is an untuned circuit. 15-, 10-, and 6-meter bands, no primary used, and the signal from the plate of the coupled directly to the tuned interstage coil. switch, once again, performs the function the right coil for the band in use. The sec- ne mixer coil is tuned to further add to the ty of the receiver. This tuning is accom- neans of the main tuning capacitor, align- ers C8 through C13 and, in some instances, itional fixed capacitor used to obtain proper r the frequency band. Again, as in the an- circuit, the main tuning capacitor is split tions with one or both sections being used, n the band selected. The signal appearing ixer tuned circuit is coupled directly to the f the 6BE6 first converter tube.

ed-plate Hartley oscillator circuit is used for signal conversion to the first IF frequency. or is a part of the 6BE6 first converter tube. he proper oscillator coil is selected by the and the oscillator tank circuit is tuned by ning capacitor and the alignment trimmer r to obtain a high degree of stability in the special zero temperature coefficient ceramic 6 is used to form the predominant portion circuit. In addition, a small negative tem- pensating capacitor C14 is used to compen- positive temperature coefficient of the coils. ation of parts results in temperature stability

experienced operator. The oscillator frequency is always 2215 kc above the signal frequency to which the receiver is tuned, thus generating a 2215 kc first IF signal. This signal is fed from the plate of the 6BE6 first converter to a conventional double tuned IF transformer which serves as the interstage coupling between the first and second converters. Signal coupling is accomplished by means of the mutual inductance between the primary and secondary of this interstage transformer, and the resulting signal is applied to the signal grid of the 6BE6 second converter tube. The selectivity of this first IF circuit provides excellent secondary IF image rejection and at the same time is high enough in frequency to provide excellent primary image rejection which results from the tuned antenna and mixer circuits. The second converter oscillator is a grounded-plate Hartley circuit using the screen of the 6BE6 converter as the grounded plate. This second IF oscillator frequency is set at 2445 kc which beats with the 2215 kc signal to produce a 230 kc IF output.

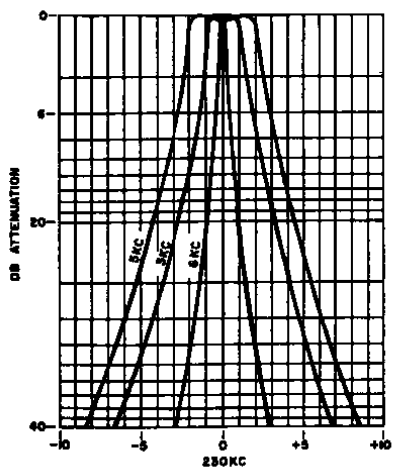
The 230 kc IF signal is coupled from the plate of the 6BE6 second converter tube to the National Ferrite Filter. The Ferrite Filter circuit uses two tuned circuits with the "Q" of the individual coils running approximately 500. The two tuned circuits are impedance-coupled one to the other with the selectivity switch performing the function of changing the coupling impedance and damping to achieve variations of bandwidths from the narrow 600 cycle position to the wide 5 kc position. In addition to changing the degree of coupling and damping, small tuning capacitors are switched to center all pass bands thus eliminating the need for retuning when the selectivity is changed.

SELECTIVITY SWITCH

The SELECTIVITY switch of the NC-155 receiver provides for three degrees of selectivity. The SELECTIVITY switch is marked with positions for 5 kc, 3 kc, and 0.6 kc. The degree of selectivity used depends largely on the mode of operation desired, and signal conditions. The 5 kc position would normally correspond to the highest receiver fidelity. However, under conditions of extreme signal interference, it is often desirable to reduce the bandwidth of the receiver and sacrifice fidelity in favor of less interference by using the 3 kc position. When CW reception is desired, further bandwidth reduction is effective and useful, and it is recommended that the 600 cycle (0.6 kc) position be used. In normal AM operation, the 3 kc or 5 kc bandwidth positions provide an adequate degree of selectivity. For CW operation, as stated above, the 600 cycle bandwidth is recommended; and for single sideband operation, the 3 kc bandwidth is recommended.

ALL
PARTS LIST

	PA
I1, I3	Pan
V1	6BZ
V2, V3	6B
V4, V5	6BA
V7	6T
V6	12A
V8	6CW
V10	OB2
V9	5Y3-
R17	Resis
	10
C69	Capa
	±
C25, C27	Capa
	±
C16	Capa
	±
L1	RF C
	Line
	Front
	Coil
	Clam
	Slug
L13	Coil
	Sprin
	Wind
	Point
	Wind
S7	Switc
	S Met
	Point
	Dial (
	Bushi
	Bushi
	Pinch
	Bowe
	Bezel
	Knob
	Knob
	Set Sc
	Set Sc
	Knob
	Knob
	Knob
	Knob
	Knob
	Socket
	Flip F
	Rivets
	Push-c
	Rubbe



SELECTIVITY CURVES

The signal appearing across the secondary winding of the Ferrite Filter is applied to the grid of the first 6BA6 IF stage which operates as a conventional signal amplifier at 230 kc. The 230 kc signal from the plate of the first IF stage is coupled to the grid of the second 6BA6 IF stage through a conventional double-tuned transformer.

The cathode of both 6BA6 stages and the 6BZ6 RF stage are returned to the chassis by way of the RF gain bus and the RF gain control. As the resistance of the RF gain control is increased, additional cathode bias is built up across it, thus reducing the over-all receiver gain. Small resistors are used in the individual cathode leads in order to keep the RF and IF tubes in rating when the RF gain control is set at maximum.

RF GAIN

The sensitivity of the receiver is adjusted by means of the RF GAIN control which controls the cathode bias on the RF and both 6BA6 IF stages. When the control is rotated to its maximum counterclockwise position, the sensitivity of the receiver will be reduced to the point where no signal can be received. Rotating the control clockwise will increase sensitivity until maximum is reached at the full clockwise position. During CW or single sideband reception, the RF GAIN knob may be used freely as a means of sensitivity adjustment as the receiver is tuned from signal to signal. For AM reception, the RF GAIN control should be set to a comfortable sensitivity level and allowed to remain in this position. Adjustment of the RF GAIN control will have some effect on the S Meter reading. For proper indication of the S Meter it is recommended that the receiver be detuned from any signal and the RF GAIN control advanced until the background noise reaches a level sufficient to cause a reading of approximately 1 unit on the S Meter. This setting of the RF GAIN control should then suffice for all normal AM signal conditions.

The signal appearing at the plate of the last 6BA6 IF stage is coupled to the AM detector by means of a conventional, inductively-coupled, double-tuned IF transformer operating at the second IF frequency at 230 kc. The diode at pin 6 of the 6T8 tube is used as a conventional AM detector. Resistors R25 and R26 comprise the detector load.

The AGC signal is derived from the high end of the detector load with resistors R24, R11, and capacitor C38 functioning as an AGC filter to remove the audio signal appearing across the detector load. This AGC signal is applied directly to the grid of the first 6BA6 IF tube through the secondary winding of the Ferrite Filter. The AGC signal is also applied through R1 to the grid of the 6BZ6 rf stage.

The audio signal appearing across R26, a portion of the detector load, is coupled directly to the mode switch or to the plate of the separate diode portion of the 6T8 detector-audio tube. The cathode of this diode is supplied with a filtered dc signal also derived from the detector load. The dc signal is equal in level to the peak audio amplitude, thereby keeping the diode conducting for all normal modulation. Should a noise pulse occur, the high negative noise spike across the audio portion of the detector load takes the plate of the noise-limiter negative with respect to its cathode, and conduction ceases, thereby effectively removing the noise peak from further signal circuits. This noise peak does not appear at the cathode of the noise limiter due to the filtering action of resistor R27 and capacitor C52. The audio output occurring on the cathode of the noise limiter circuit is also coupled to the FUNCTION switch. In the event of CW or single sideband reception, the FUNCTION switch grounds the cathode of one-half of the 12AX7 which serves as a beat frequency oscillator using a grounded-cathode Hartley oscillator circuit.

BFO

The BFO control is used to adjust the frequency of the beat-frequency oscillator which correspondingly varies the pitch of the generated audio tone. When receiving single sideband signals, the BFO should be set to the USB or LSB mark depending on the sideband desired (generally LSB on 80- and 40-meters and and USB on 20-, 15-, and 10-meters). This setting will properly position the BFO relative to the IF passband for SSB reception.