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THE CANADIAN RADIO AMATEURS' JOURNAL



APRIL 1953

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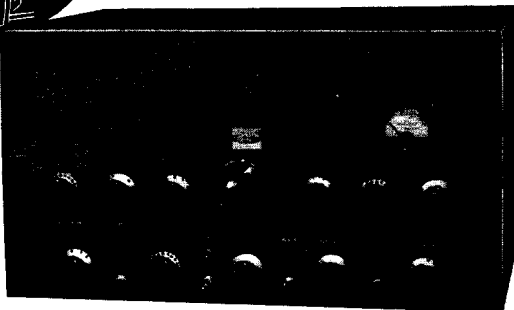
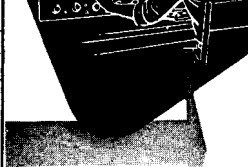
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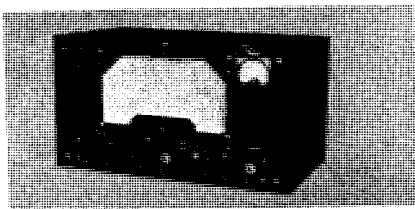


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# SKYWIRE

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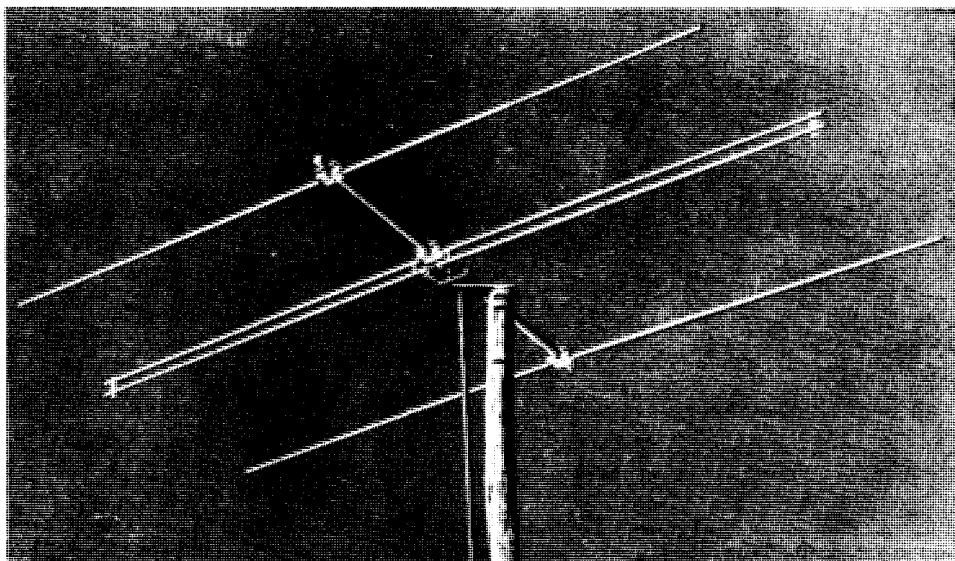
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# SIDEBANDS

The greatest season of the year - Spring - has rolled around again, and amateur activities on the bands seem at new all time highs on the bands. Forty and fifteen are well-occupied phone locations now, altho' openings on 21mc aren't great. Summer now is on it's way, and soon outdoor activity will shut down ham transmitters again.

But before the filaments are cooled for the final time this warmer weather, there's one more activity, which down through the years has become a must among the more progressive and serious members of our fraternity - Field Day, 1953.

This year, the exciting and highly profitable outdoor event takes place again, about the middle of June, which isn't so many days away. A good many clubs and individuals who enter year after year and chalk up fine scores are all ready with the portable and mobile equipment needed. But there are a good many hams who will be reading this column who have never participated in the event. It is to these hams we say - get out with a rig this year and see how much more kick you get out of your hobby than ever before.

Even at this somewhat late date, there is still time to design and build a rig to do the job for you. There's no shortage even of good surplus rigs which could be used in the Field - outfits like the extremely popular Command rigs which can be made to operate on any band with a minimum of trouble. These little power houses have another very distinct advantage in that they can be made to load everything from a hair pin to an old pasture fence, and get out well.

But this is just one suggestion. Any ham worth his salt can come up with a half a dozen more, perhaps better suited to his own particular needs. The big thing is to get out on Field Day and do some operating and have some real fun. You'll gain a lot in otherwise unobtainable experience that could be very useful at some future date if ever an emergency arises. There's no telling when it's going to be useful.

It will be interesting to see how many hams take advantage this Field Day, of the very definite extra possibilities offered by Single Sideband Suppressed Carrier. Altho' some of the Field receivers might give trouble handling S.S.S.C. most of those in use today should be capable of staying put and not drifting off the frequency.

Single Sideband Suppressed Carrier would be particularly advantageous for Field Day work because of the spectacular performance which could be expected from relatively low power inputs. You could use the low power multiplier, and still be in the high power class! And it's a cinch that you can make the contacts if you're V.F.O. because on SSSC you use the other fellows carrier for your communication. Try it out, if you have time to put one together now and you'll find nothing else, transmitter-wise, can give so much for so little in money, time, or power consumption. And the same goes for the house transmitter. If you haven't tried SSSC yet, and are considering rebuilding this summer, don't overlook it any longer.

There are now several hundred amateurs throughout the world who have gone to Single Sideband, and more are coming into it every day. It isn't a tough piece of gear to build yourself from kits already available today on the market. Canadian jobbers have these in stock for you at moderate cost, and I know you'll never regret your choice if you take one on. Single Sideband isn't too tough to build - no kidding.

Keep in mind the Field Day dates again. If you have never been on one of these affairs you've missed the time of your life. Be on one of the operating parties in your own neck of the woods sometime Saturday or Sunday, during Field Day, 1953. You won't ever forget it, and a start now for this and the following years to come will

# An All-Band Antenna and Coupler

By

J. H. Owens,\*W2FTW

**D**O you want to work 75 or 80, 40, 20, and 10 meters with a single sky-wire? Is your space limited, and cost a factor? If so, here is a way to do it—with actual performance advantages over simple dipoles for each band.

The general idea is to take a 75/80-meter dipole and fold it so that desirable standing-wave voltage and current relationships are maintained on the higher-frequency, harmonically-related bands.

Fig. 1 shows the configuration and dimensions of the antenna. It is simply a 75/80-meter dipole with the ends folded back and over the center portion. It must radiate because it is resonant and unshielded. Since it radiates the energy that is fed to it, the only other major consideration is directivity. In this respect, it is less directional than a straight-line 75/80-meter dipole, and the angle of radiation is somewhat higher. This latter characteristic is desirable if you want to join the Rag Chewers on 75 and make regular contacts with stations inside a two- or three-hundred mile radius.

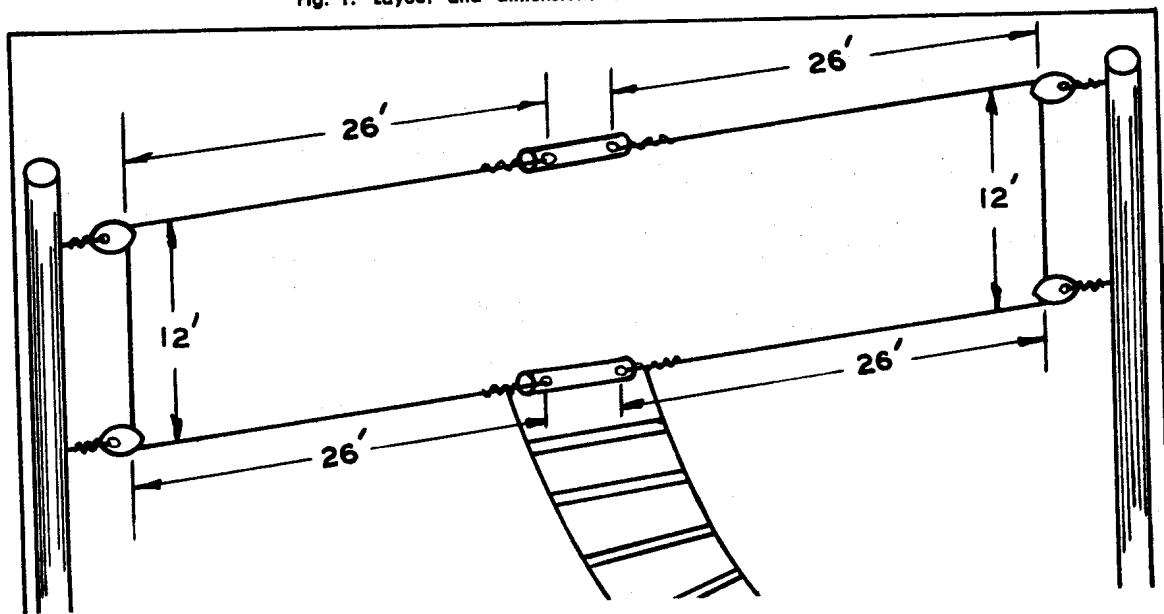
\* RCA Tube Dept., Harrison, N. J.

Fig. 2a shows maximum voltage points when the antenna is used on 40 meters. The antenna consists of two half-wave dipoles, partially folded, vertically polarized, and 180 degrees out of phase. The angle of radiation is somewhat lower than that of a dipole of equivalent height, and the directivity pattern is slightly end-fire.

Voltage points for 20-meter operation are shown in Fig. 2b. Here, the antenna approximates a beam because it provides two half-waves in phase on one side, which are in phase with the two in-phase half-waves on the other side. Best DX is obtained in the broadside direction in which the angle of radiation is low, but there are some minor lobes which provide satisfactory operation in all directions during periods of short skip.

Similarly, Fig. 2c shows voltage points for ten meters. This arrangement provides two full-waves in phase on one side, but 180 degrees out of phase with the two in-phase full-waves on the other side. The field pattern is quite complex, and for all practical purposes may be considered omnidirectional. The pattern con-

Fig. 1. Layout and dimensions of the all-band antenna.



tains major lobes each having a low angle of radiation—a highly desirable feature for 10-meter DX.

### Antenna Coupler

Like most all-band antennas, this one should be fed with tuned open-wire feeders employing four- or six-inch spreaders. An antenna coupler is employed to provide an impedance transformation, a means for tuning the antenna and feeders to resonance, and attenuation of harmonics. Any of the well-known antenna couplers will perform these functions conveniently and economically.

The coupler shown in Fig. 3 is electrically the well-known, Pi-section filter with link coupling. It consists of two variable capacitors and a swinging-link, push-pull plate tank coil—the one for the next lower frequency band than the band to which the final amplifier is tuned. For instance, if the transmitter is being operated on 20 meters, the 40-meter coil would be used in the coupler.

Capacitors  $C_1$  and  $C_2$  can be of the split-stator type if the capacitance per section is double the values shown. Single-stator capacitors have been used with excellent results. The voltage rating of  $C_1$  should be equal to that of the tank capacitor in the final amplifier, but  $C_2$  need have a voltage rating of only half as much. Depending upon the length of the feeders, optimum loading may be obtained by connecting them across  $C_1$  or  $C_2$ .

### Tuning

In operation, the coupler is first tuned to resonance as indicated by an increase in the plate current of the final amplifier. The ratio of the capacitance of  $C_1$  to  $C_2$  is then varied to provide maximum loading of the final amplifier, and the swinging links are adjusted for desired plate current. The tuning procedure is the same for all bands.

Good results were obtained on all bands from 80 to 10 meters with an antenna less than 60 feet long and with its upper radiator only 20 feet above ground.

$C_1$  50  $\mu$ f  
 $C_2$  100  $\mu$ f  
 $L_1$  TRANSM. TANK COIL

SEE TEXT

Fig. 3. Circuit of the antenna coupler used with the all-band antenna.

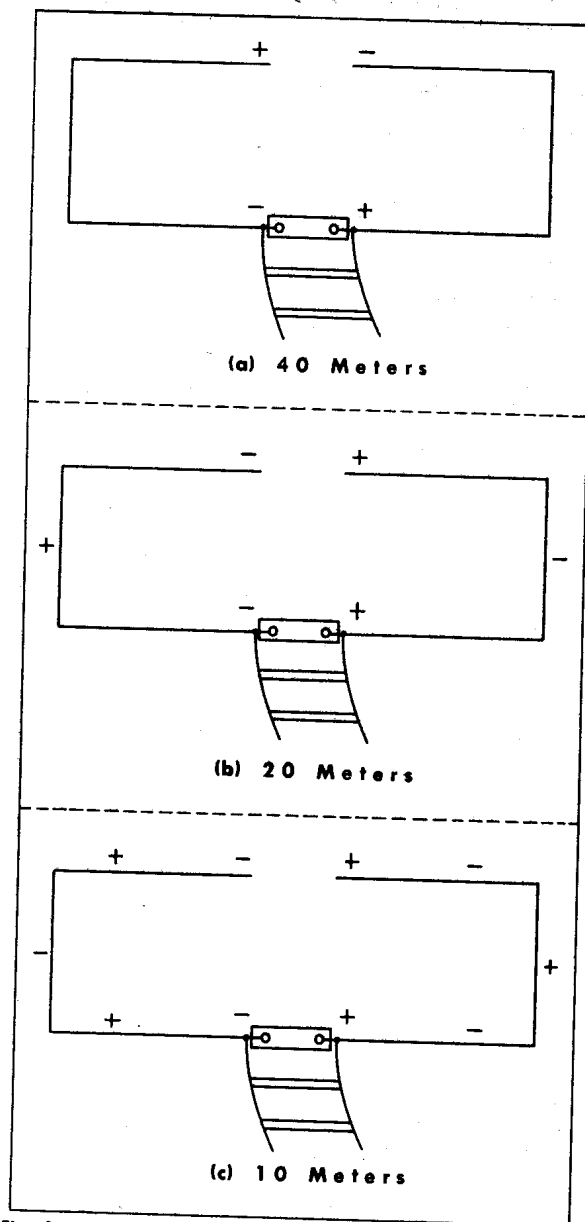
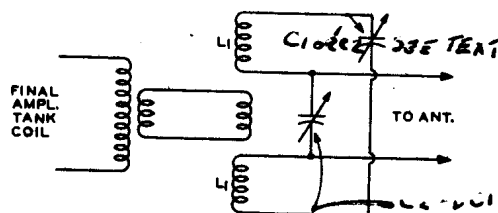


Fig. 2. Maximum voltage points on the antenna for 40-, 20-, and 10-meter operation.





# STATION CONTROL

## Switch-Relay System For Speedy Operation

By G. P. ANDERSON

**D**URING a recent station overhaul, considerable thought was given to operating control, and in this article the system adopted is outlined. It has proved very satisfactory, providing push-to-talk control, enabling break-in to be used, and including a means of adjusting the VFO frequency without interfering with reception or energising the transmitter, a signal from the VFO just strong enough to be identified being heard in the receiver. It also allows of remote operation of the transmitter.

Control is obtained by means of a 3-way switch of the type found on the surplus market. Alternatively a rotary switch could be used, but the writer finds the "key" type of switch more convenient for rapid operation.

The facilities provided may be summarised by indicating the conditions prevailing for each position of the switch :

Control Position	Receiver	VFO	Transmitter
1. Receive + VFO	On	On	Off
2. Receive ..	On	Off	Off
3. Transmit ..	Off	On	On

The control circuit also mutes the receiver when the transmitter is on, and disconnects the input to the modulator when the transmitter is off, to prevent the audio feedback that can occur if a loudspeaker is in use.

Examination of the diagram, Fig. 1, in conjunction with the following notes should make the method of operation clear. A/4 is a high resistance relay, obtainable on the surplus market; the original model had a resistance of 2,000 ohms, and was provided with several change-over contacts; the exact types required will depend upon the facilities to be catered for, or the circuit may be adapted

*We all have our own ideas about station control—which means, essentially, change-over switching. Since no two amateur stations are alike in detail, each problem is an individual one. But descriptions of control methods used by others are always helpful and frequently inspire improvements in one's own system.—Editor.*

to suit the relay available. In the circuit shown, three "make" and one "break" contact are used. The resistor R is required to limit the current flowing through the relay to such a value that it just closes firmly, and can conveniently be made variable until the correct value has been found. The relay is actuated from the 350 volt (or other comparatively low voltage) HT supply to the transmitter, and the power for energising the aerial change-over relay is obtained from the same source. (In the writer's case, the aerial relay is a surplus Type 77 modified by rewinding to operate from a low current, again through a suitable series resistor).

The control unit consists of the 3-way switch (2-pole 3-way) referred to above, and is fitted conveniently on the operating desk, in the microphone preamplifier unit.

### General Description

In order to describe the working of the unit, it is proposed to consider the conditions for each position of the switch, taking the normal receive position first.

**Receive.**—Relay A not operated, contacts as shown in Fig. 1.

- (1) No HT (350 volts) on transmitter.
- (2) No 350 volts on aerial relay; aerial on receiver.
- (3) Input to modulator short-circuited via A4.
- (4) VFO off.

**Receive + V.F.O.**

- (1) and (3) as above.
- (4) VFO on, by earth on Tag 10 (via Tag 4 and control unit).

**Transmit.**—Relay A operated via earth on Tag 5 through control unit.

Contact A1: Mutes receiver by applying a negative voltage from an external source to the AVC line of the receiver.

Contact A2: Applies 350 volts HT to Transmitter (Tag 2). Applies 350 volts HT to Aerial Relay (Tag 3).

Contact A3 : Connects VFO, by earth on Tag 10.  
Contact A4 : Short-circuit removed from Mod. input.

The control of the VFO may be seen by reference to Fig. 2, which shows the first amplifying valve of a VFO described recently

It should be observed here that since it is probable that the 350-volt supply that is broken to switch the transmitter will only supply the earlier stages, the PA and other stages should be biased to cut-off in the absence of drive, since the HT will be left on them when the control is in the "receive" positions.

Fig. 1 also shows connections for a Morse key; this may be run conveniently in the same multi-way cable as the control circuits, helping in keeping the wiring neat.

It will be seen that the conditions described under the "transmit" position of the control switch are achieved by applying a short-circuit across Tags 5 and 6 of the control panel.

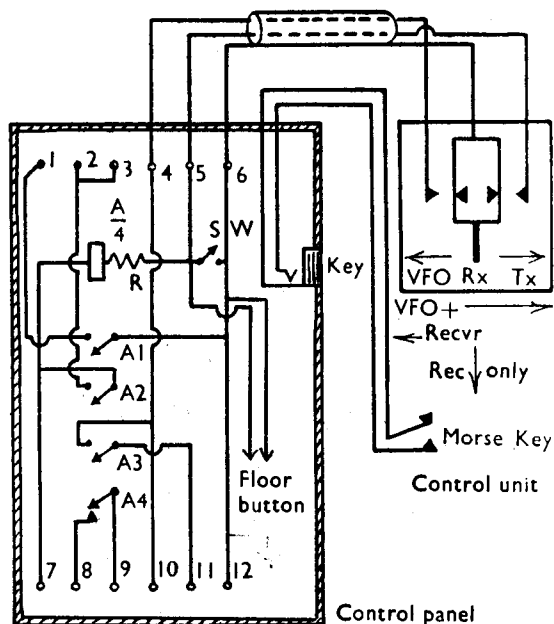


Fig. 1. General arrangement of the switching and control system devised and discussed in the text. The key for the connections is given separately.

convenient to use a small foot-operated switch, connected as shown to Tags 5 and 6 ; a door bell-push is quite satisfactory for this purpose. The switch shown on the panel as SW is to provide local control for adjustments if the control unit is some distance from the transmitter.

The control unit described has proved extremely useful in generally speeding up station operation, particularly in contests, and does enable easy push-to-talk operation. An experience with it may serve to illustrate this point. During a 'phone contact with a ZD4 during which we were much troubled by interference, the ZD4 announced the usual "QRX I'll check your channel". The writer flipped his transmitter on to offer to change frequency, whereupon the ZD4 came back and said the channel would soon be clear "as the station on there was going to QSY ! QRX again". That was sorted out quickly enough and the contact continued on push-to-talk lines, dodging interference when necessary and obviating long repeats. Semi-BK on CW is equally simple, by switching to receive

Fig. 1

- Tag 1 = Rx muting (see text)
- Tag 2 = 350-volt HT, Tx
- Tag 3 = 350-volt, Aerial c/o
- Tag 4 = As shown
- Tag 5 = As shown
- Tag 6 = As shown
- Tag 7 = 350-volt HT supply
- Tag 8 = Mod. input
- Tag 9 = Mod. input
- Tag 10 = VFO cathode } see Fig. 2
- Tag 11 = VFO earth }
- Tag 12 = HT—

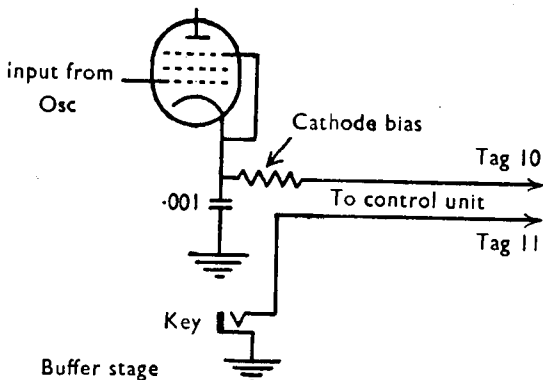


Fig. 2. The VFO connections in the control circuit.

Where it is desired to keep the hands free during operation of the transmitter, it is

# REMOTE CONTROLLED RELAY SYSTEM

A REMOTE control system for a radio receiver or transmitter which eliminates special cables and gives the operator the utmost flexibility in choice of control position can be designed using a cold-cathode, glow-discharge tube of the starter-anode type as the control relay. Such a relay may be operated by RF impulses transmitted over the mains supplying the equipment to be controlled.

A suitable tube is the OA4-G, which consists of a cathode K, a starter-anode P<sub>1</sub> and an anode P<sub>2</sub>. One of the major advantages of glow-discharge tubes for relay circuits results from the use of a cold cathode, thus eliminating the filament supply; hence, the tube consumes no power during stand-by periods.

In normal operation of the OA4-G a relatively small amount of energy initiates a glow-discharge between cathode and starter-anode. This discharge produces free ions which assist in initiating the main discharge between cathode and anode. The anode current which flows during the cathode-anode discharge can be used to actuate a relay or other device connected in the anode circuit. It may be of interest to consider the characteristics of the OA4-G and its operation in a typical carrier-actuated system.

Any of six different discharges may occur in a gas-triode, depending upon the circuit arrangements, *i.e.*, the relative potential differences between the electrodes, and upon the tube design characteristics such as the inter-electrode spacing. The closed curve shown in Fig. 2, which describes the voltage conditions necessary for breakdown between any two electrodes in a tube of given geometry, is called the "breakdown characteristic" of the tube.

From Fig 2 it will be noted that when the voltage on the anode is less than approximately 285v. no discharge will be initiated until the starter-anode voltage is approximately 85v. When this value is reached, a discharge occurs between cathode and starter-anode. This condition is shown in section A of the curve.

When the anode voltage is increased to 285v, a breakdown occurs between cathode and anode. The value of anode voltage required for breakdown between cathode and anode is substantially independent of starter-anode voltage in the range approximately 18 volts to 85 volts. This condition is shown by section B of the curve.

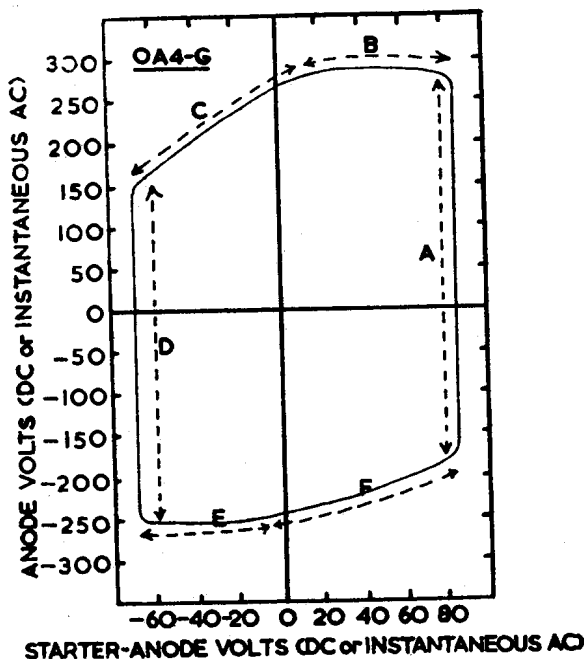


Fig. 2. This curve shows what is known as the "breakdown characteristic." See text for explanation in relation to the OA4-G.

In section C a discharge occurs between starter-anode and anode, the starter-anode acting in this case as a cathode. In section D the discharge is between starter-anode and cathode. These are the same electrodes that figure in section A, but in the present case, the starter-anode, being at negative potential with respect to the cathode, functions as the cathode.

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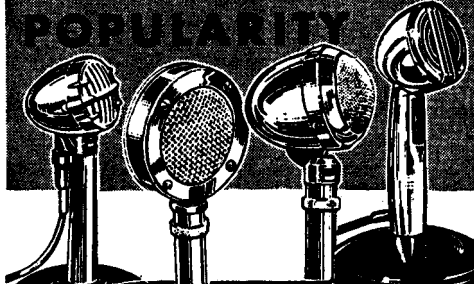
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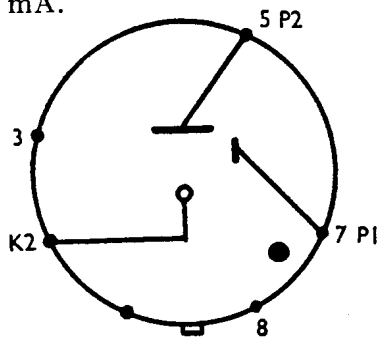
**T**HE ALL-TIME, leading popularity of Astatic Microphones now goes **DOUBLE**. All models shown are available with ceramic as well as crystal elements. The growing acceptance for the ceramic types has placed them almost shoulder to shoulder—in point of preference—with the tried-and-true favorites, the crystal units. Here, to aid you in your personal choice, is the technical data on each:

Model	Output Level	Range	Response Characteristics
D-104	—48 db.	30-7,500	Rising
T-3	—52 db.	30-10,000	Substantially flat
JT-30	—52 db.	30-10,000	Substantially flat
JT-40	—52 db.	30-10,000	Rising
200	—52 db.	30-10,000	Substantially flat
241	—52 db.	30-10,000	Rising
D-104-C	—58 db.	30-7,500	Rising
T-3-C	—62 db.	30-10,000	Substantially flat
JT-30-C	—62 db.	30-10,000	Substantially flat
JT-40-C	—62 db.	30-10,000	Rising
VC	—62 db.	30-10,000	Substantially flat
VC-1	—62 db.	30-10,000	Rising

Letter "C" in model number designates ceramic unit.

Section E and F show the relation between anode voltage and starter-anode voltage which are required to initiate discharges between anode and cathode and between anode and starter-anode respectively.

The OA4-G is designed for operation under the conditions shown in section A of Fig. 2. The tube will of course function in the other regions, but due to its physical characteristics, its operation in these regions is unstable. In normal operation, a discharge between cathode and starter-anode assists in initiating the main discharge between cathode and anode. As the starter-anode supply voltage is increased above the value at which the K-P1 discharge occurs the starter-anode current increases in proportion and the starter-anode voltage remains substantially constant at approximately 60 volts. Over the useful operating range of the tube the anode-cathode voltage drop remains very nearly constant at 70 volts. Operation is best confined to a range anode currents from 5 to 25 mA.

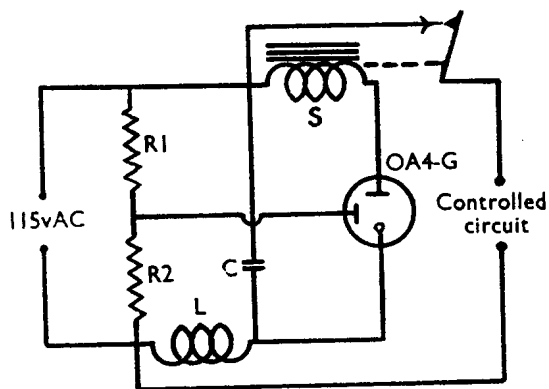


**Base connections of the OA4-G.**

The circuit of a typical relay system for remote control of a receiver is shown in Fig 3. 115v AC is applied between anode and cathode through the relay S and the RF coil L. A portion of this voltage is also supplied between starter-anode and cathode by means of the potential divider R1, R2. In addition, the supply line also carries an RF voltage generated at the operating position. The resonant frequency of the com-

ponents L and C is the same as the frequency of the applied RF voltage, so that a high RF voltage is generated across L.

This RF voltage is modulated 100% at the supply frequency. With proper adjustments of the amplitude and frequency of the applied RF voltage a discharge between starter-anode and cathode may be initiated. In practice it is found that the RF signal need not supply all the power required to initiate the discharge. R2 is usually adjusted so that the voltage across it is rather less than the breakdown value. Then, the RF voltage need only be large enough to supply the difference between the breakdown voltage and the applied low frequency voltage. It is recommended that an RF voltage of approximately 55 volts peak across L be provided. With a 50 c.p.s. supply and an RF source at approximately 100 kc it is recommended that the voltage across R2 *plus* the voltage across L should not be less than 110 volts peak.



**Fig. 3. Practical circuit for a remote control system, using the OA4-G. Values are given in the table.**

### Table of Values

**Fig. 3. Practical Control Circuit.**

- L, C = High-Q tuned RF circuit
- R1 = 15,000 ohms
- R2 = 10,000 ohms
- S = Relay, contacts as required

**BEFORE YOU TURN THIS PAGE!**

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PERFORMER!

# Compare

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Fully CSA approved



**EDDYSTONE 750**

**WORLD'S FINEST COMMUNICATIONS RECEIVER**

**"KNOW-HOW"**  
**makes the Big Difference!**

Write today for an illustrated brochure giving many more important reasons why you'll be glad you waited for the Eddystone 750. Hear it and see it—the most beautiful communications receiver built—before buying any.

**ASTRAL ELECTRIC COMPANY**

CANADIAN DISTRIBUTOR

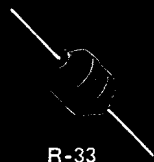
44 DANFORTH ROAD

TORONTO, ONTARIO

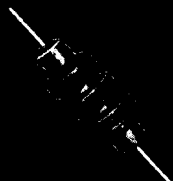
# POPULAR



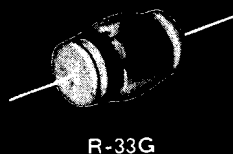
# COMPONENTS



R-33



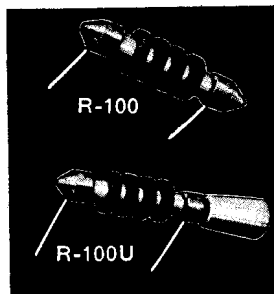
R-50



R-33G



R-60



R-100

R-100U

## R-100

These RF chokes are identical electrically, but differ in mounting provisions. are available in 2.5, 5 and 10 millihenry sizes and are rated at 125 milliamperes.

## R-300

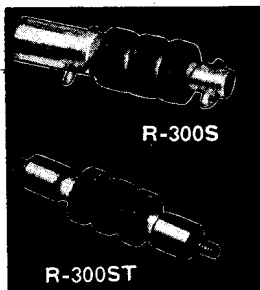
These RF chokes are similar in size to R-100 series but have higher current capacity.

The R-33 series chokes are 2-section RF chokes available in 10, 50, 100 and 750 microhenry sizes.

The R-50 series chokes are 3 and 4-section RF chokes and available in 0.5, 1, 2.5, and 10 millihenry sizes. They are rated at 50 milliamperes. R-50-I choke is wound on an iron core.

The R-33G choke is a 2-section 750 microhenry RF choke hermetically sealed in glass with a current rating of 33 milliamperes.

The R-60 choke is a high current RF choke (500 milliamperes) available in 2 and 4 microhenry sizes.



R-300S

R-300ST

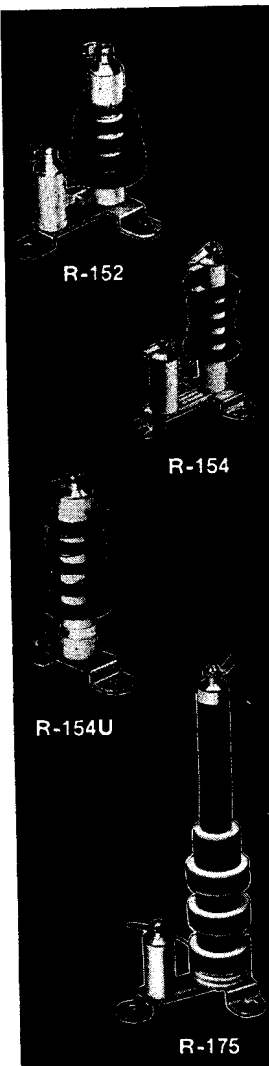
## R-152

For use in the range between 2 and 4 Mc. Ideal for high power transmitter stages operated in the 80 meter amateur band. Inductance 4 m.h., DC resistance 10 ohms, DC current 600 ma. Coils honeycomb wound on steatite core.

## R-154

For the 20, 40 and 80 meter bands, Inductance 1 m.h., DC resistance 6 ohms, DC current 600 ma. Coils honeycomb wound on steatite core. The R-154U does not have the third mounting foot

The R-175 Choke is suitable for parallel-feed as well as series-feed in transmitters with plate supply up to 3000 volts modulated or 4000 volts unmodulated. Unlike conventional chokes, the reactance of the R-175 is high throughout the 10 and 20 meter bands as well as the 40 and 80 meter bands. Inductance 225  $\mu$ h, distributed capacity 0.6 mmf., DC resistance 6 ohms, DC current 800 ma., voltage breakdown to base 12,500 volts.



R-152

R-154

R-154U

R-175

SEE THEM AT YOUR SUPPLY HOUSE



Represented in Canada by

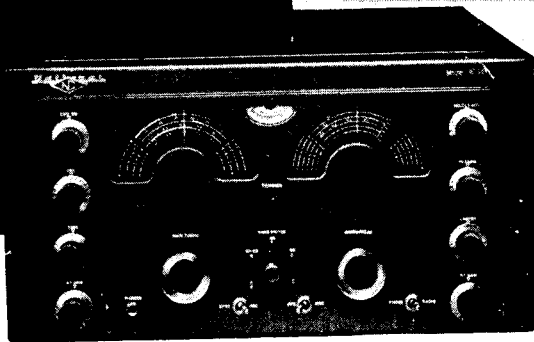
**CANADIAN MARCONI COMPANY**

830 BAYVIEW AVE, TORONTO, ONTARIO

VANCOUVER WINNIPEG MONTREAL HALIFAX ST. JOHN'S Nfld.

# TERRIFIC

the NC-  
183 D



**DUAL CONVERSION! 12 TUNED I.F. CIRCUITS!**

**1 M.V. SENSITIVITY ON 6 METERS!**

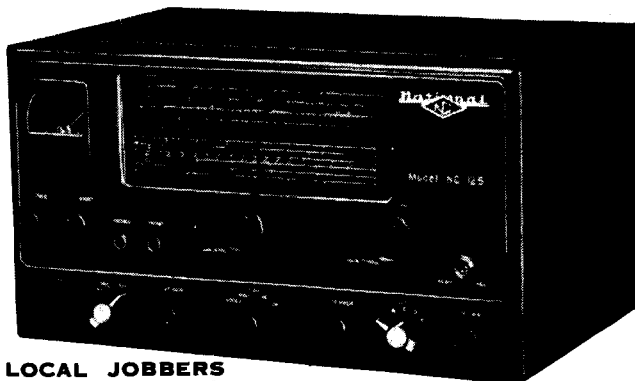
Now at last, you can get immediate delivery on the receiver that gives you more selectivity per dollar — the *only* receiver with the famed Select-O-Ject circuit built in! And that's only one of the many fine features that make the NC-125 tops

Covers 550 kcs. — 36 mcs. in 4 bands. Voice, CW, NFM (with adapter). Edge-lighted, direct-reading scale. Amateur, police, foreign, ship frequencies clearly marked. National Select-O-Ject built-in (rejects any selected audio frequency 45 db — boosts 38 db). Three microvolt sensitivity (for 10 db signal/noise ratio on 10-meter band). 5-meter. AVC, ANL, ant. trimmer. Variable CW pitch control. Separate R.F. and audio gain controls. Volt. reg., stabilized oscillator. Jack for phono or NFM Adapter. Audio essentially flat to 10,000 c.p.s.

National proudly announces a brand-new receiver — the NC-183D — *every* feature you want in a truly modern receiver! Dual conversion on the three highest ranges (including 6, 10, 15, 20 and 40 meter ham bands) no "birdies"! Steep-sided skirt selectivity with 3 I.F. stages (16 tuned circuits on the 3 high bands — 12 on all other bands, compared to 6 normally used) plus a new crystal filter. Approximately 1 microvolt sensitivity on 6 meters for a 10db signal-to-noise ratio! New, indirectly-lighted lucite dial scales! New miniature tubes for improved sensitivity! Bandsread on all bands, including new 15-meter band! New bi-metallic, temperature-compensated tuning condenser for drift-free operation! *Plus* all the time-tested features of the famous NC-183!

**NC-125**

***great news to hundreds who want maximum selectivity at minimum cost!***



**AT YOUR LOCAL JOBBERS**

Represented in Canada by

**CANADIAN MARCONI COMPANY**

830 BAYVIEW AVE, TORONTO, ONTARIO

VANCOUVER WINNIPEG MONTREAL HALIFAX ST. JOHN'S Nfld.

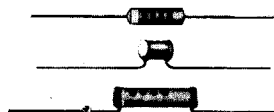




# ERIE RESISTOR COMPONENTS

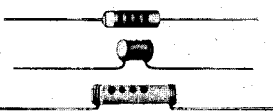
*For Easy Assembly*  
*Dependable Performance*

## ERIE TUBULAR CERAMICONS\*

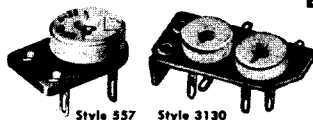


Erie "GP1" Molded Insulated Ceramicons  
5 MMF—5,000 MMF  
Erie "GP2" Dipped Insulated Ceramicons  
5 MMF—5,000 MMF  
Erie "GP3" Non-Insulated Ceramicons  
5 MMF—5,000 MMF

Temperature Compensating  
Molded Insulated Ceramicons  
0.5 MMF—550 MMF  
Temperature Compensating  
Dipped Insulated Ceramicons  
0.5 MMF—1,800 MMF  
Temperature Compensating  
Non-Insulated Ceramicons  
0.5 MMF—1,800 MMF



## ERIE CERAMICON TRIMMERS



Style 557  
1.5-7 MMF  
3-12 MMF  
5-25 MMF  
150-190 MMF

Style 3130  
5-30 MMF  
8-50 MMF  
65-95 MMF



Style TS2A  
1.5-7 MMF  
3-12 MMF  
3-13 MMF

5-20 MMF  
4-30 MMF  
7-45 MMF



Style 531 and 532  
0.5-5 MMF  
1-8 MMF



Style 535  
0.7-3.0 MMF

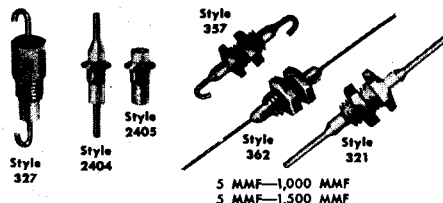


Style 3115  
0.5-3.0 MMF  
1.0-4.0 MMF  
Style 3139  
2.0-6.0 MMF



Style 3132  
1.0-3.8 MMF

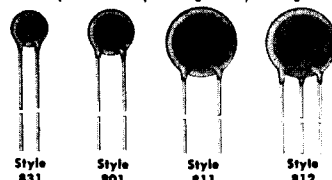
## ERIE FEED-THRU CERAMICONS



5 MMF—1,000 MMF  
5 MMF—1,500 MMF

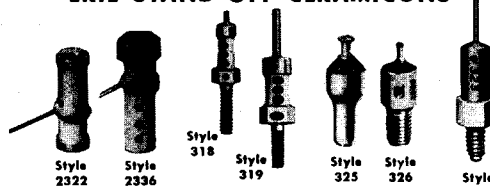
## ERIE DISC CERAMICONS

Temperature Compensating and By-Passing



Up to .01 MFD

## ERIE STAND-OFF CERAMICONS



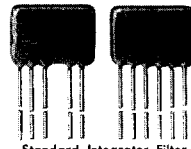
5 MMF—5,000 MMF

## ERIE BUTTON MICA CONDENSERS



15 MMF—6,000 MMF

## ERIE PRINTED CIRCUITS



Standard, Integrator, Filter,  
and Coupling Circuits

## ERIE HIGH VOLTAGE CERAMICONS



10 and 20 KV.—500 MMF

STYLE NINE  
1/2 WATT

## ERIE RESISTORS

STYLE EIGHT  
1 WATT

Erie High Stability fully insulated resistors are available in three sizes, one eighth, one quarter and three quarter watt ratings, in values from 10 ohms to 1 megohm, and in accuracies of 1%, 2% & 5%. They are stocked in standard RMA values, but are available in any special values on order.

Factories:

Toronto, Ontario;  
London, England;  
Erie, Pa.

**ERIE RESISTOR OF CANADA  
LIMITED**

1151 ROSELAWN AVE.

TORONTO, ONTARIO

# DX PREDICTIONS

Prepared by C.B. McKee, Engineering  
Division, CBC International Service

## PREDICTIONS FOR MONTH OF MAY, 1953.

Skywire frequency predictions are for amateur communications on various circuits to almost any part of the world. These tables are for five major areas in Canada, and amateurs who are operating reasonably close to the cities indicated will find these predictions quite adequate.

Figures shown are in megacycles and indicate the band to be used. They are for normal F layer transmission and don't consider Sporadic E which may provide unusual DX openings!

Toronto to: EST	00	02	04	06	08	10	12	14	16	18	20	22
Europe	7	7	7	7	7	7	7	7	7	7	7	7
Africa	7	-	-	-	-	-	-	-	-	-	-	-
Caribbean	7	7	7	14	14	14	14	14	14	14	14	14
S. America	7	7	7	14	14	14	14	14	14	14	14	14
Australia	7	7	7	7	7	7	-	-	-	-	-	-
U.S. - West	14	14	14	7	14	14	14	14	14	14	14	14
U.S. - Central	7	7	7	7	14	14	14	14	14	14	14	14
U.S. - South	14	14	7	7	14	14	14	14	14	14	14	14
Vancouver	14	7	7	7	14	14	14	14	14	14	14	14
Watrous	4	4	4	4	7	7	7	7	7	7	7	7
Montreal	4	4	4	4	7	7	7	7	7	7	7	7
Sackville	7	7	4	7	7	14	14	14	14	14	14	7

Watrous to: MST	22	00	02	04	06	08	10	12	14	16	18	20
Europe	7	7	7	7	7	-	14	14	7	7	7	7
Africa	7	-	-	7	14	14	14	14	14	14	14	14
Caribbean	14	14	14	7	14	14	14	14	14	14	14	14
S. America	14	14	14	14	14	14	14	14	14	14	14	14
Australia	14	14	7	7	7	7	-	-	-	-	-	-
U.S. - West	14	7	7	7	7	7	14	14	14	14	14	14
U.S. - Central	7	7	7	7	7	14	14	14	14	14	14	14
U.S. - South	14	14	14	14	14	14	14	14	14	14	14	14
Vancouver	14	7	7	7	14	14	14	14	14	14	14	14
Toronto	4	4	4	4	7	7	7	7	7	7	7	7
Montreal	7	7	7	7	14	14	14	14	14	14	14	14
Sackville	7	7	7	7	14	14	14	14	14	14	14	14

Vancouver to: PST	21	23	01	03	05	07	09	11	13	15	17	19
Europe	7	7	7	7	7	-	14	14	7	7	7	7
Africa	7	-	-	7	14	14	14	14	14	14	14	14
Caribbean	14	14	14	7	14	14	14	14	14	14	14	14
S. America	14	14	14	14	14	14	14	14	14	14	14	14
Australia	14	14	7	7	7	7	-	-	-	-	-	-
U.S. - West	7	7	7	4	4	7	14	14	14	14	14	14
U.S. - Central	14	14	7	7	7	14	14	14	14	14	14	14
U.S. - South	14	14	14	7	14	14	14	14	14	14	14	14
Watrous	14	7	7	7	14	14	14	14	14	14	14	14
Toronto	14	7	7	7	14	14	14	14	14	14	14	14
Montreal	14	7	7	7	14	14	14	14	14	14	14	14
Sackville	14	7	7	7	14	14	14	14	14	14	14	14

Sackville to: AST	01	03	05	07	09	11	13	15	17	19	21	23
Europe	7	7	7	7	7	7	7	7	7	7	7	7
Africa	7	-	-	-	-	-	-	-	-	-	-	-
Caribbean	7	7	14	14	14	14	14	14	14	14	14	14
S. America	7	7	14	14	14	14	14	14	14	14	14	14
Australia	7	7	7	7	-	-	-	-	-	-	-	-
U.S. - West	14	14	7	7	14	14	14	14	14	14	14	14
U.S. - Central	14	14	7	7	14	14	14	14	14	14	14	14
U.S. - South	14	14	7	7	14	14	14	14	14	14	14	14
Vancouver	14	7	7	7	14	14	14	14	14	14	14	14
Watrous	7	7	7	7	14	14	14	14	14	14	14	14
Toronto	7	7	4	7	7	14	14	14	14	14	14	14
Montreal	7	7	4	7	7	14	14	14	14	14	14	14

Montreal to: EST	00	02	04	06	08	10	12	14	16	18	20	22
Europe	7	7	7	7	7	7	7	7	7	7	7	7
Africa	7	-	-	-	-	-	-	-	-	-	-	-
Caribbean	7	7	14	14	14	14	14	14	14	14	14	14
S. America	7	7	14	14	14	14	14	14	14	14	14	14
Australia	7	7	7	7	-	-	-	-	-	-	-	-
U.S. - West	14	14	14	14	14	14	14	14	14	14	14	14
U.S. - Central	7	7	7	14	14	14	14	14	14	14	14	14
U.S. - South	14	14	7	7	14	14	14	14	14	14	14	14
Vancouver	14	7	7	7	14	14	14	14	14	14	14	14
Watrous	7	7	7	14	14	14	14	14	14	14	14	14
Toronto	4	4	4	4	7	7	7	7	7	7	7	7
Sackville	7	7	4	7	7	14	14	14	14	14	14	14

# HAMADS

Skywire Hamads must pertain to amateur radio. Rates are 20 cents per word, per insertion for commercial advertisements for profit, and 4 cents per word for all non commercial, non-profit advertisements by experimenters or licensed radio amateurs. Full remittance MUST accompany copy. Print plainly and count address in the total. Do NOT send personal checks unless exchange is included. Mail to Skywire, Toronto.

Microphone - Astatic WR40, almost new. Sacrifice for quick sale. Robert Cooch, 362 Millwood Rd., Toronto, HY 7760.

FOR SALE - Brand new NC-173 Receiver. VE2XF, 1040 Old Orchard, Apt 4, Montreal.

Sixth Northern Ontario Hamfest is being held at North Bay June 26, 27 and 28th, 1953. This is one of Canadas best ham-fests with an NC-125 as doorprize. For details and tickets, write VE3EAW.

SCR-274-N, complete BC-450 series with dynamotors and 25 cycle power supplies, 2 converted transmitters, 4 receivers, modulator, cabinet, racks, controls, cables etc., \$110.00 or best offer. B.E. Davies, 63 Strathgowan Ave., Toronto, Phone MA 3481.

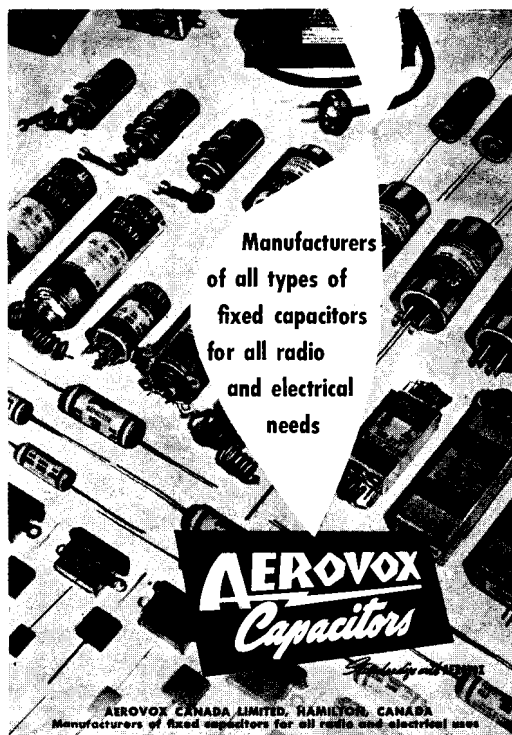
Best offer over \$200.00 takes National HRO receiver, pre-war model but in excellent condition. Complete with coils for 10, 20, 40 and 80, plus five additional general coverage coils. Mounted in attractive Hammond cabinet with 25 cycle power supply and built in speaker. RME-HF10-20 and VHF-152A, both mounted in cabinet to match receiver, or will sell separately in original cabinets. Make offer. Will give trial reliable party. VE3XZ, A. Page, Burlington, Ont.

MUST SELL - 120 watt fone-CW VFO transmitter, all bands, modulation indicator, GDO, parts and diagrams - \$125.00. NEW NC-125 receiver under guarantee, Rig and receiver both for \$370.00. Will ship prepaid. Further details from L.T. Thomas, VE5ZT, Lampard, Saskatchewan.

WANTED - BC-348 receiver and BC-221 frequency meter. Will pay good price for either unit in good condition. Write C. Snelgrove, 391 Sammon Ave., Toronto.

PARTS FOR SALE - National MB-40, \$9.95. MB-150 - \$19.95, Hammond 1125X25, \$4.95 and plate transformer similar to Hammond 777. This was made for me by Hammond and is 25 cycle - \$29.95. Write Cy Young, Bell Telephone, Beaver Hall Bldg. in Montreal, or see Harry Rash at A and A Radio, Adelaide St. W., Toronto, Ont.

A HAMAD can sell equipment for you!!



Manufacturers  
of all types of  
fixed capacitors  
for all radio  
and electrical  
needs

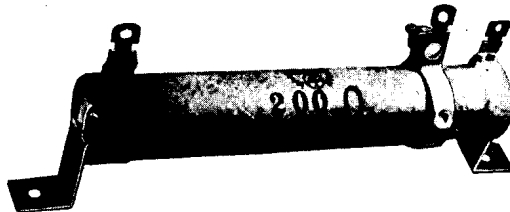
**AEROVOX**  
*Capacitors*

AEROVOX CANADA LIMITED, HAMILTON, CANADA  
Manufacturers of fixed capacitors for all radio and electrical uses

# CLAR STAT

## FAMOUS GREENOHMS-WIRE-WOUND ADJUSTABLE POWER RESISTORS

★ These power resistors feature the exclusive Clarostat inorganic cement coating and are similar in rugged construction to the fixed types on page 11, except for the bared section of the winding contacted at any ohmage by the adjustable slider band. This band is permanently locked in place at the required resistance value by simply tightening a screw with a screwdriver.



All resistors furnished with mounting brackets at no extra cost.

Standard Packing — Individually Boxed.

Ohms	Ohms	Ohms
1	100	1,500
2	150	2,000
3	200	2,250
5	250	2,500
7.5	300	3,000
10	400	3,500
15	500	4,000
20	750	4,500
25	800	5,000
50	1,000	6,000
75	1,250	7,000

Series  
K-50-NA  
¾" dia.  
x 4½" l.

Series  
K-80-NA  
¾" dia.  
x 6½" l.

Series  
K-100-WA  
1½" dia.  
x 6½" l.

Ohms	Ohms
7,500	65,000
8,000	70,000
9,000	75,000
10,000	80,000
12,000	85,000
15,000	90,000
20,000	95,000
25,000	100,000
50,000	
55,000	
60,000	

Series  
K-160-WA  
1½" dia.  
x 8½" l.

125,000 and 150,000 ohm  
units available only in

115 and 160 watt types. **SERIES AC-10-FA—10-WATT**  
**SOLD AT YOUR JOBBERS SERIES A-25-KA—25-WATT**

### DIMENSIONS

★ Fixed and Adjustable Greenohms are of the same dimensions, wattage for wattage, as follows:

Rating	Diameter	Length
10-watt	5/16"	x 1¾"
20-watt	9/16"	x 2"
25-watt	9/16"	x 2½"
40-watt	¾"	x 3½"
50-watt	¾"	x 4½"
80-watt	¾"	x 6½"
100-watt	1½"	x 6½"
160-watt	1½"	x 8½"
200-watt	1½"	x 10½"

Represented in Canada by  
**CANADIAN MARCONI COMPANY**

VANCOUVER WINNIPEG MONTREAL HALIFAX ST. JOHN'S

## WANTED COMMUNICATIONS PERSONNEL

Man fully competent on trouble shooting, repairing and aligning of communication type receiving and transmitting equipment. Must be familiar with associated measurement equipment. Employment to be with a large Electronics Manufacturer in the Toronto area.

Reply, giving all pertinent details, including experience, references and salary expected to Box 17, Skywire, Brampton.

# HOW'S UR OBS IQ?

Special Canadian Bulletin for all VE3s  
A QSO Contest between Ontario Section amateurs, sponsored by the Ontario Phone club, will be held on two consecutive Sundays, April 26th and May 3rd, 1953, from 10.00 AM to 10.00 PM Eastern Standard time each period. The purpose of the Contest is to enable CW and phone operators to become more familiar with both types of operating. Two awards will be made. The CW award will be known as the Sparton Radio Trophy and the phone award will be known as the Columbia Record Trophy. Both trophies, donated by Sparton of Canada, will be suitably engraved with the winner's call and the year of presentation. Permanent possession of the trophy will be given to the stations winning it on three occasions. Following are the rules:- The Contest call is CQ VE3. Frequencies from 3500 to 3725 kc will be allotted for CW operation, 3500 to 3800 kc for CW-to-phone operation, 3725 to 3800 kc is allotted to phone-only operation, 3765 kc is allotted to mobile phone stations. No multipliers will be used and one point per contact for phone to phone, phone to CW and CW to phone, provided the contacts are made in the portion of the band above designated. Exchanges will be: A contest number, call, report and time. Any station may operate phone and CW, if his operation takes place in the proper portion of the band. Stations may be worked only once, regardless of type of emission. One contestant cannot win both trophies. Judges of the contest will be the Contest Committee, and contest logs should be sent to S. Moir, P.O. Box 191, Simcoe, Ontario, up to midnight May 16, 1953. After the winners have been selected, the remaining contestants who submit logs are eligible for a draw prize.

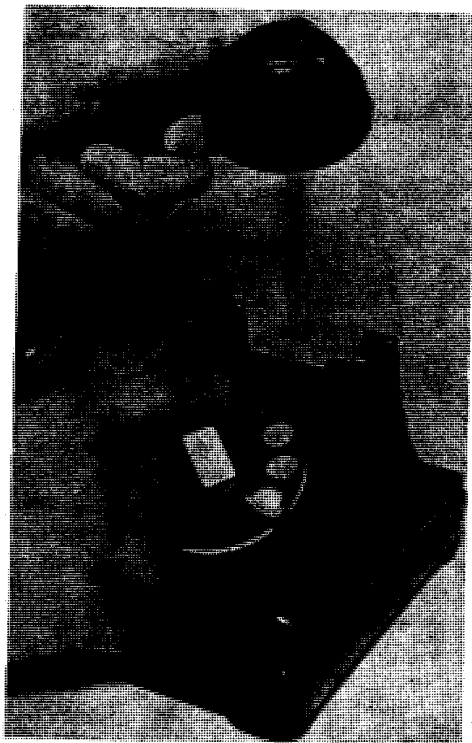
Official Bulletin Nr 388, Mar. 5, 1953.  
With the approach of spring and warmer

weather, the possibility of floods and consequent communications emergencies becomes greater. All U.S. and Canadian amateurs are urged to provide themselves with means for working on the National Emergency frequencies of 3550, 3875, 7100 and 7250, 14050, 14225, 28100 and 29640 kc, and to contact their local A.R.R.L. Emergency Coordinator, or the Section Emergency Coordinator whose address may be found on page 67 of October, 1952, QST, to learn of local plans.

Official Bulletin Nr 389, Mar. 12, 1953.  
A.R.R.L. continues to invite applications as Official Observer. Recent changes in amateur regulations emphasize the need for Observers who wish to help in bettering conditions in the various amateur bands. League members residing in any U.S. or Canadian section are eligible. The different classes of Observer appointment include categories for phone and CW checking which require only receiving equipment and individual skill. Interested amateurs are requested to write to A.R.R.L. Headquarters for full details on how to qualify for this appointment. Observer reports that amateurs planning 7200 to 7300 kc voice operation, through appropriate multiplication of present 1800 kc oscillators, should be cautioned about the possibility of third harmonic radiation in the region of 5400 kc.

Official Bulletin Nr 390, Mar. 19, 1953.  
Amateurs are reminded that recent FCC amendments to the amateur rules which become effective 3.00 AM EST, March 28 involve the following modifications in present 15 meter band operating privileges. At that time, frequency shift keying will be permitted from 21,000 to 21,250 kc. Voice operation including narrow band frequency or phase modulated telephony will be available for all amateurs, except Novice and Technician in 21,250 to 21,450 kc.

## HOW MUCH OF A TELEPHONE EXPERT ARE YOU?



**THESE TWO TELEPHONES** look alike at a quick glance. But upon closer inspection there is a difference—a difference with a visible clue to what it is. The clue indicates that one of the telephones has been built for a special service. Can you spot the clue? Do you know what it reveals?

**ANSWER;** The telephone below is a standard type. The set above it, however, is designed to be used by someone who is hard of hearing. The clue is the tiny "M" on one of the switch-hook plungers and stands for "medium" volume. Other letters not visible are "H" and "L" for high and low volume. By twisting this plunger, the user can control the volume of sound in the receiver, so that telephone users with impaired hearing may obtain normal hearing quality.

This telephone set is only one of a variety of items of special equipment designed to help the hard of hearing in using the telephone. In most instances the use of such equipment can help immeasurably in broadening the social and business horizons of the hard of hearing.

For instance, some cases of slight impairment may be benefited by the use of watch case or double head band receivers which permit the user to have a receiver over each ear.

In more serious cases, telephones such as the one described above can be provided. They are equipped with receiver amplifiers, and are available in different forms depending on whether combined hand telephones or other types of telephone sets are in use at the location and whether the customer wishes or needs to use a bone conduction receiver or not.

There are also microphones for the use of persons wishing to speak directly "across the desk" to a person who is hard of hearing, both close up or at a distance while moving about the room.

GLEN HOPPER, installer, Saul Ste. Marie, is shown using the combined handset amplifier for the hard of hearing. Mr. Hopper was able recently to demonstrate the receiver amplifier to a married couple who are practically deaf mutes. The husband was unable to hear even with the highest amplification, but to the wife's surprise and joy she was able to hear successfully for the first time. Arrangements have been made to provide the lady with this telephone service. Mr. Hopper's commendable initiative has greatly lightened the burden of this lady's handicap.

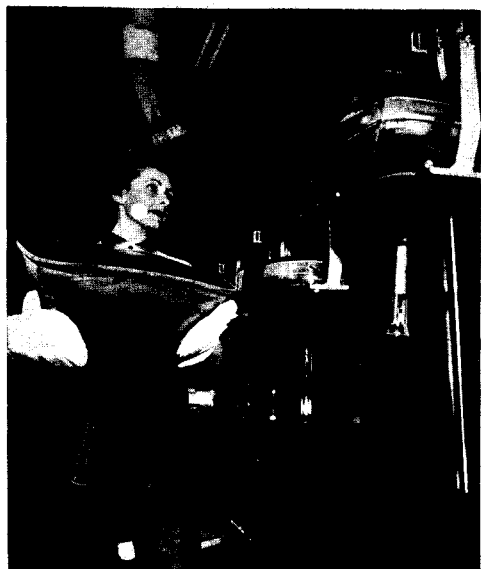
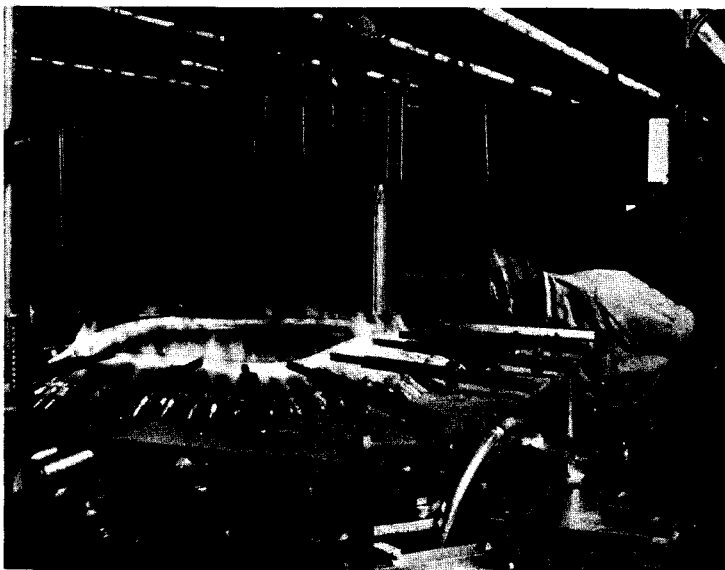




An inspector examines the assembly of an electron gun, to assure that this fundamental element of a television picture tube conforms to rigid specifications.

## Production-Line Scenes in the *at Lancaster, Pa.*

A ring of gas jets around the outer rim of a tube fuses the glass faceplate to the kinescope's metal shell.



One of RCA's employees at the Lancaster plant loads metal-shell picture tubes on the overhead conveyor system.



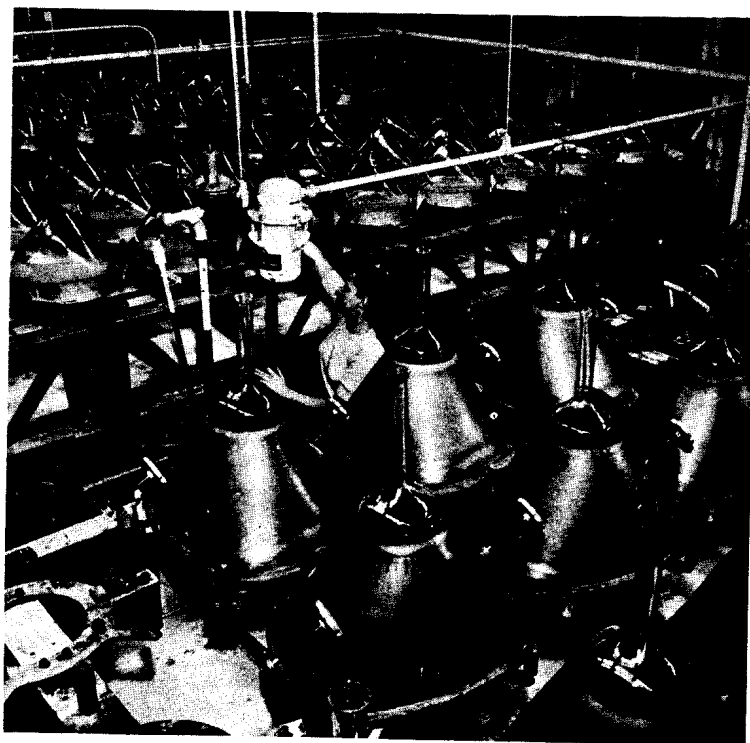
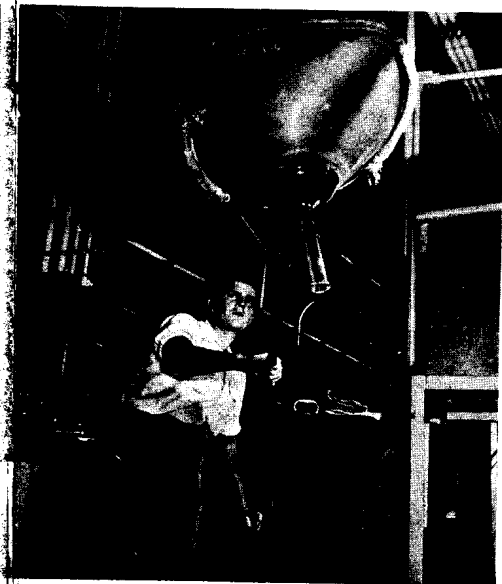
At the terminal of the "settling belt," the water of the phosphor solution pours out into a spillway, leaving a fluorescent coating on the faceplate.



Faceplates of metal-shell kinescopes are carefully move on to the ne

# RCA Tube Plant

This fork-like instrument, guided by a worker, lifts a hot tube onto a cooling belt.



A phosphor solution is poured into a kinescope which is then placed on a moving belt where the phosphor settles out to form the tube's picture surface.



and all-glass rectangular cleaned before the tubes step in production.



Using an optical pyrometer behind a protective shield, a worker measures the heat intensity of gas flames during the metal-to-glass sealing operation.

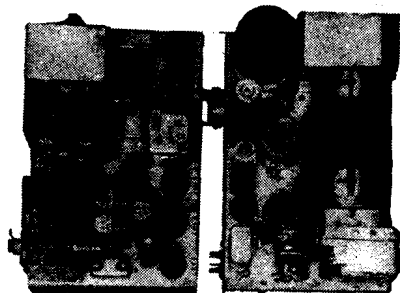


Exposure to a powerful light allows this inspector to give the screen surface of the picture tube a final inspection before shipment.

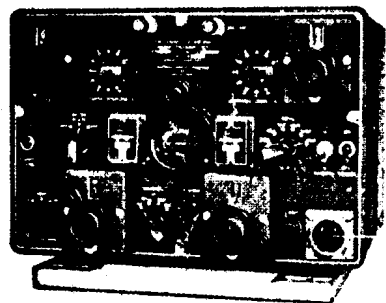


# TERRIFIC BARGAINS

THE HOTTEST **WAR SURPLUS MATERIAL**



**BC-966-A IFF**



## WAR SURPLUS

Here's another great guy!  
AT-1 transmitter covering  
2 - 20 mcs. Three 807's -  
6J5 and 6H6, and convert-  
ible as ham rig. Top this  
price anywhere today - IF  
you can. Good condition!!

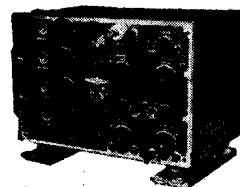
\$17.95 each.

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Built by Philco, these BC-966 IFF units are tremendous value. Tubes alone worth the entire price. Loaded with parts that you use every day. Don't miss out.....!

Approximately 2 meter frequency operation. 14 tubes, 350 V. DC dynamotor, 12 V DC input. Contains vantage regulators and many other fine parts. Worth more \$13.95 for parts than price asked.....

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