



## B.A.R.T.G. SPRING RTTY CONTEST

1. WHEN.  
02.00 G.M.T. 20th March, 1965, to  
02.00 G.M.T. 22nd March, 1965.
2. BANDS.  
3.5; 7.0; 14.0; 21.0 and 28.0 m/cs.  
Amateur Bands.
3. STATIONS.  
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.
4. COUNTRY STATUS.  
A.R.R.L. Country list—except that  
KL7; KH6 and VO to be considered as  
separate Countries.
5. MESSAGES.  
Messages exchanged will consist of:—  
(A) Message number.  
(B) Report (R.S.T.)  
(C) Time in G.M.T.  
(D) Country.
6. POINTS.  
(A) All two-way RTTY contacts with  
stations in one's own Country, will  
earn two points.  
(B) All two-way RTTY contacts with  
stations outside one's own Country,  
will earn ten points.  
(C) All stations will receive a bonus of  
200 points per Country, including  
their own.
7. SCORING.  
(A) Two-way exchange points, times total  
Countries worked.  
(B) Total Country points, times number  
of Continents worked.  
(C) Add item (A) and (B) together.  
This is your total test score.

i.e. SAMPLE SCORE.

- (A) Exchange points (302)  
times Countries (10) = 3,020
  - (B) Country points (2,000)  
times Continents (3) = 6,000
  - (c) Add item (A) and  
(B) above = 9,020  
(total test score)
8. LOGS AND SCORE SHEETS.  
Logs and Score Sheets should be received  
by:—  
B.A.R.T.G. Contest Manager,  
Alan Walmsley, G2HIO,  
The Woodlands,  
Bath Lane,  
Moir, a  
Nr. Bruton-on-Trent,  
Staffordshire,  
ENGLAND.  
Not later than 1st May, 1965, to qualify.  
Thanks are due to RTTY, Inc., and VK3KF,  
for their help in the formation of the rules.  
The Committee of the B.A.R.T.G. are hopeful  
that the inception of a Spring DX contest  
will further the cause of RTTY and would be  
grateful if you would help in this matter by  
giving maximum publicity to the date of the  
event and to the publication of the rules.

73's

Alan Walmsley G2HIO

EDITOR'S NOTE: RTTY, INC., is dropping its  
plans for the Anniversary RTTY SS, which  
was to be held February 20 and 21, in order  
that a better turn out will be had for the first  
B.A.R.T.G. RTTY SS Contest. Our best wishes  
to them, and W6EV will be in there trying to  
run up a good score.



I1ROL CASCINA, ITALY

## A SUMMARY OF THE FOURTH ANNUAL RTTY SWEEPSTAKES

Now that all the smoke has cleared away  
and the Holidays are behind us let's take a  
breather and indulge in a peek at what hap-  
pened on that memorable week-end last fall  
when the RTTY gang went into orbit. For  
the first time in the past four years, propaga-  
tion conditions were excellent for our annual  
mayhem festival and many of the scores were  
astronomic!! Bruno, I1RIF, turned the hat  
trick and came up as the grand winner for  
the third time in a row. In accomplishing his  
tremendous score I1RIF used all five bands  
allowed by the contest rules. Participation by  
overseas DX'ers, especially those in Europe,  
was by far the highest ever recorded in an  
RTTY contest. A peculiar exception to the  
good propagation conditions existed between  
North America and the "down under" coun-  
tries. Contacts between North America and  
the VK-ZL group were almost nil. However,  
the logs indicated that conditions to Europe,  
North Africa and South America were excel-  
lent almost around the clock. This is prac-  
tically a 180 degree reversal of conditions  
during previous contests.

The QRM situation, as expected, was hor-  
rible but this evidently didn't prove too much  
of a handicap because most of the gang who  
wrote comments on their logs claimed they  
had a great time and are tooling up for  
this next one. RTTY'ers are indeed a hardy  
breed!! For the first time since the start of  
this annual clambake there seemed very little  
confusion as to the scoring system and the  
committee had very little correcting to make  
on the individual logs. A number of the logs  
were beautifully done and certainly repre-

### TOP TEN WINNERS

I1RIF .....	58,840
DL1VR .....	50,950
I1AHN .....	40,690
K8DKC .....	38,444
W2RUI .....	34,140
W4EGY .....	29,876
K8MYF .....	28,734
W7VKO .....	28,656
KP4AXM .....	24,854
K8KDW .....	24,916

sented a lot of hard work by the senders in  
addition to the time they spent in actually  
operating the contest. Again I regret to say  
that less than half of the participants failed  
to send in their scores but a tip of the old  
sombbrero to all of you who did. There were  
only three "gripes" received regarding the  
bonus system of scoring and one of these was  
tempered by the remark that "if you don't  
like the rules, don't play the game." While  
on the subject of bonus scoring it might be  
of interest to note that if I1RIF had scored  
his results by the bonus system allowed for  
North America his total would have been  
38,168 points. This is an amazing feat and  
Bruno is to be congratulated for a job well  
done!

Certificates will be awarded to the top  
ten winners by RTTY, Inc., and a million  
thanks to all of you who helped to make the  
Fourth Annual RTTY Sweepstakes a job well  
done!  
Bud Schultz, W6CC

### FOURTH ANNUAL RTTY SWEEPSTAKES CONTEST

"I was all thumbs but had a lot of fun"—  
W1GKJ.  
"Loads of DX and had a ball—keep it the  
way it is"—W8KDW.  
"Conditions this year were the best yet"—  
GM3ENJ/GM3IQL.  
"The QRM on 20 was a masterpiece"—  
K8MYF.  
"Here's to bigger and better RTTY con-  
tests"—W3NMP.  
"It was a grand weekend"—G2HIO.  
"Conditions were quite strange—I only  
worked one statesider"—ZL1WB.  
"Heard lots from Europe on 20 but couldn't  
seem to get across the pond"—VE4BJ.  
"Haven't had so much fun on the air for  
a long time!"—K1PLP.  
"Being my first crack at the contest I quite  
enjoyed it"—VK2EG.  
"The international RTTY activity seems  
to have picked up considerably since last  
October"—W4GJY.

"I will try and get a beam for the next  
contact"—PAØFB.  
"Heard lots of DX stations, sorry I couldn't  
reach 'em"—W7PHG.  
"For each and every contact a QSL card  
was filled out and sent to the respective QSL  
bureaus"—KP4AXM.  
"Didn't have a very high score, but sure  
had lots of fun"—W5JUM.  
"This was my first RTTY contest, but it  
won't be my last"—SM6CSC.  
"The QRM on this side of the ocean was  
much heavier than last year"—OZ8US.  
"In spite of a lot of QRM I managed to  
make 50 contacts"—XE1YJ.  
"The bands were all open at the usual  
times to all parts of the world"—I1RIF.  
"It was barely an afternoon tea party in  
this part of the world"—VK3KF.  
"Swell contest—only one I enter"—  
WØDOP.

RESULTS OF THE FOURTH ANNUAL WORLD-WIDE RTTY SWEEPSTAKES  
FINAL TABULATION OF ALL LOGS RECEIVED

W1AOH	16,664	W6LDF	10,698	F2FO	9,000
W1GKJ	13,600	W6EV	6,672	F8KI	4,790
K1PLP	6,510	W6BB	4,112	F3PI	10
W1BCW	2,100	W6LVQ	3,850	G2HIO	4,280
W1ILV	1,406	WA6VVR	3,310	G2FUD	820
W1BZT	896	WB6GOU	1,744	GM3ENJ	5,900
W2RUI	34,140	K6SLR	576	I1RIF	58,840
W2MZV	17,600	W7VKO	28,656	I1AHN	40,690
W9ECV/2	11,712	W7UKC	21,680	I1LCF	4,920
W2FAN	7,400	W7PHG	12,960	KH6ANR	3,016
WB2AHB	2,528	W7BAJ	6,400	KH6AX	2,508
K2AMI	944	W7TDK	4,328	KP4AXM	24,954
W2UJS	290	W7JFU	18	LA6VC	20,450
W3DJZ	17,070	W7ESN	12	LA6J	7,080
W3KDF	15,796	K8DKC	38,444	OZ8US	2,640
K3YAH	14,060	K8MYF	28,734	PAØFB	3,360
W3NMP	10,722	W8KDW	24,916	SM6CSC	9,000
W3ZVP	6,036	W8FWG	13,066	VE3BIJ	9,240
W3ISE	5,680	W8DBW	11,952	VE4BJ	7,100
W4EGY	29,876	W8HYX	3,104	VE3CM	3,382
W4AIS	24,520	K8QLO	896	VE3IR	1,726
W4BOC	21,100	W8OMY	704	VE3WR	1,680
WA4GTA	13,860	W8CAT	420	VE7XY	520
W4CQI	10,704	W9QAH	3,638	VE7AMJ	360
W4GJY	9,910	WA6JEF/9	2,720	VK3KF	1,840
W4TMS	1,650	K9QNV	1,649	VK2EG	360
K5QBU	6,564	WØDOP	4,096	XE1YJ	4,500
W5FCP	5,624	DL1VR	50,950	YV5AVW	15,552
WA5BNH	2,732	DL1VN	19,800	ZL1WB	13,440
W5JUM	688	DJ4BF	13,750		

— NEWS —

When the use of teletypewriter began to interest the Italian Amateurs, our Association (A.R.I.) asked the Post and Telecommunication Administration if it was possible to use the RTTY in Radio Amateur traffic.

To the request of A.R.I., the "M.PP.TT." answered with the following letter:

Rome, Aug. 13, 1963—prot. XI/1/13334/81.2

Concerning the use of teletypewriter in Radio Amateur Traffic:

With refer to your letter no. 00956 of July 7, with which you required the opinion of this Administration about the use of teletypewriter in Radio Amateur Traffic.

After an exam of the question, this Administration intend that the Radio Amateur Stations can be equipped with teletypewriter also, under condition to observe the disposed of Art. no. 5 of the Instructions alleged to the Law January 14, 1954 no. 598 (. . .). Those instructions explain only the usual technical forms about radio transmitting apparatus, power, bands, emissions, etc., but nothing concerning FSK (. . .). This Administration note that the duty to send us a summary of Radio equipment (. . . see art. no. I of the Law Jan. 14, 1954, no. 598 . . .) concern the teletypewriters also when those became part of Radio Amateur Station. Of course, all the amateurs that work with teletypewriter and they who will in future, must inform us about the type of their own teletypewriter.

By order of First General Inspector of Telecommunications. f. to Cademartori."

With this simple letter the Italian Radio Amateurs have had "OK" for RTTY.

Translation submitted by I1ROL.  
Dal Ministero delle Poste e delle Telecomunicazioni riceviamo le seguenti lettere  
Roma, 13 agosto 1964—

Prot. XI/1/13334/81.2  
OGGETTO: uso di telescriventi da parte di radioamatori.

Si fa riferimento alla nota di codesta Associazione nr. 00956 del 7 luglio u.s. con la quale è stato richiesto il parere di questo Ministero circa la possibilità di utilizzare impianti di telescriventi nelle comunicazioni fra radioamatori.

Esaminata la questione, questo Ministero ritiene che le stazioni di radioamatore possano essere costituite e funzionare anche con impianti di telescriventi, a condizione che siano osservate le prescrizioni di cui all'art. 5 delle norme allegate al D.P.R. 14 gennaio 1954, n. 598, delle norme allegate al D.P.R. 14 gennaio 1954, n. 598.

Si fa notare peraltro che l'obbligo di rimettere a questo Ministero la descrizione sommaria delle apparecchiature, sancto all'art. 1 del suddetto D.P.R., si deve ritenere applicabile anche alle telescriventi in quanto facenti parte delle apparecchiature costituenti le stazioni di radioamatore. I concessionari che ne siano già muniti e coloro che adotteranno in futuro gli apparati di cui trattasi sono pertanto tenuti a rendere noto allo scrivente il tipo di telescrivente in loro possesso.

per  
L'ISPETTORE GENERALE SUPERIORE  
DELLE TELECOMUNICAZIONI  
f.to Cademartori

## TWO TONE TERMINAL UNIT

WARREN T. SHREVE, W3ISE

1632 Ludwell Drive  
Maple Glen, Pa.

Here is a schematic, block diagram and description of a transistorized two tone terminal unit that I have been using since last April with good results.

Outside of the normal claims for two tone tu's, its claims to fame are: has separate automatic gain control loops for the mark and space channels, uses readily available components, does not use any polar relays, and provides for completely flexible operation of the page printer, reper, and TD units.

To date three of these units have been built (W3KDF, W3GHM and myself) and judging from the way junk box parts have been used, it appears that the circuits are extremely non-critical.

Referring to either the block diagram or the schematic, here is a rundown on the unit.

First, the audio tones from the receiver are fed to the two tuned amplifiers (one for mark and one for space sigs) each having its own automatic gain control circuit and slide-back detector circuit. The time constants of the slide-back detectors are pretty much as described by Frank K6IBE in the June 1963 issue of RTTY. The time constant of each of the gain control loops was made longer than the 163MS time required per letter so that the gain would follow only the average value of the letters. The amount of feed-back reduces the gain of the amplifier by approximately 50 percent at maximum output. Inclusion of the gain control loop made the unit a lot less critical to input signal level. The outputs of the two slide-back detectors are combined and filtered and fed through an emitter follower to a Schmitt trigger unit, which acts as an 'electronic polar relay' and has a lot of the desirable features of the polar relay but no moving parts.

This Schmitt circuit triggers on signals of about 0.2 volts as measured at the output of the slide-back detector and is symmetrical about the zero axis. In the original unit I had a balance pot in the base of the left hand transistor, but found it was not necessary. The values shown give good symmetry for all the 2N404's I have plugged into this circuit.

The output of the Schmitt unit is then fed to the selector magnet driver circuits. An in-

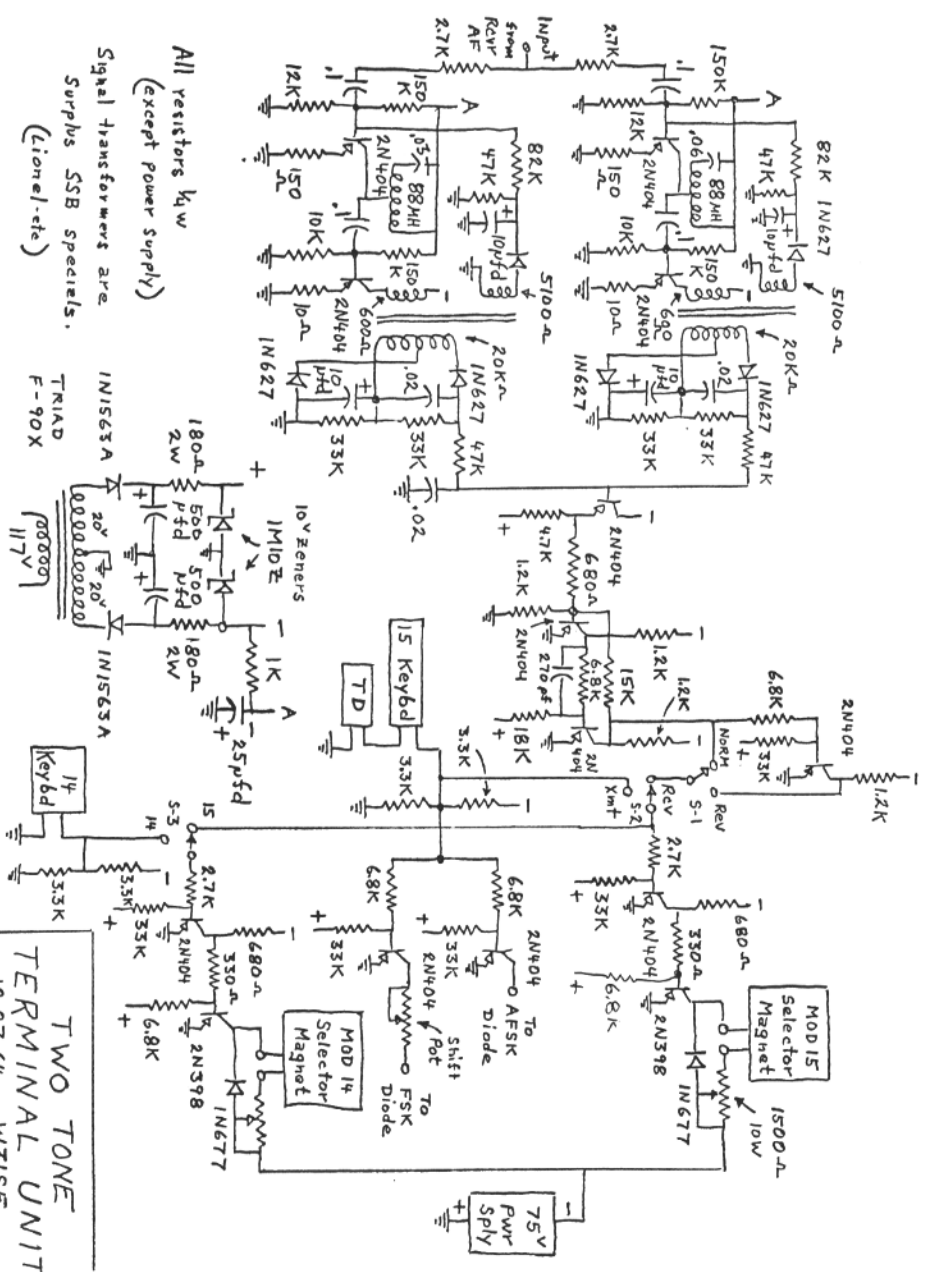
verter stage and switch (S-1) is included in case the other fellow is sending an inverted signal and you don't want to or can't change to the other side of zero beat.

Switch S-2 permits changing the input for the model 15 printer from either the receiver output or its own keyboard. Normally, when receiving, this switch would be in the 'RCV' position and would be changed to 'XMT' when you are transmitting so that you can print your own sending on the 15. The TD contacts are always in series with the 15 keyboard. For my operation I have found this to be the most logical location.

Provision is made for driving a FSK diode for use on the lower bands and also for driving an AFSK oscillator such as is used with the sideband rigs or on the VHF bands. If only one is required, the other circuit of course could be omitted. The third switch (S-3) enables one to operate the 14 reper either from its own keyboard, or for it to be the same as the model 15. Please note that the 15 and 14 selector magnets are not in series, as is quite often done. In this case they are more or less in parallel, and therefore the selector magnet power supply must be capable of supplying the currents for both magnets.

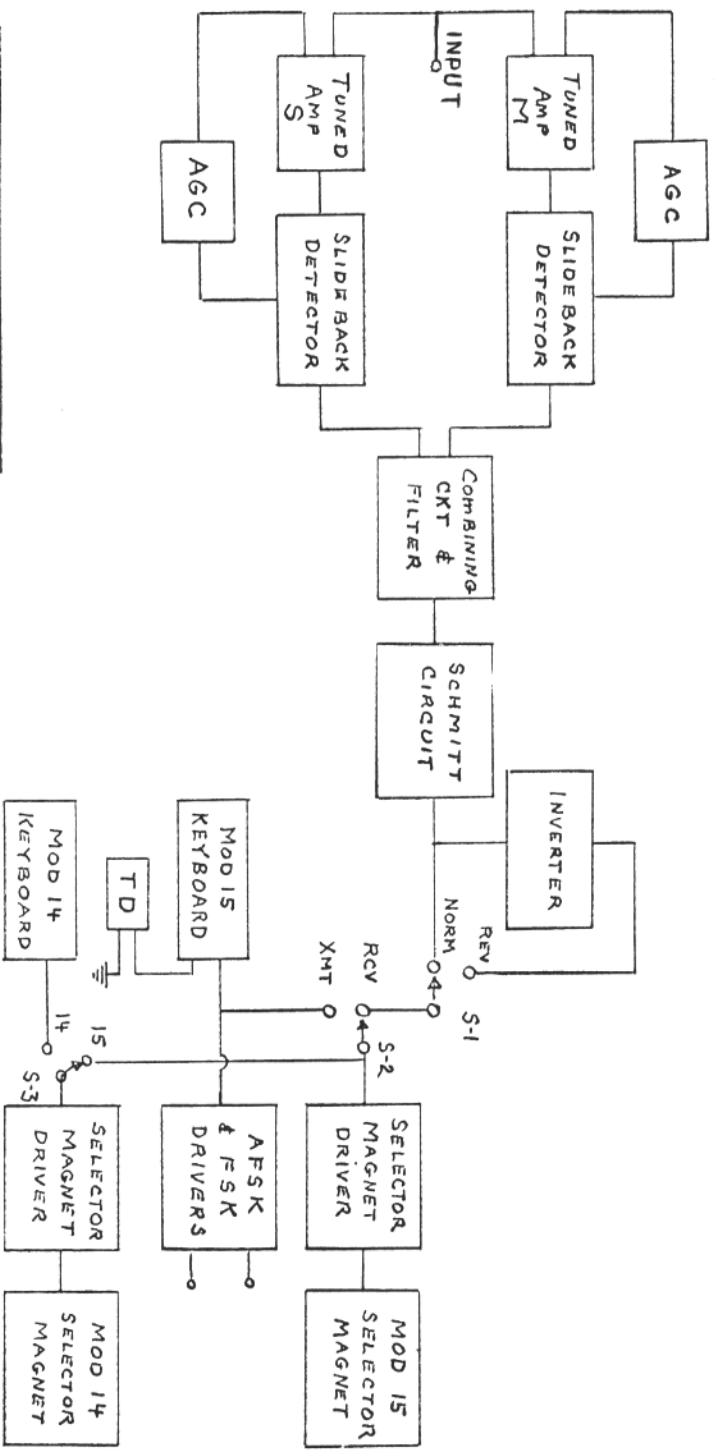
One comment on the selector magnet power supply. The transistors used to drive the selector magnets are rated at 105 volts, and use of a higher voltage is sure to cause troubles. Trouble was encountered with some of my transistors even at the 100 volt level yet others would work fine. To play safe I reduced my supply to approximately 75 volts. Elimination of the polar relays made a world of difference at my shack. With the relays I had always been plagued with arcing problems that would cause noise in the receiver. No amount of shielding would completely eliminate the clicks. Enter the transistor switch and good-bye to all the noise.

As far as operation is concerned, there are no adjustments, so there's nothing to do but plug it in, connect a scope to the toroids (using as small a value of coupling capacitor as possible), and tune the receiver until you get the standard cross-hatch pattern. The selector magnets will start clicking with only 5 millivolts signal coming from the receiver.



All resistors 1/4w  
 (except power supply)  
 Signal transformers are  
 surplus 5SB specials.  
 (Lionel-etc)

TWO TONE  
 TERMINAL UNIT  
 10-27-64 W315E



TWO TONE  
 TERMINAL UNIT  
 10-27-64 W315E

# WHEATSTONE BRIDGE CIRCUIT PROVIDES REVERSIBLE FREQUENCY SHIFT KEYING

PETER VON CHRUSTSCHOFF, K8YEK  
157 Redwood, Troy, Michigan 48084

Many hams, getting started in RTTY, are confronted with the problem of transmitting "RIGHT SIDE UP" frequency shift on some of the bands when using their SSB exciter's.

The usual way to reverse shift is the polar relay, keyed by the keyboard, which in return keys the VFO. Polar relays are tricky and difficult to adjust, and if out of adjustment will introduce mechanical bias to the signal. This bias makes it difficult for the other fellow to copy your signal, especially in QRM. The circuit described will eliminate the polar relay and provide instant reversal of shift by the flick of a switch.

Basically the circuit is a wheatstone bridge circuit in which the usual galvanometer is replaced by the shift diode. The bridge consists of  $R_5$  and  $R_6$  in two legs and  $R_2$ ,  $R_3$  and  $R_4$  in the other two (fig. 1).  $R_2 + R_3$  being large—about 335K against  $R_4$ —27-K—, and  $R_5$  and  $R_6$  being equal, the bridge is unbalanced and the diode is forward biased (negative) and conducts.  $R_4$  limits the current to about 2 m A. Now if we disconnect  $R_4$  from  $R_3$  the bridge polarity reverses and the diode is reverse biased and cut off. Inserting the keyboard contacts between  $R_4$  and  $R_3$ , we have a shift circuit that will make the diode conduct on mark.

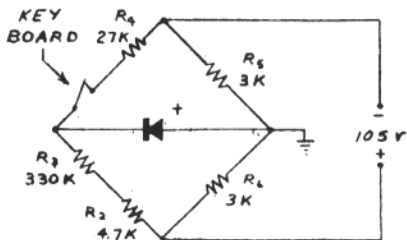
If we connect  $R_4$  and  $R_3$  (fig. 2) and connect the keyboard contacts across  $R_3$ , the bridge is unbalanced to back bias the diode on mark ( $R_3$  shorted by the keyboard contacts on mark and  $R_2$  smaller than  $R_4$ ). When the keyboard contacts open the diode is forward biased through  $R_4$  ( $R_2$  and  $R_3$  being

very large compared to  $R_4$ ) and conducts, thus the shift in this circuit is reversed over the conditions described in Figure 1 and the diode conducts on space. Every time the diode conducts  $C_1$  is added in parallel to the VFO tuning circuit, thus reducing the frequency and providing the desired shift.

Switching of the keyboard contacts is achieved by a single pole single throw switch, thus giving instant shift reversal. The final circuit (fig. 3) shows the complete arrangement and it may be noted that the power supply is only grounded at the junction of  $R_5$  and  $R_6$ . The circuit is not critical, and parts should not cost more than \$10.00.  $C_1$  is set for the desired shift, and the shift will not change more than 60 cycles over the VFO range. The VFO will detune about 3 KC with the addition of the shift circuit and can easily be reset. (Check your instruction book for VFO calibration.) Additional keying units can be added for narrow shift, and by use of a switch at the keying network could readily be selected. A second cut-off bias for the diode ( $R_{10}$  and  $R_{11}$ ) is provided in the transmitter so that the keying circuit can be removed without having the diode "floating" and possible instability of the VFO.

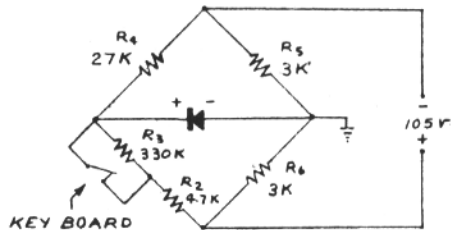
The circuit has been in use for some time on my HT32-A and performs very satisfactorily. I hope that this will help many of the RTTY'ers, especially the ones with transceivers, to solve their shift reversing problems.

NOTE: ARRL Handbook, 1963, pp 536, describes the operation of a bridge circuit.



DIODE CONDUCTS ON MARK

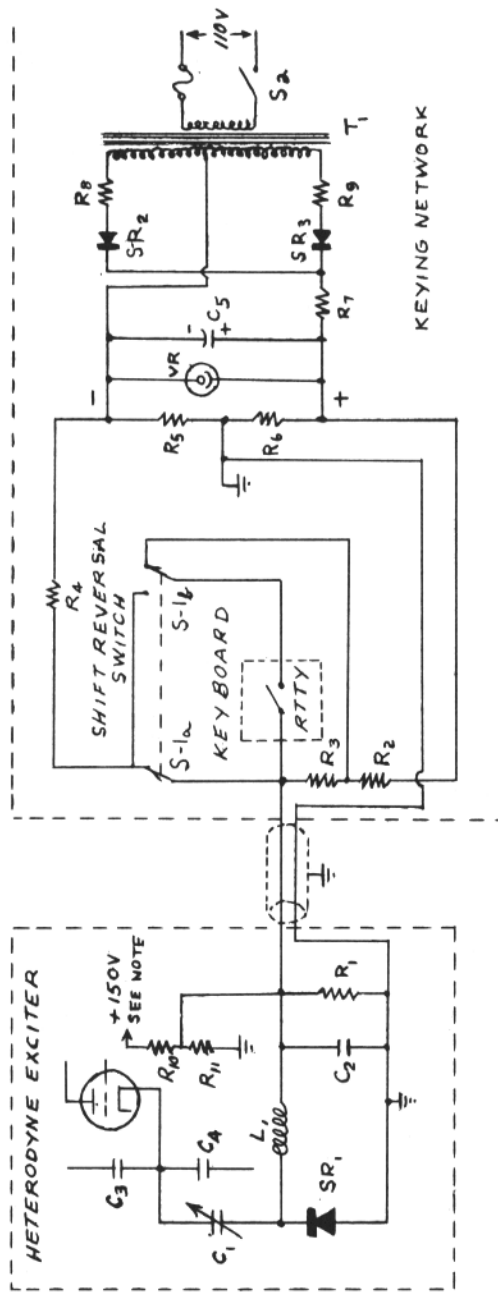
FIGURE 1



DIODE "CUT-OFF" ON MARK (DIODE CONDUCTS ON SPACE)

FIGURE 2

## REVERSIBLE FREQUENCY SHIFT KEYING FOR HETERODYNE EXCITERS—WITHOUT THE USE OF POLAR RELAYS



NOTE - CONNECT INTERNALLY TO ANY +150V POINT IN THE EXCITER

FIGURE-3



## PARTS LIST FOR THE REVERSIBLE FREQUENCY SHIFT KEYING CIRCUIT

R <sub>1</sub> -270K	C <sub>1</sub> -3-12 uufd. NPO trimmer
R <sub>2</sub> -4.7K	C <sub>2</sub> -.001 ufd. @ 200 WVDC
R <sub>3</sub> -330K	C <sub>3</sub> -TRANSMITTER CIRCUITRY
R <sub>4</sub> -27K	C <sub>4</sub> -TRANSMITTER CIRCUITRY
R <sub>5</sub> -3K @ 5W	C <sub>5</sub> -40 ufd. @ 250 WVDC
R <sub>6</sub> -3K @ 5W	SR <sub>1</sub> -1N34-A
R <sub>7</sub> -1.5K @ 2W	SR <sub>2</sub> -1N1694 OR EQUIVALENT
R <sub>8</sub> -56	(400 PIV @ 200 Ma.)
R <sub>9</sub> -56	SR <sub>3</sub> -SAME AS SR <sub>2</sub>
R <sub>10</sub> -100K	VR-OB2
R <sub>11</sub> -50K	
T <sub>1</sub> -CHICAGO TRANSFORMER PS-8616 (or equivalent)	
S <sub>1</sub> -DPDT SWITCH	
S <sub>2</sub> -SPST SWITCH	
L <sub>1</sub> -2.5 mhy. NATIONAL R-100 (or equivalent)	

NOTE: All Resistors 20% @ 1/2 watt unless stated otherwise.

Use shielded cable between the heterodyne exciter and the keying network (Amphenol 80-PC2F receptacles may be mounted on the exciter and the cabinet containing the keying network. Use two conductor shielded cable with Amphenol 80-MC2M jacks on the ends to connect the two units).

## K9AQJ/NØRJU

Chicago, Illinois

Explanation of the gear on the table-top (homebrew, too). Reading from left to right:-

Extreme left, small external RTTY filter, next to homebrew TU, which is under AC Mains meter which is next to Field Strength meter (homebrew), which is next to Ameco Pre-amplifier for the receiver.

Next to the TU is the HQ-180C under the TT-63A surplus repeater for the Model 15.

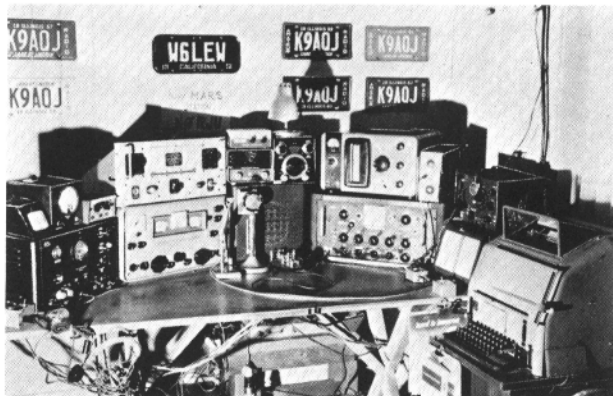
In front of HQ180C are two mikes, the DB-10 (Japanese) and the D-104. Next to the mikes is an old Gold Bug (circa 1930) which is used for CW. Next to that (invisible) is an old Navy hand key (circa 1925) for Narrow Shift CW ID on RTTY.

In back of the mikes and key is the home-

brew Loudspeaker (8"). On top of loudspeaker is (L) Halliscratcher HA-5 VFO, re-designed for operation as such *plus* power supply for homebrew RTTY VFO to its right. On top of HA-5 is a Knight SWR Bridge.

Next to Loudspeaker is the homebrew Xmtr-100 W for CW & RTTY, 60 W for AM, 120 W for DSB. On top of the Homebrew XMTR is the obsolete (but usable) Johnson Courier which furnishes a half-gallon for CW, & RTTY. 300 W for DSB. Not used for AM. Next to Linear is the BC-221 Freq. Meter (AC-Powered). Next to that is the Model 15 TTY.

Under the table are 5 power supplies, all homebrew. Added, since the pix was taken: 1 AF67 AM/RTTY for 10M.



# CONVERTING THE AN/SGCI RADIOTELETYPE TO OPERATE ON 500/700 CPS OR 2125/2975 CPS

WILLIAM AULD, W2DXD/A2DXD

3 Echo Ridge Rd., Saddle River, New Jersey

### GENERAL

This piece of equipment is finding its way into Mars and possibly other areas. The unit as is will operate in a teletypewriter loop of 60 MA and receives and sends with 500 and 700 cycle tones. The loop current is checked with the unit in transmit position. Since the mark is 700 CPS the AFSK and TU must be reversed to the standard of mark LOW on the TU and audio tones. When operating with the converted unit, make sure the band pass filter is out when using 2125/2975 tones. It may be advantageous to add a 2000-3000 CPS bandpass filter in the tone circuit as well as in the input circuit when operating on the high frequency tones. The 400-900 CPS bandpass filters should be on when using the unit with these frequencies.

The following parts list is required for the conversion:

- 1 0.1 MFD moulded 400V
- 1 0.066 MFD moulded 400V
- 1 0.033 MFD moulded 400V
- 2 0.001 MFD moulded 400V
- 1 Millen 74400 octal plug in can
- 1 0.25 MFD moulded 400V
- 1 50 K 2W Potentiometer Linear
- 2 88 MH Toroids
- 2 DPDT toggle switches
- 1 DPST toggle switch
- 1 3PDT rotary switch
- 3 3 cond. phone jack
- 1 Printed circuit board  
1 1/2" x 3 1/4"

### CONVERSION OF AFSK OSCILLATOR

To make the unit operate on 500/700 CPS and 2125/2975 CPS make the modifications as shown in figure 4 and Fig. 5. New components are indicated by values and existing components and indicated by original part number.

Remove the capacitors C111 and C112 and relocate to the switch SW3 along with the two 0.001 MFD capacitors used to make the unit oscillate at 2125/2975 CPS.

Remove the two diodes CR 103 and CR 104, and reverse their direction and replace in the same place. Use pliers as a heat sink to prevent injury to them.

Adjust the mark space tones with the two pots on the right side just back of the front panel marked R 146 and R 147. Mark the position for 500 and 700 CPS, and then retune them for 2125 and 2975 CPS and make

another mark. Use these for reference when shifting from one frequency to another.

### CONVERSION OF THE TERMINAL UNIT

Mount a single lug terminal strip near Z 102. Mount the 50K pot on a Z bracket near Z 102.

Make up a printed circuit board as shown in figure 6 and mount it in a millen can 74400. This will be plugged in the octal socket holding the spare polar relay. (If you were lucky and got one with the unit) wire the filter so that pin 6 is mark (2125 CPS) and pin 7 is space (2975 CPS) and pin 8 is common. The millen can must be cut shorter to 3 1/2" so that the unit will slide into the cabinet.

Remove the resistors R 121 and R 124 and relocate them to Z 102 terminals 2 & 3 and 3 & 5. Connect A 0.1 MFD capacitor from the center of the 50K pot to the single terminal strip. Remove the blue wire from terminals 1 and 4 of Z 102 and connect to switch SW1A. Remove the two yellow wires from terminal 2 of Z 102 and connect to SW2. Remove the single wire from terminal 5 of Z 102 and connect to SW2. Run wires from these yellow wires to a 3 conductor phone jack for scope monitoring.

Wire the rest of the switches and circuits as shown in figure 3.

Make sure of the correct polarity when connecting the loop circuit.

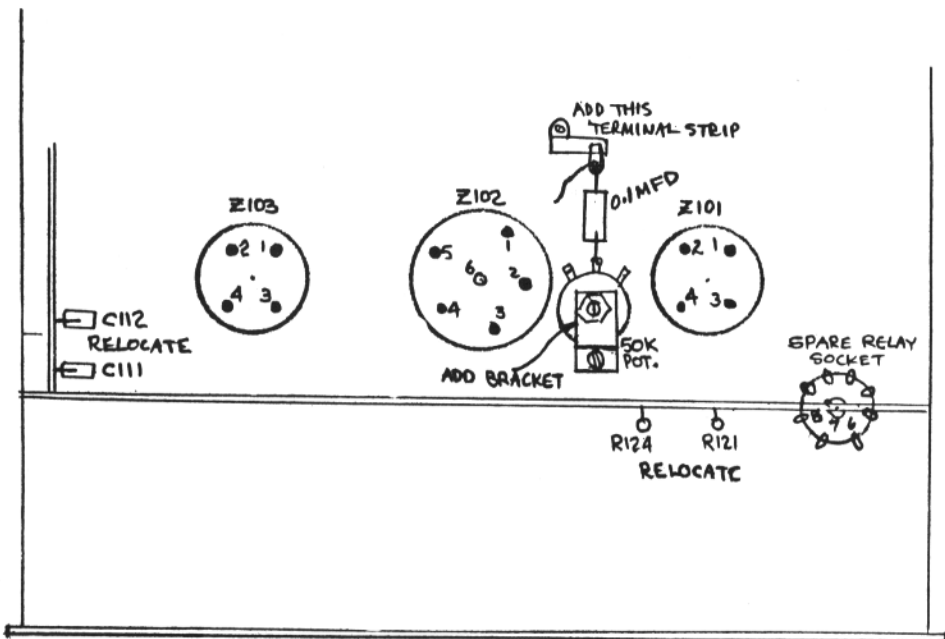
The output impedance may be connected as either 600 or 50 OHMS. For 600 OHMS connect shorting bar from center to terminal marked 600, and to the other for 50 OHMS.

Figure 5 shows the method of cutting out the 400-900 CPS bandpass filters when using the unit on 2125/2975 CPS.

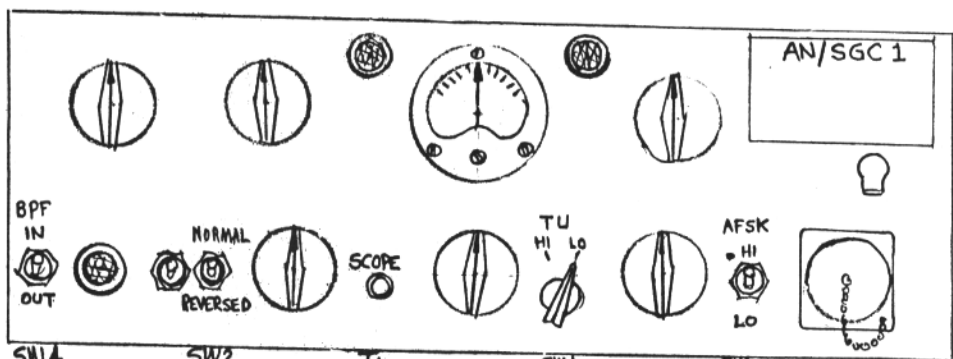
The relays K101 and K102 are as follows:

	Transmit	
K101 Energized		K102 Energized
	Receive	
K101 De-Energized		K102 De-Energized
	Standby	
K101 Energized		K102 De-Energized

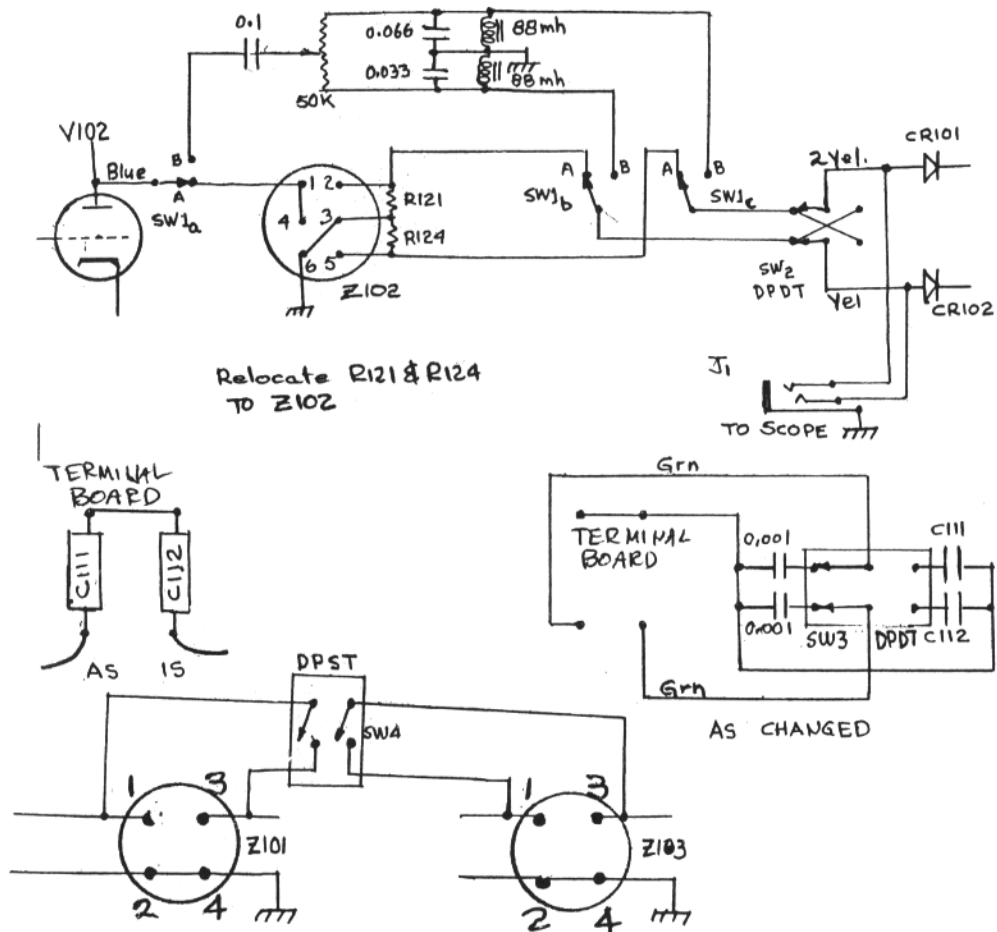
By operating in the auto position the auxiliary contacts that are marked control may be used to turn on and off your transmitter. These are close on transmit and are floating above ground. After the distant station has stopped transmitting you may actuate the unit when in auto position by starting to type. The time lag may be reduced by substituting a 0.25 cap for C 114.



BOTTOM VIEW - LOCATION OF COMPONENTS.  
FIG. 1



LOCATION OF ADDED COMPONENTS TO PANEL.  
FIG. 2

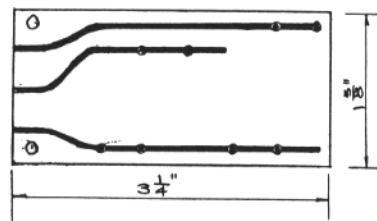


Relocate R121 & R124 TO Z102

AS CHANGED

AN/SGC 1

PC BOARD FOR FILTER 2125-2975 cpe.



Capacitors on one side and the toroids on the other side.

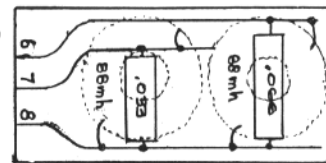


FIG. 6

## DX-RTTY

BUD SCHULTZ, W6CG  
5226 N. Willmonte Avenue  
Temple City, California

Hi DX'ers:

This month's crop of news all came in from my good right arm in Bethesda—Name-ly Ed, K3GIF. Ed has really been flying high the past few weeks and has come up with a couple of new countries that should cause quite a stir among the DX set. On January 9th Ed managed a QSO with LX1DE in Luxembourg. On January 13th he came up with OE2WSL in Salzburg, Australia. Both of these have fine signals according to Ed and should be quite an incentive for the gang to keep their beams pointed on Europe. K6ROR out here on the Coast reported working the OE and said the signals were 20 over S-9!! DL3IR says he has been in QSO with TI2IO in Costa Rica who is getting ready for RTTY in a few weeks. Henry, ZS1FD, had bad luck with his antenna and currently is operating with it just ten feet off the ground. He says the high winds did a lot of damage in his area. Alan, G2HIO, reports that there are at least four GI stations on 80 meters but none will come on 20 since they have no beams!! K3GIF tells us that Rene and Herb at Munich are hoping to convince an XW8 from Laos who is due thru Munich shortly to go on RTTY. Virgil, WB2WUV is the new op at Conakry, Guinea for the S.S. Hope, FG7XT is awaiting delivery of a light-weight TTY machine to send as a loaner to PJ2AA in Aruba. After a month PJ2AA will send the machine to St. Martin and Jean will give the RTTY gang the FS7 contacts and then take it to Antigua, etc. This sure sounds like a real barn burner for you DX hunters!! Ed included a lot of other juicy items in his letter but room does not permit me to spring 'em all on you this trip. I'll hold back a few for next month.

We have received several requests for a

run-down on the WAC RTTY roster so will wind this up with the latest tally. Congrats are in order for the last two on the list whose cards just came in this week—namely W4AIS and W7UKH. Fine work fellers!! Here's the complete list up to this date:

- |           |             |
|-----------|-------------|
| 1. VE7KX  | 25. VE4BJ   |
| 2. W6CG   | 26. WØPHM/4 |
| 3. K6OWQ  | 27. IIRIF   |
| 4. W6AEE  | 28. DL6EQ   |
| 5. W7LPM  | 29. WØFQW   |
| 6. W2RUI  | 30. W6UGA   |
| 7. W2JAV  | 31. W9HJV   |
| 8. W6TPJ  | 32. W5CME   |
| 9. G3CQE  | 33. K8DKC   |
| 10. W6LIP | 34. W3DJZ   |
| 11. W7ESN | 35. WB2CVN  |
| 12. W8JIN | 36. W6JOX   |
| 13. K3GIF | 37. VK4RQ   |
| 14. W5BCP | 38. DL1VR   |
| 15. WØNFA | 39. DL3IR   |
| 16. W8UUS | 40. W5SH    |
| 17. TG9AD | 41. W6LVO   |
| 18. KR6MF | 42. W8CAT   |
| 19. K4JXG | 43. W6MTJ   |
| 20. W7FEN | 44. W7VKO   |
| 21. W6FYM | 45. W6NRM   |
| 22. W1BGW | 46. W4AIS   |
| 23. ZS6UR | 47. W7UKH   |
| 24. VK3KF |             |

In checking over the list I see I forgot to offer a tip of the old derby to Bob, W6NRM, for achieving his WAC RTTY. One just doesn't overlook an old timer like Bob at a time like this. Bob had his WAC cards for a long time but just got around to sending 'em in for credit.

Hope to see you all next month.  
73  
Bud, W6CG



I1LCF FANTI DOTT, FRANCO BOLOGNA, ITALY



## HORSE TRADES

FOR SALE: KLI Parts or trade for model 15 parts. Need upper-case H/Stop, motor stop/start kits for model 15. Unused CH158, nice for power tool storage, \$3.00 each. One only TTY portable test set TS-659/UG ED58HE repeat character & dot transmitter, metal case, good condx. Schematic in top lid \$75.00. All FOB Tampa. W4BNI, 2903 Bay View Avenue, Tampa, Fla. 33611.

FOR SALE: Wheatstone oiled perf. tape 15/32". W6DOU, 3154 Stony Point Road, Santa Rosa, Calif.

FOR SALE: 88 or 44 mhy. toroids, five for \$1.75 postpaid. RTTY Gear for sale. W6VPC, 1067 Mandana Blvd., Oakland, Calif. 94610.

WANTED: Chassis less modules for CV-89 RTTY converter, have following to sell, 14TD \$30.00, model 15 with P/S \$80.00. 19 keyboard with perforator \$25.00. K1-AJE, Box 829, Haley Road, Kittery, Maine.

FOR SALE: OR TRADE, model 14 TRs and TDs parts, test equipment, ham gear and magazines. W4NYF, 405 NW 30th Terrace, Ft. Lauderdale, Fla. 33311.

FOR SALE: Model 26 working condx, prefer local deal. Best offer. Also Type 1-193A test sets for aligning 255A polar relays. Reconditioned in wooden chests. (Barry Electronics gets \$95.00). Only \$29.95 FOB. Manuals for 1-193A, \$2.50 PP. W2BVE, 834 Palmer Avenue, Maywood, N.J. 07607.

FOR SALE: Table Top Model 28 printer, communications type box. WB2CVN, 154 Brooks Avenue, Bayville, N.J. 08721.

FOR SALE: FRR-3 dual diversity receiver and AN/FGC-1 Terminal Unit, both in excellent condition and with tech manuals, \$75.00 for each unit. W6YNS, 10462 Orange Park Blvd., Orange, Calif. Phone 714-633-1037.

FOR SALE: TT/63A regen repeaters \$34.95 each. RCA FSK units \$79.95 each. VE7BOC, 1426 King Albert Avenue, Coquitlan, New Westminster, B.C., Canada.

SWAP: Hallicrafters S40A receiver and International 6 meter converter with 7 mc IF for model 14TD. W8FFT, 193 South Florida Street, Buckhannon, W. Va. 26201.

WANTED: Teletype art tape W3LST, 228 Plummer Street, Oil City, Penna.

FOR SALE: Model 15 printer complete with TU, \$150.00. John Gregson, 9505 Las Tunas Drive, Temple City, Calif.

FOR SALE: Complete RTTY Set-up. Model 19 printer and table with model 14 TD complete with power supply and associated plugs and cables in excellent condition, \$200.00. W6WOC, 2647 20th Avenue, San Francisco 16, Calif.

FOR SALE: Teletype paper, 8 1/2" wide, standard roll, 75c per roll, \$8.00 per case of 12. Model 14 typing reper., make offer. Also Navy type FSA frequency shift keyer, 110/220 vAC input, 1-6mc/s (\$45.00). W2BVE, 834 Palmer Avenue, Maywood, N.J. 07607.

WANTED: Relay test set I-181 (W.E. D-162269). Also W.E. prints covering Telegraph Repeaters X-61824. K1CLD, Piermont, New Hampshire. 03779.

FOR SALE: CV-57/URR complete with tubes, manual, and in very good condition, \$75.00. Navy frequency shift monitor, tubes 2 to 28 mc plus, complete with tubes; crystal standard in good condition. Measures shift in 50 cycle steps to 1500 cps. \$75.00 Units FOB Akron, Ohio. W8KDW, R.D. No. 1, Box 173, Dowlstown, Ohio. 44230. (Need 28 ASR parts also).

FOR SALE: Clearing out sale AN/FGC-1 Radio-teletype Converters, \$50.00. USED. New with spare parts, \$125.00. ALA-2 Panadapters with free conversion instructions, \$29.95. 19"x72" open racks, new and used, as low as \$12.50. Write for free list. Gulf Electro Sales, Inc., 7031 Burkett, Houston, Texas. 77021.

### CORRECTIONS—Jan. '65 RTTY, Page 10

R50 should be 430 ohms, RC2OGF, 431J; R52 should be 2.7K, RC2OGF, 272J; R57 should be 180 ohms, RC2OGF, 181J; R58 should be 10K, B14.

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