

ALEXANDER VOLTA RTTY DX CONTEST

SSB & RTTY Club
BOX 144 — COMO (Italy)

The SSB & RTTY Club claims the first edition of the "ALEXANDER VOLTA RTTY DX CONTEST."

The contest will be entirely devoted to increase the interest of all the radio amateurs in RTTY, and in order to remember the Italian discoverer of electricity Alexander Volta.

The rules you will find below are the same as in "ANNUAL WORLD-WIDE RTTY SWEEPSTAKES" from RTTY Society of Southern California, in order to permit a comparison in two different season periods under the same rules.

A special prize to the winner will be offered from il RIF, Bruno. Certificates will be awarded to the top two winners in each country by SSB & RTTY Club.

RULES

- TEST PERIOD:**
0200 GMT May 22nd to 0200 GMT May 24th.
- BANDS:**
The test will be conducted in the 3, 5, 7, 14, 21 and 28 MHz amateur bands.
- Stations may not be contacted more than once on any one band. Additional contacts may be made with the same station if a different band is used. In the interest of encouraging multi-band DX operation, the same country may be claimed more than once if contacted on different bands. The same state worked on more than one band may be claimed only once.
- COUNTRY STATUS:**
For the purpose of this contest KH6, KL7 and VO will be considered as separate countries in addition to ARRL list.

5. STATIONS WILL EXCHANGE MESSAGES CONSISTING OF

- Message Number
- Check (RST)
- Time in GMT
- State or Foreign Country

6. POINTS:

- All two-way RTTY contacts by North and South American countries including KH6 will earn two points.
- All Two-way RTTY contacts by countries other than in (A) above will receive ten points.
- All stations receive 200 points per country worked, not including their own.

7. Free log forms are available on request from SSB & RTTY Club. These forms are not obligatory.

Logs should contain NR, exchanges and times sent and received; bands; calls; state and country points.

8. SAMPLE LOG:

NOTE: Log the state only once, the first time contacted. Log the country in each band contacted.

9. SCORING:

- (Includes All Stations)
- Two-way exchange points times total states worked.
 - Total country points per band times number of continents worked.
 - Add item (A) and (B) above. This is your total test score.

10. SAMPLE SCORE SHEET:

Logs and Score sheets should be received by SSB & RTTY Club, Box 144, COMO, Italy, by June 27, 1965 to qualify.

W7HPH, BOISE, IDAHO



ARMED FORCES DAY COMMUNICATION TESTS ONCE A YEAR OPPORTUNITY

The Department of Defense is ever mindful of the unique communications potential inherent in the amateur radio fraternity. Each of the services has a firm and long standing policy of encouragement and support of amateur radio activity. As a tangible demonstration of their active amateur radio programs the separate military departments join each year in conducting the Armed Forces Day Communication Tests. This year's tests will be conducted on 15 May 1965.

These tests provide amateurs throughout the world with the opportunity of working crossband with designated military stations and to participate in "CW" and "RTTY" receiving contests. The plans for the event are a joint effort of the three MARS (Military Affiliate Radio System) Chiefs for their respective services. The operating portion of the program is accomplished by active duty personnel and guest operators at the participating military stations.

Amateurs everywhere are invited to use this event as a means of demonstrating their skills and operating proficiencies. Once again all normal modes of emission will be utilized and it is hoped that every amateur will be able to work at least one of the military stations.

The theme for this Sixteenth Armed Forces Day will be, "Power for Peace." A large number of contacts will demonstrate to the world that there is indeed "Power for Peace" in the communications freedom enjoyed by the U. S. Amateur and that close partnership with the military can be healthy and mutually beneficial relationship in our society.

On 15 May 1965, you may qualify for the one time QSL card from each of the military stations. Further, you may demonstrate your operating abilities and technical skills by receiving a certificate for perfect copy of the "CW" and/or "RTTY" message(s) from the Secretary of Defense. QSL cards can only be forwarded to those licensed amateurs who established a two-way contact with a station. Interception by short wave listeners (SWL) will not qualify for a QSL card.

However, anyone that has the equipment and abilities may copy the Secretary of Defense messages and receive a certificate.

Military to Amateur Crossband Operations:

The military stations will transmit crossband on spot frequencies outside the amateur bands and establish radio contacts with amateurs in the appropriate sections of the amateur bands. This is a test of crossband operations, and contacts will consist of a brief exchange of locations and signal reports. No traffic handling will be permitted.

CW Receiving Contest:

A "CW" receiving contest will be conducted for any person capable of copying International Morse Code at 25 words per minute (25 WPM). The "CW" broadcast will consist of a special Armed Forces Day message from the Secretary of Defense addressed to all radio amateurs and other participants.

RTTY Receiving Contest:

A radioteletypewriter "RTTY" receiving contest will be conducted for any individual or station that possesses the required equipment. This is a test of the operator's technical skill in aligning and adjusting his equipment, and serves to demonstrate the growing number of amateurs that are becoming skilled in this method of rapid communications. The "RTTY" broadcast will be transmitted at 60 words per minute (60 WPM) and will consist of a special Armed Forces Day message from the Secretary of Defense to all radioteletypewriter enthusiasts.

SCHEDULE OF EVENTS

Military to Amateur Tests

Military stations WAR, NSS and AIR will be on the air from 151400 GMT (0900 EST 0600 PST) to 160245 GMT (2145 EST 1845 PST). NPG will be on the air from 151800 GMT (1000 PST) to 160800 GMT (160000 PST).

Amateur contacts from NPG will be discontinued from 160245 GMT (151845 PST) to 160400 GMT (152000 PST) to allow the Armed Forces Day "CW" and "RTTY" receiving contests.

MILITARY FREQUENCIES (KCS unless otherwise noted)

| STATION | EMISSION | APPROPRIATE (MCS) AMATEUR BANDS |
|-----------------------------|----------|---------------------------------|
| WAR (Army Radio Wash, D.C.) | CW | 3.5 - 3.65 |
| | CW | 3.65 - 3.8 |
| | CW | 7.0 - 7.2 |
| | CW | 7.1 - 7.2 |
| | CW | 14.0 - 14.2 |

| | | | | |
|-----------------------------------|--------------------------------------|--------|--------------|------------|
| NSS (Navy Radio Wash, D.C.) | 3269 | CW | 3.5 - 3.65 | |
| | 4012.5 | RTTY | 3.65 - 3.8 | |
| | 4015 | CW | 3.65 - 3.8 | |
| | 4040 | SSB/AM | 3.8 - 4.0 | |
| | 6970 | CW | 7.0 - 7.1 | |
| | 7301 | CW | 7.1 - 7.2 | |
| | 7380 | RTTY | 7.0 - 7.2 | |
| | 14385 | SSB/AM | 14.2 - 14.35 | |
| | 14440 | CW | 14.0 - 14.2 | |
| | 14480 | RTTY | 14.0 - 14.2 | |
| | AIR (Air Force Radio, Wash, D.C.) | 3347 | RTTY | 3.5 - 3.8 |
| 3397.5 | | CW | 3.5 - 3.8 | |
| 4025 | | SSB | 3.8 - 4.0 | |
| 6997.5 | | CW | 7.0 - 7.2 | |
| 7305 | | SSB | 7.2 - 7.3 | |
| 7315 | | RTTY | 7.0 - 7.2 | |
| 13995 | | CW | 14.0 - 14.2 | |
| 14397 | | SSB | 14.2 - 14.35 | |
| NPG (Navy Radio San Francisco) | | 3357 | CW | 3.5 - 3.8 |
| | | 4001.5 | RTTY | 3.65 - 3.8 |
| | | 6835 | CW | 7.0 - 7.1 |
| | 7301.5 | CW | 7.1 - 7.2 | |
| | 7375 | RTTY | 7.0 - 7.2 | |
| | 13547 | RTTY | 14.0 - 14.2 | |
| | 13975.5 | SSB | 14.2 - 14.35 | |
| | 49.692 MCS | AM | 50 - 54 | |
| | 148.41 MCS | FM | 144 - 148 | |

CW RECEIVING TIME

| TIME | TRANSMITTING STATION | FREQUENCIES (KCS) |
|---|---|---|
| 15 May 1965 160300 GMT (2200 EST) | WAR, NSS, AIR Army, Navy, Air Force Radio Stations, Wash, D.C. | 3269, 3347, 3397.5 4015, 6970, 6992.5 7301, 13995, 14440 14405, 7315 |
| | A6USA (Army Radio San Francisco, Calif.) | 6997.5 |
| 160300 GMT 1900 PST | NPG (Navy Radio San Francisco) | 3357, 6835 7301.5 |

RTTY RECEIVING TIME

| TIME | TRANSMITTING STATION | FREQUENCIES (KCS) |
|---|---|---|
| 15 May 1965 160335 GMT (2235 EST) | WAR, NSS, AIR Army, Navy, Air Force Radio Stations, Wash, D.C. | 3347, 3365, 4012.5 4560, 6992.5, 7315, 7380, 14405 14480 |
| | A5USA (Army Radio Fort Sam Houston, Texas) | 4025 |
| 160335 GMT 2135 CST | NPG (Navy Radio San Francisco, Calif.) | 4001.5, 7375 13547 |
| 160335 GMT 1935 PST | AG6EA (McClellan AFB California) | 4580, 7332 |
| 160335 GMT 2135 CST | AG3HQ (Scott AFB Illinois) | 4590, 7540 |
| 160335 GMT 1935 PST | A6USA (Army Radio San Francisco, California) | 6997.5 |

SUBMISSION OF COMPETITION ENTRIES

Transcriptions should be submitted "as received." No attempt should be made to correct possible transmission errors.

Time, frequency and call sign of the station copied as well as the name, call sign (if any) and address of the individual submitting the entry must be indicated on the page containing the text. Each year a large number of perfect copies are received with insufficient information thereby preclud-

ing the issuance of a certificate. The name and/or call sign of the individual are mandatory if the certificate is to be awarded.

Competition entries should be submitted to the Armed Forces Day Contest, Room 5B960, the Pentagon, Washington, D. C. 20350 and postmarked not later than 31 May 1965.

EDITOR'S NOTE: RTTY'ers should make a special effort this year. We almost topped the CW group last year, in copy and contacts, and with a good try this year, we may be able to accomplish this worthwhile goal.

THE I-193-C POLAR RESEARCH TEST SET AND DOT GENERATOR

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A piece of military surplus teletypewriter test equipment the I-193-C polar relay test set and dot generator, is currently being offered for sale at \$24.95 brand new, by Telemethods International, 3075 East 123 Street, Cleveland, Ohio 44120.

This instrument may be one of the most potentially useful pieces of test equipment for the money ever offered to amateur teletype enthusiasts. For this reason, we shall undertake a discussion of what this unit is, how it works, and what it can do for the average amateur.

POLAR RELAY TESTING

Polar relays are probably the best and definitely the cheapest means of circuit isolation available to the average amateur. The major difficulty with a polar relay is that it is a precision instrument and must be treated as such. If not properly adjusted, it is all but worthless. The adjustment of a polar relay requires that it meet two specific requirements; 1) Bias, and 2) Sensitivity.

1) BIAS. The term bias when used in connection with RTTY means the favoring of the system or relay to increase the time spent marking and to decrease the time spent in the spacing condition, or vice-versa. A properly adjusted polar relay must have zero bias; i.e., if the windings of the polar relay are supplied with a signal consisting of alternate marks and spaces of 22.5 milliseconds duration each, the contacts must give an output consisting of marks and spaces that are 22.5 milliseconds each. This is referred to a zero bias condition. If the contacts provide 24 milliseconds of mark and 21 milliseconds of space, then the relay is said to have a 1.5 millisecond marking bias, or a $(1.5/22.5) \times 100$ or 6.6% marking bias. (Not normally tolerable.)

The bias of a polar relay can be tested by applying a zero bias signal to the windings (a sine-wave is suitable) and measuring the relative mark-to-space time of the contacts. Figure 1 shows the way this is done in the I-193-C.

The 20 c/s voltage is generated within the test set by a special oscillator circuit to be described later. (Some people use a 60 c/s voltage from a filament transformer, but 20 c/s is preferred because 20 c/s is very near to the "frequency" of a 60-Speed RTTY signal and thus tests the relay under dynamic conditions that are nearly identical to those under which it will actually be used.) The

metering circuit consists of a 1-0-1 mA zero-center meter in a balanced configuration. When the relay marking contact is closed the meter reads full-scale in one direction, when the spacing contact is closed the meter reads full-scale in the other direction. If the relay has zero bias, the meter is trying to move first one way and then the other and therefore will "hover" at zero. If the relay has bias, the meter will hover at some position other than zero. If the meter scale is marked 100-0-100, as it is in the I-193-C, it will then read the percent bias directly.

2) SENSITIVITY. Proper sensitivity adjustment requires the use of three accurately measured currents. These are: 1) A soaking current that must be applied before the sensitivity test is made. The soaking current sets the magnetic conditions of the relay; it is usually several times as large as the operating current. 2) An operating current which is the minimum current at which the relay is supposed to operate. 3) A non-operate current which is the maximum current that can be applied and cause no operation of the relay.

The method of making a sensitivity test is as follows: A soaking current is applied in the marking direction; the relay must close the mark contact. The soaking current is removed, and the operating current is applied in the opposite direction; the relay must operate and close the spacing contact. The soaking current is again applied in the marking direction; the relay must operate to mark. The non-operate current is applied in the spacing direction; the relay must remain on mark. If these requirements are met, the entire process is repeated but in the opposite direction. With the proper arrangement of keys (switches) in the testing circuit, it is a simple and fast process. In the I-193-C the currents used for testing the 255-A Relay are: Soak-5mA, Operate-0.7mA, non-operate-0.4mA. It is obviously a convenience if relay contact position can be determined by an indicator of some sort. The I-193-C uses the same metering circuit as shown in Figure 1 for contact-closure indication during the sensitivity test.

DOTS AND SYSTEM ALIGNMENT

Dots are continuous reversals or a continuous train of equal marks and spaces. Their use for system testing and alignment is far superior to sending a repeated character from a keyboard, as is commonly employed. This

use will be described later. Figure 2 shows a simplified form of the circuit used for generating dots in the I-193-C.

The circuit works on the basis of shock exciting a series-resonant circuit composed of L and C. The LC combination is tuned to resonate at approximately 20 c/s. When power is first applied, S1 has its upper contact closed and the LC circuit is shock excited into oscillation. When the LC circuit comes to the end of its first swing, the current in the winding of S1 reverses and the lower contact of S1 closes encouraging the LC circuit to continue oscillating. This process repeats itself so long as power is applied. One remarkable feature of this circuit is that the adjustment of S1 is not critical. Since S2 has one winding in series with LC tank circuit, it also operates from one contact to the other giving an output of continuous, equal marks and spaces or dots. The potentiometer in series with the other winding of S2 is used to control a DC biasing current in S2 in order to give a perfect no-bias output from S2. Included in the test set, but not shown here, is a metering circuit to meter the output of S2 to insure that there is no bias in the output.

Methods for alignment of an RTTY system will now be described with the aid of Figure 3.

There are several alternate methods of system alignment as indicated in Figure 3. The first and probably the most common method, but not the best or the simplest, is to send a repeated character from the keyboard thru the keyer into the transmitter; the transmitted signal is then monitored on an oscilloscope connected to the output of a receiving terminal unit. The basic objection to this method is that the entire character must be viewed on a slow-scan oscilloscope and this will, on the ordinary 'scope, make the individual elements of the character so small that very little can be determined. (The inherent difficulty with this method is that the "stop" pulse is of a different length from the rest of the units.)

A far better method involves the use of a dot generator such as the one described earlier instead of a keyboard character. Since the marks and spaces from a dot generator are all of the same length, it is only necessary to view one mark and one space on the 'scope. This means that the size of the viewed elements can be roughly four times larger and therefore the accuracy of determination of bias is four times better. One even greater advantage is that a meter can be used instead of an oscilloscope. Several methods for using a meter are shown in Figure 4.

The arrangement shown in Figure 4 (a) is to be used when the terminal unit has an electronic output circuit. The voltmeter shown is an ordinary VOM or VTVM. It is set to a convenient range and R is adjusted to give full-scale deflection when a steady

marking signal is being received. A steady spacing signal is then sent and the meter should read zero. The dot generator is then connected to the keyer and the transmitter turned on. The VOM pointer should vibrate at mid-scale if there is no bias in the system. If spacing bias is present, the meter will read less than mid-scale; and if marking bias is present, the meter will read greater than mid-scale.

The arrangement shown in Figure 4 (b) is used if the TU has a relay in the output circuit. The meter is an ohmmeter. It is "zeroed" by adjusting to show infinite ohms when the relay is open, and to show 0 ohms when the relay is closed. When a signal is received the ohmmeter will read at mid-scale if there is no bias, and to one side of mid-scale if there is bias.

Figure 4 (c) shows an alternate to the method of Figure 4 (b). It is superior to the previous methods in that it uses the meter in the I-193-C. This has the advantage of the calibration of the meter in the I-193-C to give the percent bias directly; also, no other instruments are required.

The I-193-C cannot be used in this last arrangement unless it is slightly modified. The modification consists of making a few wiring changes to enable the metering circuit contained in the unit to be accessed from the outside. No parts have to be added or removed and the normal functions of the set are in no way affected.

The modification is as follows (please refer to Figure 5 which shows a partial schematic diagram and a wiring diagram):

The set as originally built allowed the use of a single or double plug for sending dots. In most cases only a single plug is used, therefore, the wiring to J3 can be removed. This is done by cutting the jumper between J2 and J3 and moving the orange lead from J3 to the sleeve of J2. J3 can now be used for dots input from the circuit being tested. Next, ground the sleeve of J3, run a lead from the tip of J3 to K5, and add a jumper on K5 as shown in dotted lines in Figure 5. Because the test set is so well shielded, it is recommended that this shielding be preserved as much as possible. This can be done by making the jumper from J3 to K5 the center conductor of a shielded cable; the shield is to be grounded at the point where the shielded lead goes thru the compartment wall. The meter in the test will now read the bias of a signal connected to J3 when K5 is in the "SEND DOTS" position.

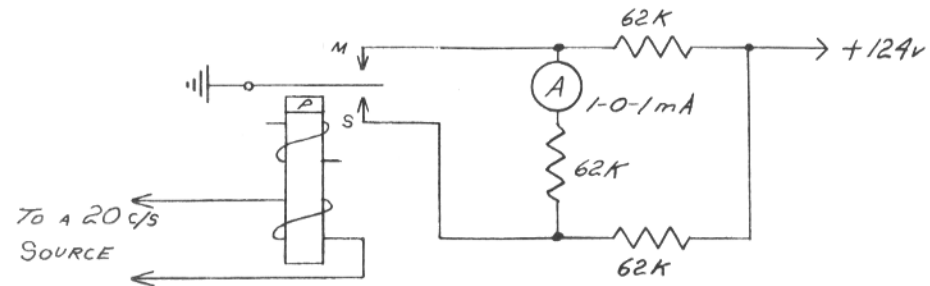


Fig. 1—A means of bias testing of a polar relay.

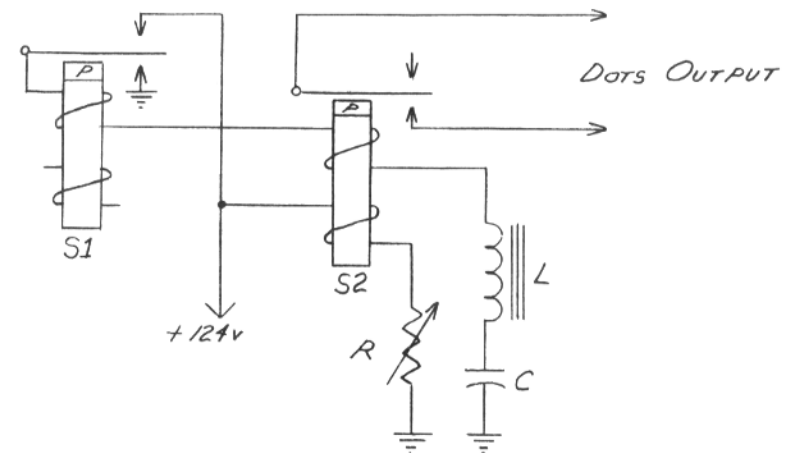


Fig. 2—The I-193-C Dot producing circuit.

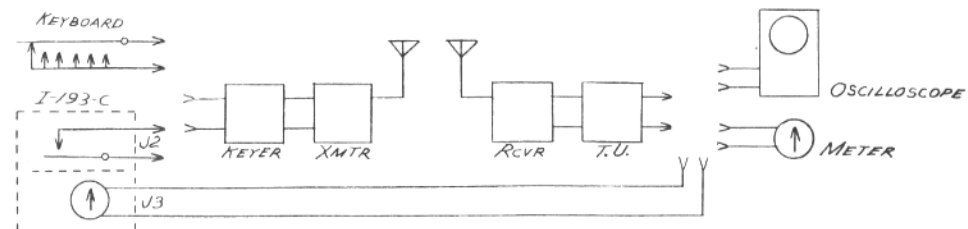


Fig. 3—Possible methods for alignment of an RTTY system.

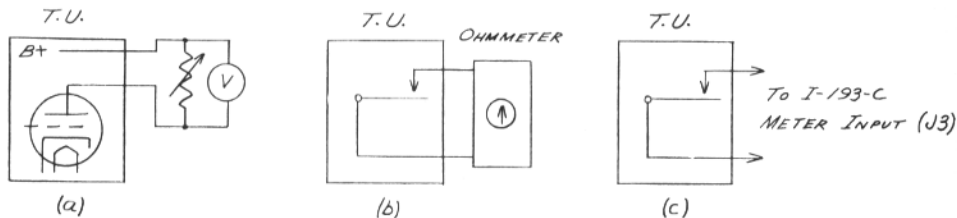


Fig. 4—Three possible methods for metering the TU output to determine bias.

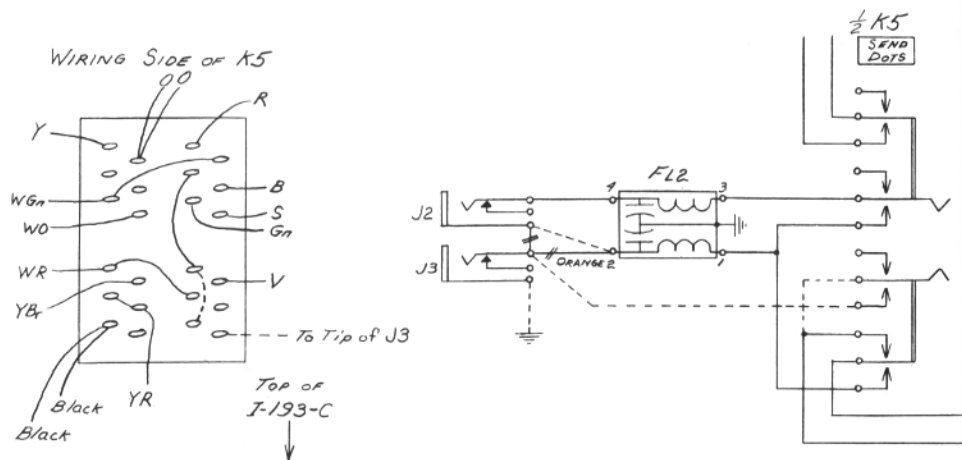


Fig. 5—Partial wiring and schematic diagrams of the I-193-C Test Set showing wiring changes to use internal meter for reading bias on an external circuit.

THE MAINLINE TT/L FSK DEMODULATOR

(Some Follow-up Notes)

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and

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The original schematic for the TT/L demodulator appeared in the November 1964 *RTTY Bulletin*. An article containing greater technical detail on receiving techniques which led to the development of the TT/L appeared in the December issue, together with some minor corrections of typographical errors in the original circuit.

We were pleased to learn that a high percentage of the readers are constructing or have constructed this unit.

The authors have been busy making further checks and tests. With consideration of these findings and some excellent data collected by others now using the TT/L, certain minor improvements have been incorporated. These improvements are:

1. R-12 is now a 30k 2W 5%
2. R-22 is now a 3.9k
3. R-32 is now a 4.7 meg
4. R-35 is now a 560k
5. C-21 is now a 0.01mfd
6. C-37 has been added (a 0.0068 mfd)
7. C-40 has been added (a 0.5 mfd)
8. R-66 has been removed
9. R-48 is now a 270k
10. A new input section for the FM unit has been designed which will be presented in a separate article soon to be released.
11. The secondary leads of T-6 are now reversed.

EXPLANATION FOLLOWS:

1. On some units, R-11 was nearly out of range. This change places R-11 more in the middle of its adjustment.
2. This assures a slight positive bias on the slicer tube, resulting in better triggering and greater sensitivity.
3. Changing R-32 gives a more positive snap-action to the auto-receive circuit.
4. Changing R-35 gives greater range to the auto-receive sensitivity pot.
5. This was an error on the original circuit. It is now corrected.
6. This is in parallel with C-28 and gives improved noise balance. There will be more on this later in the article.
7. This is a 0.5 mfd capacitor which has been added to the +150 volt regulated line in the vicinity of V-10. It filters out a small audio spike from the first limiter.
8. Part of the improvement connected with the addition of C-37 on change 6.

9. Gives a little more range to the indicator eye pot.

10. Transformer A-4778 was difficult for some to obtain, even though it is a Stancor item. Also, this gives increased limiting for weak-signal reception.

11. The secondary connections of T-6 should be reversed for proper phasing to eliminate any possibility of oscillation caused by closeness of the leads in the limiter by-pass switch. This means that the green lead is now grounded and the black lead goes to the top of R-58.

The original limiter, designed prior to the arrival of the bandpass filter from the designer, would limit down to about -58 db. input. When the input filter was added, it was necessary to incorporate some divider networks to adapt up and down to 500 ohms in and out. This caused about a 27 db. insertion loss.

If the receiver is operated at a loud audio level, there will be more than adequate limiting available; or if the bandpass filter is not used, there is more limiting than needed.

However, in view of the facts that some had trouble locating the A-4778, and the insertion loss of the b.p.f. was high, a new input section has been designed using a 6AB4 and another easy-to-find A-53 transformer. The b.p.f. now can be used in such a manner that there is only a fraction of the original loss, and the 6AB4 circuit has adequate gain to more than compensate.

In fact, the new circuit, even with the bandpass filter, will limit down to about -65 db. input — our test equipment began to fail at this point. This means that even with the audio knob clear off on the typical receiver, one will still get full limiting. Thus it is not necessary (although still desirable) to run the receiver at high audio levels. This new circuit has so much limiting that one can easily operate this input section directly off a telephone line, etc. where the maximum level seldom exceeds 0 db. level.

The use of the bandpass filter is highly recommended for, among others, a reason seldom given much thought. All receivers have some hum level. A Collins 75S-1 was measured at -35 db. level. A bandpass filter will not allow this hum level to reach the demodulator limiting system in

the event the audio should fade into the receiver's output hum level.

When this hum level is eliminated, one finds that the signal is still there, although quite weak. Satisfactory reception can then continue. An experiment was made with the xtal calibrator on a new Drake R-4 receiver — the original S-meter reading was about 10/S-9. The audio was turned down completely, and still full limiting was realized. Then the pre-selector was detuned until the S-meter read only perceptibly above 0, with the audio output knob still turned off. The limiting then, and not until then, started to go out of saturation. This exhibited the fact that most any normal method by which the receiver might be used will give good results **PARTICULARLY IF THE BANDPASS INPUT FILTER IS USED ALSO.**

Just having a 1.2 or a 1.5 Kc. filter in the I.F. of the receiver is not "enough" for optimum reception when using a limiter section. Also, with limiting of this magnitude, one can dispense with the a.v.c. from the receiver and often get definite improvement; particularly under conditions of static, etc.

The use of toroids versus the TV width coils frequently pops up. Apparently not many observed the graph in the December issue which shows that on a single-tuned toroid that a fairly low "Q" should be retained. A normal unloaded toroid when used in a typical amateur set-up has a "Q" of approximately 200, and just is not satisfactory. The impedance is extremely high for filters — approximately 300,000 ohms. The use of the TV width coils gives an outstanding linear discriminator which is optimum for the particular use in this demodulator where a wide range of shifts is desired.

However, for those who still prefer 88 mh toroids, we have worked up several new filter sections and will present them as we have time to make final measurements and verify our data. A discriminator for narrow shifts also is nearly complete and will be presented later.

The data on the TV coils used in the TT/L is as follows:

| | | |
|-------------------------|------------|--------------------------|
| | 2125 | 2975 |
| INDUCTANCE: | 37.4 mh. | 26.7 mh. |
| CAPACITOR: | 0.15 mylar | 0.107 |
| | | (use a 0.1 and a 0.0069) |
| REACTANCE: | 499.3 ohms | 499.3 ohms |
| IMPEDANCE: | 5,304 ohms | 5,304 ohms |
| "Q": | 10.6 | 10.6 |
| COIL RESISTANCE (d.c.): | 47 ohms | 47 ohms |

Similar data has been worked out for the new 1275/2125 discriminator shown as well and can be obtained by writing one of the authors with a SASE.

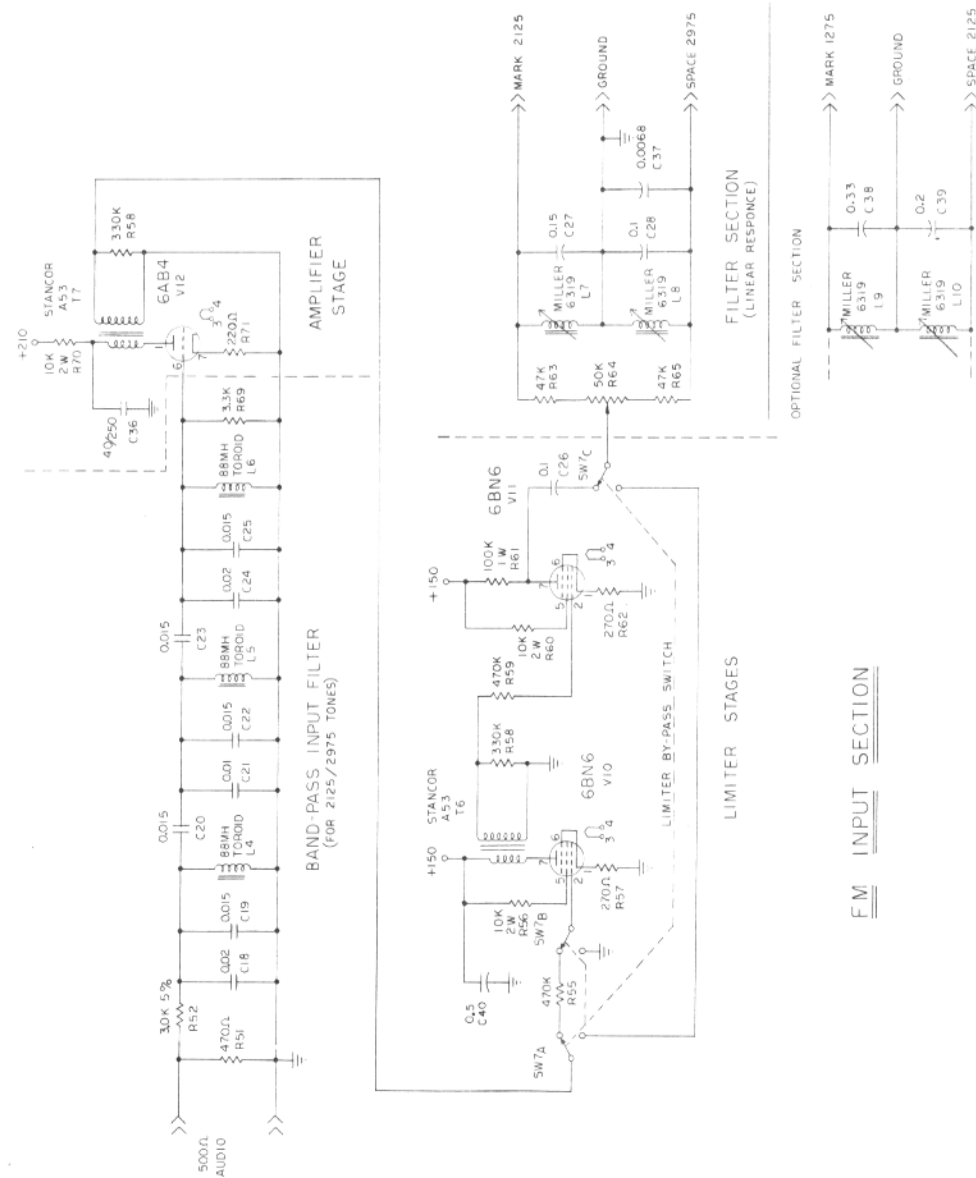
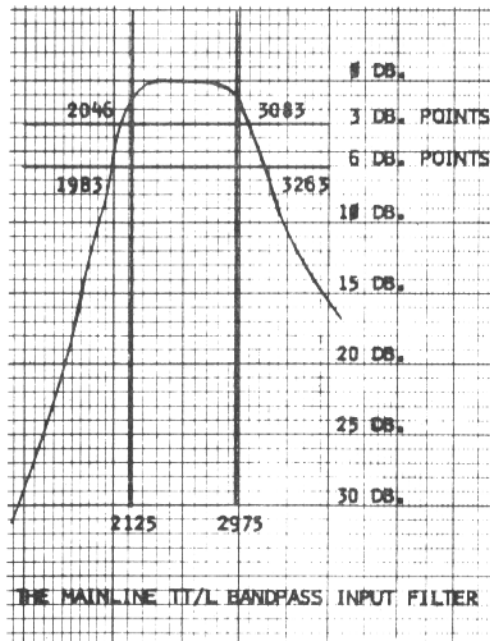
Many of the persons constructing the TT/L have expressed interest in obtaining filters for an AM limiterless section, as

shown on page 10 of the November, 1964, issue. Electrocom Industries of South Bend, Indiana (contact Burt Jaffe, K9BRL) has available a variety of filters which would be quite well suited to this purpose. These filters range from \$30 to \$60 each, depending on the bandwidth and frequency. Filters best suited to the circuit shown would cost \$45 each.

If an additional set of commercial filters was used, it would be an excellent idea to fix the limiter so that it could precede either the commercial filters or the TV coils as shown. The limiter could then be removed and two selectivities of limiterless could be realized. So many variations are possible, it is very difficult to advise anyone as to which course to take.

It does seem that the optimum performance during severe interference comes from very narrow filters used with no a.v.c. on the receiver and with no limiter on the TT/L. This seems to produce the best S/N ratio under adverse circumstances. Of course the broad-band FM section with limiting is so much easier to use on normal conditions. Narrow filters under these conditions offer little improvement and are an inconvenience because of the critical tuning required.

All reports received to date by the authors indicate that in every case those using the TT/L claim results far superior to other units used previously. It is comments of this sort that make the project seem worth the time we have put into it; so our thanks to everyone for the compliments.



NEWS

G
FCC 65-139
63441
Before the
FEDERAL COMMUNICATIONS
COMMISSION

Washington, D. C. 20554
In the Matter of
Amendment of Parts 0, 1 and 97
of the Commission's rules
to implement the provisions of
Public Law 88-313.

ORDER

By the Commission:
At a session of the Federal Communica-
tions Commission held at its offices in
Washington, D. C. on the 24th day of
February, 1965.

The Commission having under considera-
tion Public Law 88-313, approved May 28,
1964, which amended Sections 303(1) and
310(a) of the Communications Act of 1934,
as amended, to provide for the issuance of
an authorization, under such conditions and
terms as the Commission may prescribe, to
permit an alien licensed by his government
as an amateur radio operator to operate his
amateur radio station licensed by his govern-
ment in the United States, its possessions,
and the Commonwealth of Puerto Rico
provided there is in effect a bilateral agree-
ment between the United States and the
alien's government for such operation by
United States amateurs on a reciprocal basis;
and

IT APPEARING, That rules implementing
Public Law 88-313 should be adopted; and
IT FURTHER APPEARING, That auth-
ority for the issuance of the rules herein
adopted is contained in Section 4(i), 303,
and 310(a) of the Communications Act
of 1934, amended; and

IT FURTHER APPEARING, That the
rules adopted herein are pursuant to Public
Law 88-313, involve interpretative rules and
rules of agency practices and procedures, and
that the public notice and effective date pro-
visions of Section 4 of the Administrative
Procedure Act are not applicable;

IT IS ORDERED, effective March 29,
1965, That Parts 0, 1, and 97 of the
Commission's rules are amended as set forth
in the attached Appendix, and FCC Form
610-A is adopted.

FEDERAL COMMUNICATIONS
COMMISSION

Ben F. Waple
Secretary

Attachment: Appendix
Released: February 25, 1965
NOTE: Rules changes herein will be covered
T.S. I(63)-6 and T.S. VI(64)-4.

U.S.S. Josephus Daniels DLG-27
SupShips
Bath, Maine
19 February 1965
Dear OM's and YL's:

U.S.S. Josephus Daniels DLG-27 is, I
believe, about to make some kind of histo-
ry. To illustrate, let me quote the letter
from the office of CMO to our Captain.

Dear Captain:
Since your letter requesting amateur oper-
ation said the radio operations would begin
on commissioning day, we are enclosing en-
velopes addressed to members of the Ama-
teur Radio Association (AREA) so you may
contact them.

"Hams" like to contact ships and a "OSL"
from one on its commissioning day will be
a unique event.

73
s/M. C. Magee
OP-945N

In keeping with the spirit of this, the
Daniels's amateur station will be put into
operation as of commissioning and will come
up on 3980 kc at approximately 2000Z, 8
May 1965. Field day type contacts would
be more than welcome and beautiful QSL
cards will be sent to each and every contact.

Hope to meet you on the dial for a
unique and memorable event.

73
Eugene F. Leafy RMC (Gene)
WB6HWZ/MM

See that another year has gone by !!!!
So enclosed you will find a check for another
year of "RTTY" . . . Things have been kinda
hectic for me this year . . . So my on the
air activity has been mostly that of the
usual three nets a week!

What little spare time I have has been
taken up with talks and demonstrations at
clubs and conventions . . . have done little
new building . . . But still helping tune up
a flock of printed circuit T. U. for the
local boys. Gosh there is much to talk about
but I just can't get it off in print . . . See
that W4AIS thinks he has the "First" RTTY
card . . . (Sept. 64 RTTY) but seem to
remember that back in about 1955 I put
the smoke signal Indian on my RTTY card
that I have been using ever since for only
RTTY . . . (was on one of your issues of
RTTY).

Also have enclosed a few "Zerex" sheets
of early attempts at RTTY !!! Since I have
been saving old radio gear and mags etc.,
I ran across this in an issue of "Popular
Radio" 1924! Sorry that the photos did not
come out clean . . . but read the text,
kinda interesting.

73
Phil, W2JAV



Transmitter, HX-20; P.A., 4-EL 34 In grounded grid; Receiver, Eddystone 888a; Terminal Unit, FSR 1. (AP66862); Input Filter, W4EHU Comb. Filter; Tuning Indicator, Cross Line. Teletype Equipment: Creed 7B Page Printer; Siemens T 68 Tape Printer; Teletype Model 14 TD; Siemens T Loch 1M Key-board Perforator.

To The "RTTY" Staff:

Well, since I took the pictures a month ago I have added a SUPER DE LUXE AUTOMATIC MOTOR-DRIVEN NARROW SHIFT CW-ID TRANSMITTER—in other words, I mounted a flywheel from an old be-set on a 3 rpm 24 volts motor from an old surplus IFF receiver, made up the call by covering parts of the circumference with tape . . . with a sliding contact made from an old relay-tongue; it works a lot better than it looks . . .

As far as the pics goes, it looks a little awkward with the perforator in front of the rx . . . and it is . . . but after all, during the contest it showed that it was more convenient than running to the other end of the room to punch . . .

The RAX receiver has a very important function . . . being the same height as the BC929 scope cabinet, it helps to support the TU.

The contest was lots of fun . . . the qrm on this side of the ocean much heavier than

last year . . . more stations on . . . but way too few from Denmark, considering that 55 amateurs have printers by now.

The U.S. stations were really strong here . . . see the list on the other side of this sheet . . . but not a single VK, ZI or South American station was head here, at least not by me . . .

I am pretty sure that the QRM in the states has been terrific. I heard a lot of stations calling and calling, seemingly not being able to hear anything but the real strong ones . . . and don't count me in there . . . with my antenna situation . . . a wee-beam pointing south 15 feet above the ground and a triband vertical on the ground . . .

I got a greeting from you through your friend from "specific products." It's always nice when people just drop in . . . please say hello from we when you meet . . .

Well, that will be all for this time. Good luck and 73.

From OZ8US

A rectangular box containing a cartoon illustration of a man sitting at a desk with a typewriter. Above him, the call letters 'W2JAV' and the word 'RTTY' are displayed in large, stylized fonts. Below the illustration, the name 'Phillip Catona' is written. At the bottom of the box, the address '400 North Second St., Hammonton, N. J.' is printed. The entire box is framed by a border of small characters, including 'R', 'Y', 'S', 'G', and 'E'.

It appears that I made a big mistake in my article that you published in the February issue — I made the assumption that everyone was familiar with the small signal transformers. Judging from my mail and questions on the air, it seems not quite everyone knew of them. I would appreciate it if you could pass the word along on these gadgets.

These transformers are sold in many surplus stores and they have been advertised every month for at least the past year in QST by Arrow Electronics of Farmingdale, New York. They have found use in SSB exciters and phone patches in the past, and now the ultimate — RTTY !!! \$1.00 to 1.50.

73's
Warren T. Shreve, W3ISE

DX-RTTY

Bud Schultz

5226 N. Willmonte Avenue, Temple City, California 91780

Howdy DX'ers:

It's the same old story this month — a big mail bag full of news and not enough room for all of it so let's just take pot luck and hit the high spots. Congratulations are in order for Sergio, IIAHN, who is the latest qualifier for WAC-RTTY. He sent in cards from LA6J, W8BRL, YV1EM, ZS6BCT, KR6BQ and VK3KF. Ed, K3GIF, writes that TAI AH should be on the air from Ankara some time in March. Perhaps this item will be old-hat by the time this is printed. Ed also reports that ON4DM is a new one from Belgium with a fine strong signal into the States. According to K3GIF the DXpedition of FG7XT which has been reported here previously is now slated for April. Keep your ears open for this one. Another exciting bit of news came in this month from the Italian SSB and RTTY Club announcing the first edition of the "Alexander Volta RTTY DX Contest" to be held May 22 to May 24. The particulars will be found elsewhere in "RTTY" so I will not waste the space to repeat them here. This contest along with the BARTG deal that has just been concluded should keep everyone on his toes and furnish lots of new countries for the DX fiends. Bill Brennan, G3CQE, has another excellent column in the current issue of the Short Wave Magazine replete with photos and news and includes a fine technical discussion on a simple notch filter for AF TU's. For those of you who are looking for a real fine Ham Journal I can recommend The Short Wave Magazine very highly. The fee is six bucks and the QTH is 55 Victoria Street, London, S.W.1. I am in receipt of the latest BARTG bulletin edited by Arthur, G2FUD, and it is a "knock-out." 18 pages crammed with every sort of RTTY news, gossip, Ham-ads and it even contains some "Calls Heard" similar to the feature that used to be so popular in QST. In fact Arthur's news is so interesting I am going to take a few excerpts to let you in on what is going on over in the UK. Here are a few goodies picked at random:

"The Group will shortly offer an RTTY operating award to anyone able to prove two-way RTTY contacts with 25 or more countries. Stickers will be available for each

additional 25 countries, and a special merit award for 100 countries. Bill Brennan G3COE, the first European RTTY-WAC, will be awards manager. Fuller details will follow at a later date, but impatient souls may contact Bill."

"4th ANNUAL WORLD WIDE RTTY SWEEPSTAKES, OCT 1964. Ken GM3ENJ and Andy GM3IQL joined forces as usual and were ready with the CQ tape smartly at 200 on the 17th. They ran up 28 contacts until an irate neighbour finally went mad with the TVI at 1600 on Sunday. 25 were worked on twenty, three on forty and only one (deaf!) DL heard on eighty. Two items quoted out of Ken's hilarious report on the contest: "one VE, after we had called him 10 times, came out with this: 'Whoever the hell you are there is lots of d---ed QRM, will you please try again thanks BK.'" "Another pathetic gentleman was noted to remark: 'I AM NOT VY GOOD IN THIS SISTEM AND MY TZLEWRITOR IS NOTBOK.'"

"GW3TSM has a good chance of becoming the first regular GW on RTTY (and would find himself very much sought after in the Spring RTTY Contest!)

And so it goes with the BARTG newsletter if anyone is interested in receiving it the information as to cost can be obtained by writing to Arthur, G2FUD or Doc Gee, G2UK.

There has been some delay in getting out the awards to the ten top winners in the Fourth Annual World-Wide DX Contest but that is now in the works so please be patient. It was a big job and got out of hand but I solemnly promise to do better on the next one. At this time I am still in a state of shock from the last one but don't read me wrong — I'm not complaining — it just hurts when I laugh. I'm still waiting for you DX hounds to send in your news and some photos of yourself and your gear. Don't be so modest — stand up and be counted!! — and that's about it for now, Gang, thanks for putting up with me again this month. I'll see you all at the same old place next issue (if the boss doesn't fire me when he reads this mess!)

73, Bud, W6CG

HORSE
TRADES

- WANTED: All back issues of RTTY, before 1963, in good condition. Please write Al Marcy, W4ID, 461-3rd Avenue, Sea Park, Eau Gallie, Florida 32937.
- WANTED: Cover and sync motor gear and pinion for model 12. W5IFH, 1802 Edgehill, Pasadena, Texas 77502.
- WANTED: Model 28 gear, KSR, LXD, LPR, etc. Also parts for Teletype Corp. and Kleinschmidt machines, K2HJC, P. O. Box 96, Morrisonville, N. Y. 12962.
- FOR SALE: Model 19s and 15s also misc RTTY equipments. WA9HDC, RR 1, Tinley Park, Illinois 60477.
- FOR SALE: TM-11-352, complete Description, Adjustments, Parts on TG-7 and TG-37 (model 15 page printer). New, \$4.25 pp in USA. W4NZY, 119 North Birchwood Avenue, Louisville, Kentucky. 40206.
- WANTED: Tuning Fork (with shutter) for TT-4/A (180 vbs) K5RTI, 1301 Clearfield Drive, Austin, Texas. 78758.
- FOR SALE: Toroids, uncased. Joseph Visalli, WN6LFU, 20580 Sunnyside Avenue, Sunnyvale, California.
- FOR SALE: Model 28 KSR, excellent shape, \$150.00. Model 15 very clean, \$75.00. Both machines in operation. W9ECC, 851 Crestview Drive, West Bend, Wisc.
- WANTED: 180 VPS fork for Kleinschmidt, also source of parts. Also want Model 28 floor type cabinet, TM for Model One Type 152 Northern Radio Dual Tone converter. All letters answered promptly or call collect 915-755-4376 after 1800 MST, K5OLU, 5128 Paris Avenue, El Paso, Texas. 79924.
- TRADE: Brand New 14TD in box for Measurements Model 80 Signal Generator in good condition. K9CNG, 839 North 6th Street, Vandalia, Illinois.
- FOR SALE: Unused surplus BE-77 Line Units with manual. Just the thing for testing TG-7 and Model 15. Has schematic Operating info on metal plates on sides. Contains polar relay and Meter IS 80 for 115-0-115 V DC also scale 100-0-100 MA for mark and space bias. \$7.50 each plus postage for four pounds please. W4BNI, 2903 Bay View Avenue, Tampa, Florida. 33611.
- FOR SALE: Model 14 TD, model 14 keyboard perf (iron horse) BPRE-1 reperfector, double tape reader, 15 typing unit, automatic tape winder etc. Will trade for National SW3 receiver, coils, and power supply. W6LSC, 12700 Elliott Avenue, Space 287, El Monte, Calif. 91731 Phone 213-442-0015.

- FOR SALE: One Kleinschmidt Model 150 Teletypewriter, has keyboard, standard. Has built in 20/60 mil battery loop supply. Sync motor. Onepiece type bars. Single ply or fanfold paper. Instruction and maintenance manuals included. \$200.00. Excellent condition. One model 120 Kleinschmidt Teletypewriter reperfector transmitter. Has keyboard and TD attached. Has built in 20/60 mil Neutral battery loop supply. Sync motor. Standard keyboard. Instruction and maintenance manuals included. Excellent condition. \$200.00. K6RZL, 3770 Oakdale, Pasadena, California.
- FOR SALE: KTTY TOROIDAL CHANNEL FILTERS, octal mount, specify frequency. \$3.00 each. WA6JGI, 3232 Selby Avenue, Los Angeles, California. 90034.
- WANTED: RTTY's from June 1963 through November 1964. Bill Gates, P. O. Box 374, Durham, California. 95938.
- TRADE: Model 15 sync motor for model 26 sync motor. WA2YJD, 35 Amherst Road, Great Neck, L. I., N. Y.
- FOR SALE: Gears and Pinions for 14s, 15s, 28s and others. \$3.00 a matched set. 60 or 75 speed. Green keytops, by set or each, cheap. Misc TTY parts, W9YVP, 11001 South Pulaski, Chicago, Illinois. 60655.
- WANTED: Your name, call and zip code when writing to RTTY. Thanks 0111-0011.
- FOR SALE: TELETYPE SYNCHRONUS Motors for 14 and 15 teletypewriters also for trans-dist. with fans, base and plate. General Electric. Used excellent \$10.00. Atlantic Sales, 250 Columbia, Brooklyn 31, N.Y.
- FOR SALE: Sets of four 8x10 photographs of prototype Mainline TTY-L Converter clearly showing optimum layout of components. \$3.50 postpaid. W8SDZ, Toledo, Ohio.

NOTE: When writing to RTTY, please give your call and zip number. Subscription renewals should be made to expire with the December 1965 issue. Price per single issue is 30 cents.

NOTICE—RENEWALS AND SUBSCRIPTIONS
ACCEPTED THROUGH
DECEMBER 1965 ONLY

Subscription Rate \$3.00 Per Year
Via Air Mail or Overseas \$4.00 Per Year

RTTY is the Official Publication
of the
RTTY Society
of Southern California
W6EV

and is published for the benefit of all
RTTY Amateur and Experimenters

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