RTTY

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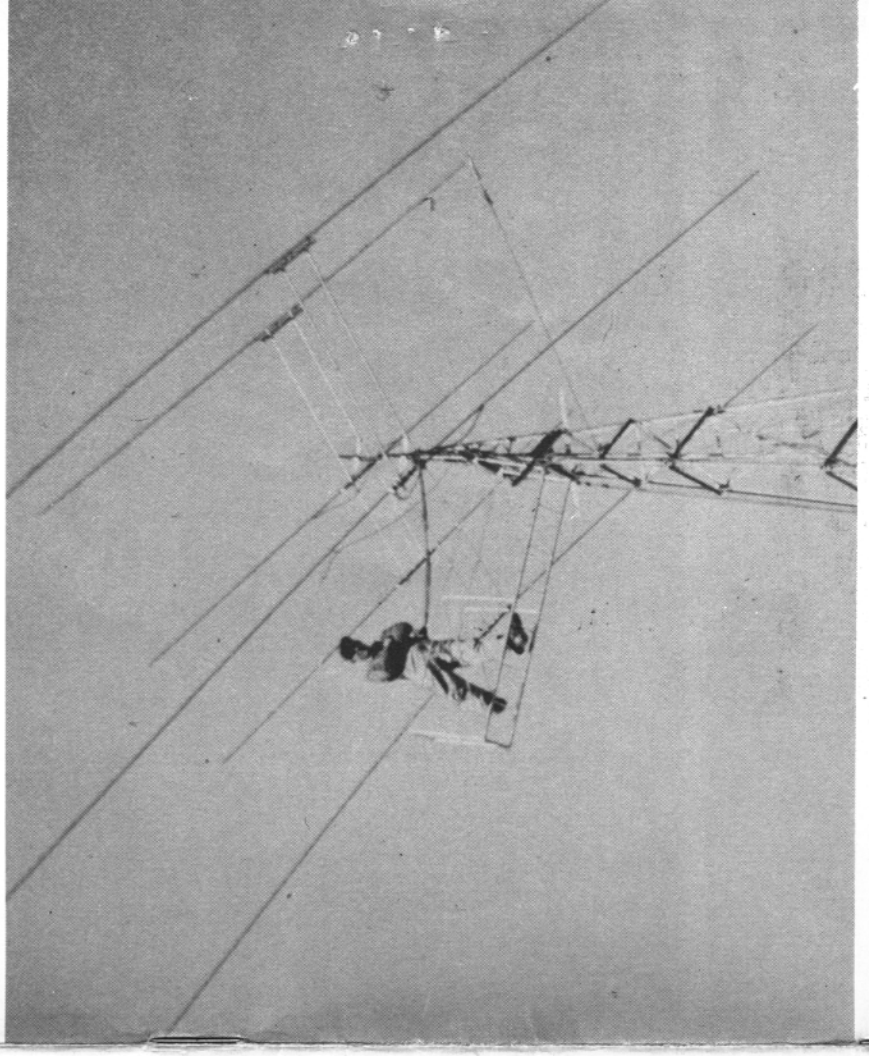
25 Cents

NEWS OF AMATEUR RTTY



HORSE TRADES

This page of the Bulletin is for use of amateurs who who have RTTY equipment for sale or trade and those looking for equipment to buy or trade. It is afree service and may be the means of getting someone on the air.

FOR SALE—Model 12 with terminal unit (torroids), all electronic keyer, padded cover, box of paper.....W6IES

FOR SALE—1 Complete model 12 brush motor 2 spare keyboards for 12.....W7FNA

WANTED —Keyboard for model 19.....W6AEE

FOR SALE—An excellent model 12, table and polar relay —W6TT

FOR SALE—Sync. motors for 26. Herbach & Rademan, Phila.

FOR SALE—Model 12 complete with governor motor cheap. —RTTY

FOR SALE—Governor motor for 12.....W8DXM

WANTED —Sync. motor for model 12.....W6HFK

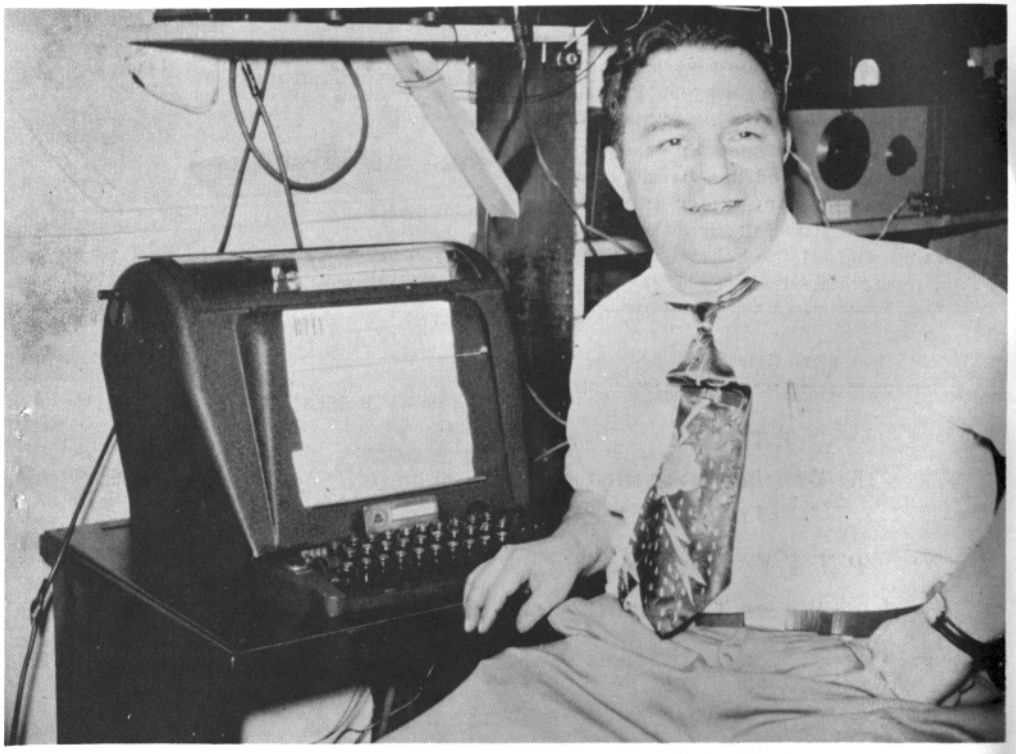
FOR SALE—Model 12 minus keyboard also 9Hy troids..W6HFK

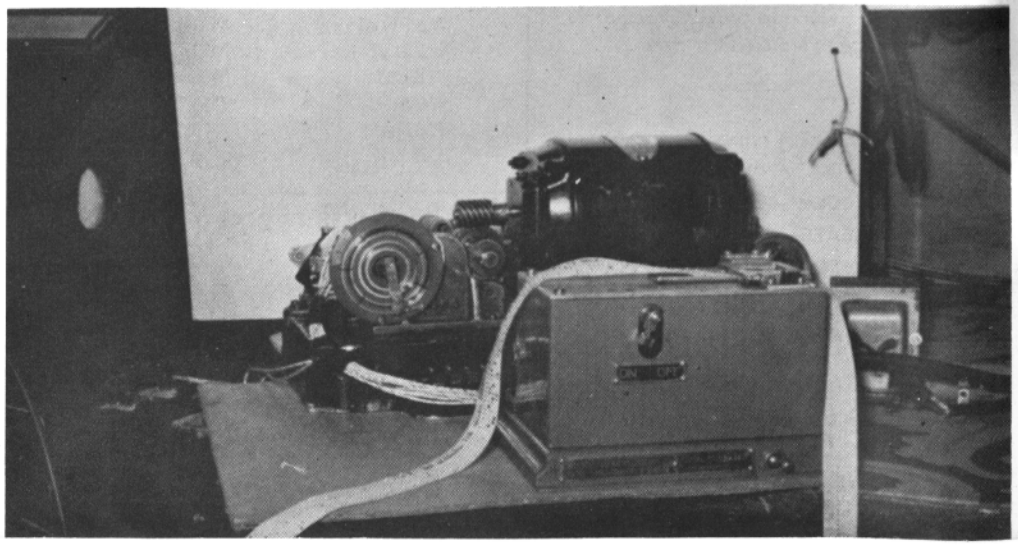
FOR SALE—Model 15 Complete with governor motor....W6AEE

Station of the Month Department

W1BGW - Jack Borman

Dorchester 21, Mass.





Intentional Generation of Distorted Teletype Signals and the Use of Range Finders

By FRANK WHITE, W3PYW, Silver Springs, Maryland

INTRODUCTION

Many of the amateurs that are on the air with radio teletype equipment are fascinated by the perfection with which the machine repeats exactly what is sent by the sending machine. In this respect, radio teletype communication is not akin to voice or CW communication, both of which require a certain amount of ability on the part of the man at the receiving end of the circuit. Teletype is an electro-mechanical device and requires only electro-mechanical perfection to work properly.

The portion of a radio teletype circuit that is electronic must combine with the mechanical portion of the system in the manner that the designer of the mechanical device determined that the job should be done, or probably poor results will be obtained.

The construction of a device which will test the ability of your teletype converter and printer to copy teletype signals is well within the capabilities of the interested amateur with radio teletype equipment. This article will describe such a device and describe how it can be used.

Very little information has been printed for amateur consumption that describes the selecting mechanism of a teletype printer. It is necessary to understand how the selection or "sampling" of the received information is done by the printer before considering what troubles can develop to upset this function.

THE TELETYPE CODE

The signalling code used for teletype is made of seven elements. Two of these elements, the first (star) and last (stop) are common to each letter or stunt. ("Stunts" are carriage return, line feed, figures, letters, blank and space.) The start and stop element of the code are necessary to synchronize the receiving machine with the sending machine. The five elements contained between the start and stop elements provide the letters of the alphabet, the numerals, the stunts, and miscellaneous symbols. Each of the five elements between the start and stop element may be either "marking" or "spacing," depending on the letter or stunt to be sent and received. "Mark" and "space" are teletype terminology that have logical derivation which need not be described now.

Since each of the five elements between the start and stop elements may be either marking or spacing, the total number of possible combinations which may be selected from these five elements

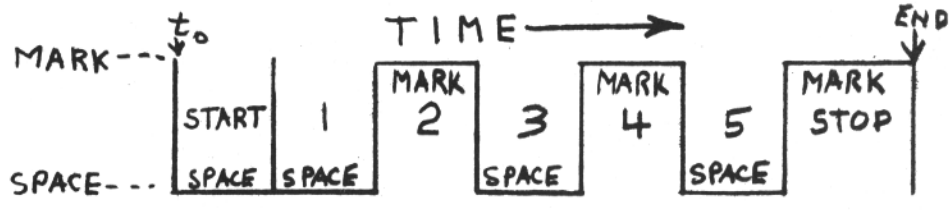


Figure 1

is two to the fifth power, or thirty-two. This provides the 26 letters of the alphabet plus the six stunts previously mentioned.

Let us assume the letter "r" is to be sent. The time history of the transmission of this letter would be as follows:

The "start" element (which is **always** a "space") comes first, followed by the five elements which make up the code of the letter "r." This is followed by the "stop" element (which is **always** a mark). Notice that the "stop" element is some longer (1.42 times as long) than the other six elements.

Radio teletype used by amateurs can operate at a maximum speed of 60 words per minute. The average word consists of five letters, and a space following it. **At sixty words per minute** (the maximum sending speed) this requires (on the average) 360 operations. Since time must be allowed to synchronize the receiving machine with the transmitting machine, a total of as many as 368 operations are provided for in each minute. A maximum sending rate of 368 operations per minute establishes that each operation must require (60 divided by 368) .163 seconds (163 milliseconds). Since the "stop" element is longer than the other six elements, the total code of seven elements is 7.42 units in length. Thus, each of the first six elements of the code will be 22 milliseconds in length and the seventh element (stop) will be 31 milliseconds in length.

The receiving printer is synchronized with the transmitting printer by means of the "start" and "stop" elements of the code. The machines, instead of operating continuously, are stopped and resynchronized after the transmission of the first six elements of the seven element code. This synchronization ocurs after each operation. It insures that the receiving machine will be ready for the "start" element of the next letter to be sent.

The "start" element of the code allows the "selection" or "distribution" of the receiving printer to begin rotating. In modern teletype printers (such as 14-15-19-26) a "selector" is used and the five middle elements of the teletype code are "selected" mechanically. The older printers (such as the Model 12) employed a "distributor" which was either a commutator type of device or rotating cylinder with cams.

The teletype printer on the receiving end of the circuit must "sort out" the five middle elements of the teletype code and determine if each is "mark" or "space." As we have seen, each of these elements is 22 milliseconds in length. Since either "space" or "mark" is sent for each of the five middle elements of the code, the receiving teletype unit must "recognize" which is present. The best place for such "recognition" to take place is at the **exact center** of the five middle elements of the code. Thus, if signal distortion or mechanical imperfections are evident, as long as the receiving teletype system selects at the exact center of each of the five middle elements of the teletype code, a minimum effect will result from such deficiencies.

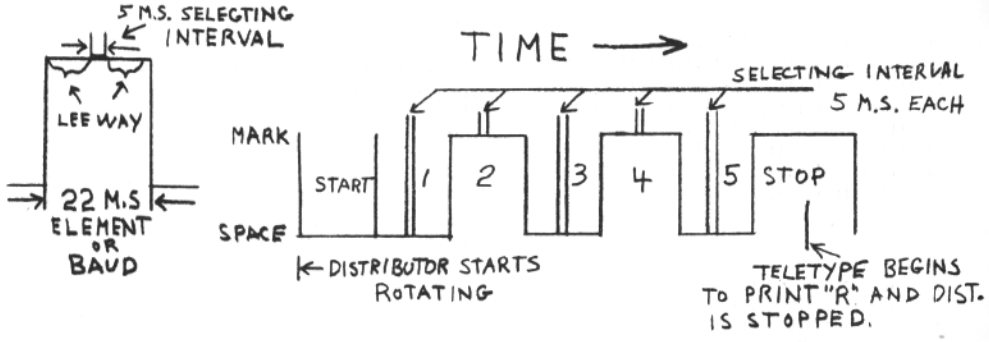


Figure 2

Regardless of whether mechanical selection, or a distributor is employed, the receiving teletype printer (if correctly adjusted) samples the midpoints of the five elements of the teletype code, other than the start and stop element. The sampling is accomplished for twenty percent of each element which is a sampling time of 5 milliseconds. Let us assume that the letter "r" is being received. The time history of this operation would be as follows:

In the foregoing, the assumption was made that the teletype selector or distributor was perfectly adjusted so that only the middle twenty per cent was employed for sampling the incoming signal. In modern teletype machines, such as the 14, 15, 26 and 19 (but not the 12), a method is provided for centering the sampling at the exact middle of the elements, **while the printer is in operation.** The device provided is known as a "range finder." The Model 12 provides a method of centering or "ranging" but the ranging must be done with the distributor stationary. The "range finder" on the more modern machines is provided with a thumb screw (to permit easy loosening and tightening of the movable arm) and a calibrated range finder scale. The scale is calibrated from 0 to 120 of which 100 divisions represent one element (22 milliseconds) of the teletype code. Manipulation of the range finder may permit determination of the following items:

1. Distortion of the incoming signal, assuming receiving equipment is perfect.
2. Speed of sending (or receiving) machines, asuming one of them is correct.
3. Performance of the complete electro-mechanical system on the receiving end, assuming sending signal is perfect.

USE OF THE RANGE FINDER

The range finder is normally used in the following manner. A station is asked to send a continuous ryry signal. The range finder on the receiving end is moved in one direction (say, towards zero) until errors appear in the copy. The direction is reversed until errors are eliminated. The reading of the range finder scale is noted. The range finder is then moved toward the other end of the scale the maximum amount before errors occur in the copy and the reading on the range finder scale is noted. These two range finder scale readings give the "operating margin" of the signals under test. Since the selecting period occupies twenty per cent of the element length, the best possible margin should be 80 per cent, or an orientation range of 10 to 90. In order to tell a fellow amateur that his signals are, or are not, perfect it is necessary for you to determine if your printer and converter is distorting the incoming signal. A number of methods may be employed to enable such determination. A station may be used to make an "orientation range check" that is known to send perfect teletype signals. In such case, if an orientation range check is conducted and readings of 10-80 are obtained, the receiving layout, either the electronic equipment or the teletype printer (more often than not the trouble is in the printer), is "biased." The upper limit has been lowered 10 per cent and this is called "mark" bias. This particular receiving set-up would probably produce an orientation range of 10-90 on incoming signals having ten per cent spacing bias. If a receiving set-up is to be used for advising other stations whether or not their signals are biased, it would be worthwhile to eliminate (by careful adjustment) any internal bias in the receiving set-up.

REMOVAL OF INTERNAL BIAS IN TELETYPE

A thorough treatise on the subject of removing bias from teletype equipment would require a fair sized book. Some of the more obvious source of bias in

teletype equipment will be discussed with the thought in mind that they will suggest solutions in other related instances.

The "mechanical selection" principle in the 14, 15, 26 (and related) teletype printers employs a magnet to pull (or hold—in some cases) the armature to the "mark" condition and a spring (with adjustable tension) to move the armature away from the magnet to create the "space" condition of the mechanical selector. Let us assume an extreme situation, the magnet return spring disconnected. The teletype printer would remain in the "mark" condition and would be internally biased 100%. If the armature return spring were connected, but the tension was inadequate, the printer would still be internally biased. On the other hand, let us assume that a 200 ma current was used to operate the magnet instead of 60 ma (certain mechanical selectors require 30 ma—depends on the type of selector). The 200 ma current which would saturate the armature pole pieces would create internal bias in the printer.

Thus, it can be seen that the current through the selector magnet, and the tension of the return spring, **both** must be correct or the printer probably will have internal bias.

Relays can create bias, in a manner similar to the creation of bias by the selector magnet, as outlined above. For example, let us assume that a relay is used to key an audio oscillator from 2975 to 2125 cps for an AFSK rtty system. If either the spring tension of the relay, or the relay operating currents are incorrect, the relay "operate" time, or "release" time will be incorrect and the relay will either take too long to open, or too long to operate. A large amount of trouble is often created by relays used in teletype circuits due to contact bounce. If the relay armature, in our previous example, caused the relay contacts to bounce, or if the contacts were dirty, the signals created by the relay would either be biased or be of erratic quality.

A polar relay, if adjusted **approximately** correct, can create little bias. The most important items to remember about polar relays are (a) correct operating current, 60 ma, (b) clean contacts, (c) correct contact point and magnet spacings.

ORIENTATION RANGE READINGS AND THEIR INTERPRETATION

Orientation range readings on another station, obtained using **perfect** (no internal bias) receiving equipment, may be interpreted as follows:

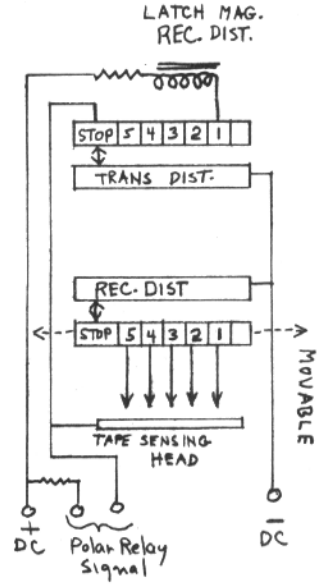
Lower Limit	Upper Limit	
10	90	Incoming signals are perfect.
25	105	Both lower and upper limit are raised 15%. Total distortion is 15%. This normally indicates that the stop pulse of the sending keyboard is improperly adjusted.
35	100	Lower limit is raised 25% and the upper limit is raised 10%. Total distortion is 25%. This indicates the sending machine is running slower than receiving machine by 5%.
10	75	Upper limit is lower 15%. The total distortion is 15%. The sending station has a marking bias of 15%.
35	90	Lower limit raised 25%. Total distortion 25%. The sending station has a spacing bias of 25%.
5	60	Lower limit lowered 5%, upper limit is lowered 30%. Total distortion is 30%. This indicates the sending machine is running faster than the receiving machine by 5%.

Certain liberties have been taken in the foregoing brief discussion to simplify the text. However, it is hoped that it will aid a better understanding of how the "range finder" can be used.

INTENTIONAL GENERATION OF DISTORTED TELETYPE SIGNALS

It was desired to generate a signal of known distortion. The distorted signal could then be used to assist those amateurs having Model 12 printers to adjust their receiver distributor to select at the exact center of the segment, and enable other amateurs to test their printers. For example, if first a distortion which represents 40 per cent mark bias was sent and then a distortion representing a 40 per cent space bias was sent and the receiving unit at the other station copied both perfectly, the other station would know that selection was occuring at the center of the segments. Assuming this was not true, signals of reduced distortion could be sent until the copy at the other station was without error. The other station could be told which way to "orient" selection, and by how much.

One way to send distorted signals is to shorten and lengthen the "start" element of the seven element teletype code. This can be done quite conveniently if an electronic transmitter distributor is employed, but if a mechanical transmitting distributor is used, bias is more difficult to insert.



USE OF MORKUM T/R DISTRIBUTORS TO GENERATE KNOWN, ADJUSTABLE DISTORTION

We have on hand a Morkum transmitter and receiver distributor unit. This unit originally came with a series governed DC motor. It has been changed to a synchronous motor (modification instructions will be furnished upon request) by substituting "off-the-shelf" Boston gears. Using the transmitter and the receiver distributor, a signal of known and adjustable distortion can be generated. First, the receiver distributor is modified by strapping the next adjacent segment to the "sampling" segment. This cause the segments of the receiver distributor to have the same elctrical length, (each successive segment of the five middle segments is **mechanically** longer than the preceding segment, since the receiver distributor rotates 14% faster than the transmitter distributor), that is, each is employed for 22 milliseconds as the brush of the receiver distributor passes over it. The transmitter distributor is used to create the "start" and "stop" segments of the teletype code and the receiver distributor is used to create the five middle segments of the teletype code. The transmitter distributor is used to start the receiver distributor by circuitry through the latch magnet of the receiver distributor from the start segment of the transmitter distributor. A simplified diagram of this arrangement is now shown:

Since the receiver distributor face plate may be rotated mechanically (this was provided to permit "ranging"), the five middle elements of the teletype code may be advanced or retarded with respect to the beginning of the start and stop signal, provided by the transmitter distributor. For example, if the receiver distributor face plate is rotated to produce a long start element, spacing bias is produced. For a certain adjustment

(Continued on page 14)

A Gated Beam Radio Teletype Converter

By R. W. GUGGENHEIM, W6NCO

INTRODUCTION

Now that teletype machines are becoming more readily available to the amateur, and with Frequency Shift Keying (FSK) becoming more popular on the lower frequency bands, a selective receiving adaptor is necessary to change the desired signals into D.C. pulses to operate the printer. Such a device is called a converter or terminal unit.

First, a review of basic radioteletype theory: The adopted standard shift for FSK is 850 cycles. When this 850 cycle shift is received in the receiver it is detected, and with the use of the BFO, beat until we reach 2125 cycles. Then when the carrier is shifted, the tone changs 850 cps to 2975. These two frequencies, 2125, called the mark channel, and 2975, the space channel, are the tones utilized in the terminal unit described here.

REQUIREMENTS

The requirements set down prior to the design of this unit were few and simple.

1. It must be selective, passing only the two channels with about a 50 cycle bandwith.
2. It must include a device to compensate for fading.
3. It must not be too expensive in cost, nor difficult to operate.

One system was tried, using toroids and eighteen tubes. Obviously, this was not the answer so a study was begun on other methods of achieving results which would satisfy our requirements.

THEORY

After reading the published literature available, it was decided that the type 6BN6 tube had great possibilities, using it as a gated beam discriminator. After several weeks' work, a working model was made which surpassed all expectations. This tube is unlike conventional tubes in many ways, but this application uses the gated beam principle, with the quadrature grid as the gate. Briefly, a parallel tuned circuit is connected in series with the quadrature grid and ground. Plate and accelerator potentials applied and we find the tube cut off as far as the plate is concerned but conducting from cathode-to-input-to-accelerator grids. Then a signal is applied to the input grid and when it reaches the same frequency to which the quadrature is tuned, the tube conducts, is saturated and gives a square wave pulse of plate current. When the signal frequency is changed the tube again cuts itself off. Such is the theoretical action of this tube. However, in this service, some AC feed through is present in the tube due to the external aiding capacitor from input to quadrature grid.

CIRCUIT

The circuit used in this terminal unit fulfills all the requirements. First, a limiter circuit is used to limit the voltage to the 6BN6 grids. The diodes are biased according to the limiting level desired by changing the value of the diode bias resistor. An AC voltage of about 20 volts RMS is applied to the series connected 0-7 transformer primaries. The signal is fed simultaneously to both 6BN6 input grids. The quadrature grid of one 6BN6 is tuned to 2125 cps and the other to 2975. When neither one of the frequencies appear on the input grids both tubes are cut off, but

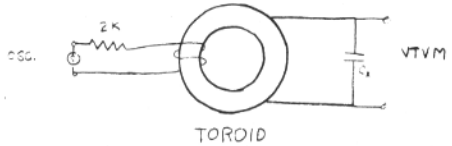


Fig. 1

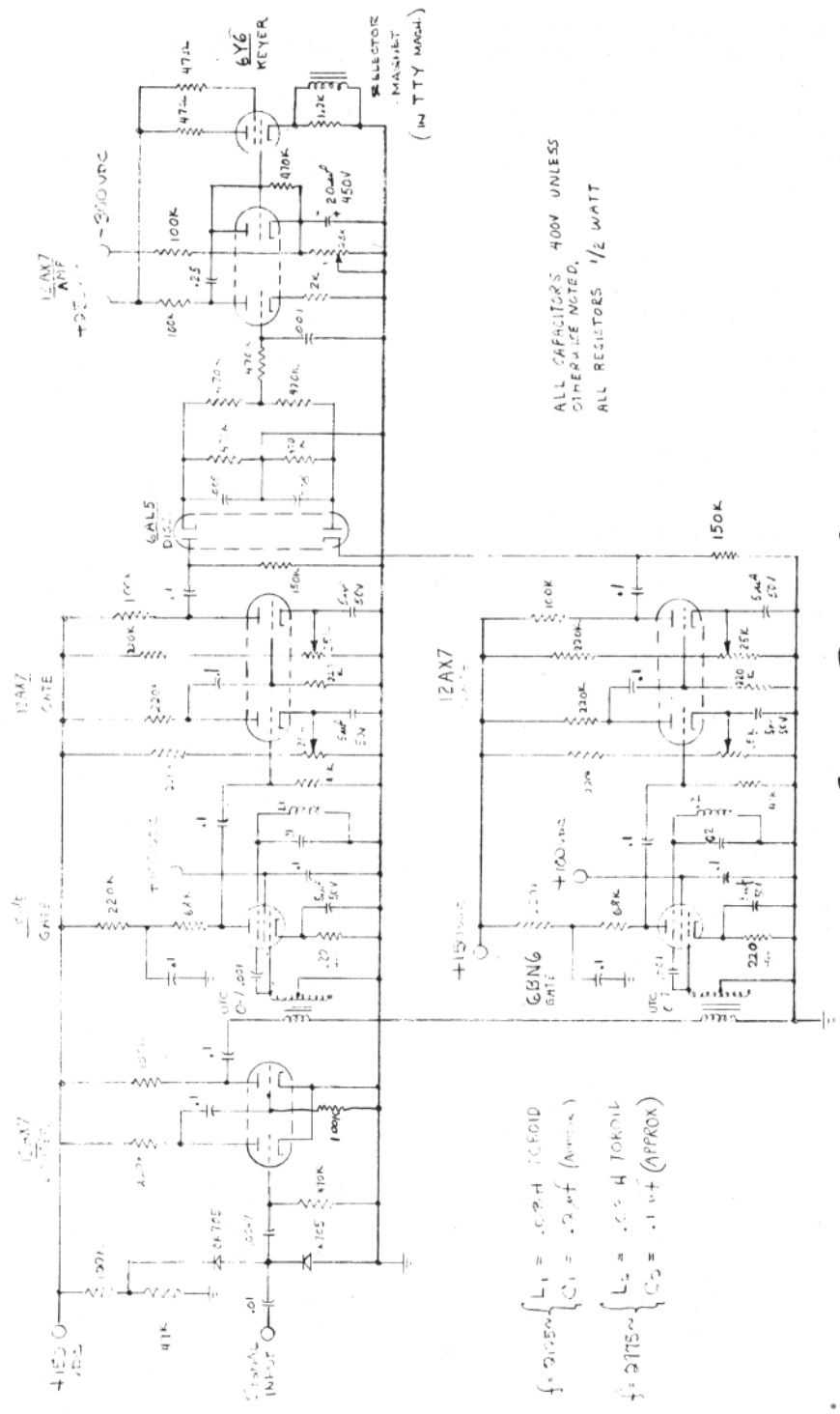


Figure 5

when a signal corresponding to the frequency of the quadrature grid appears on the input, that tube conducts. The signals go into a 12AX7 with both sides biased to cut off. When the signal appears on the 12AX7 grid the tube turns on, both sides conduct and the resultant waveform is a square wave of about 40 volts amplitude at the second plate. Both channels, mark and space, are identical except for the tuned circuit in each quadrature grid. Then the signal goes into the discriminator and thence to the keyer circuit, which should need no explanation.

CONSTRUCTION

No particular care was observed in consructing this unit. The unit is built on two 5x7x3 chassis; the limiter, filter, and discriminator on one, and the keyer and power supply on the other. (However, all could have been put on one large chassis.) All parts except the toroids used in the quadrature grids, and the 0-7 transformers were mounted on Vector tube sockets. All potentiometers are screw driver adjustment and shafts up on the top of the chassis. Power supply is external.

When resonating the toroids the method in Fig. 1 has been found most satisfactory. Slight readjustment may be necessary upon installation.

One word of caution, however, and that is to keep all magnetic fields away from the 6BN6 tubes lest the beam becomes badly distorted and possibly fails to function.

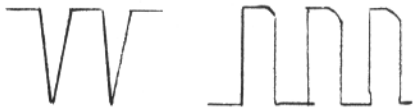


Fig. 2

Fig. 3

ALIGNMENT

Feed the output(500 ohm) of the receiver into the grid of the limiter. The point of limiting should be approximately 5 volts. At the plate of the second half of 12AX7, the voltage should be about 20 volts RMS, and waveform that of a typical clipped sine wave as seen on an oscilloscope. Then feed 2125 cps into the 6BN6 grids through the limiter. One will conduct, and as the frequency is varied from side to side a very marked decrease in output is noted at the plate with a waveform similar to Figure 2. This signal is fed into the grid of section one of the 12AX7. With the test oscillator set at 2100 cps adjust the bias potentiometer to cut the tube off. When the frequency is swept, the 12AX7 will conduct when 2125 cps is reached, $\pm$25 cps (Fig. 3). The same procedure is followed on the second half of the 12AX7 and duplicated entirely in the other channel.

The selector magnet is connected in the cathode of the 6Y6 and the -300 volt potentiometer adjusted to give the correct magnet current.

(Continued on page 15)

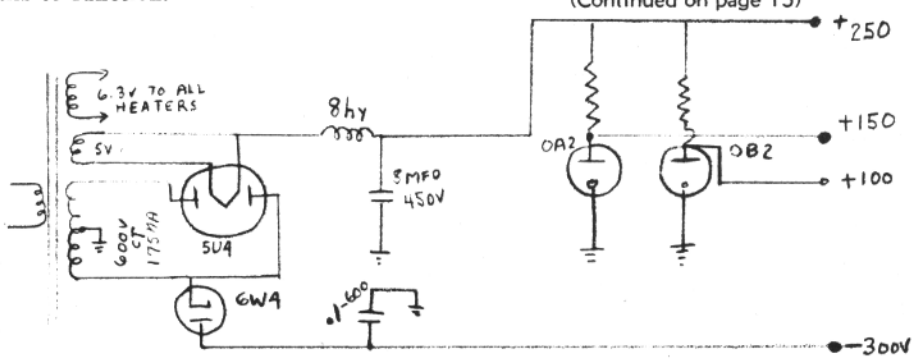


Fig. 4

"What an interesting publication RTTY is. It gave me great pleasure to receive it. Please let me have all the back issues that are being printed and enroll me as a member to receive the bulletin in the future. Also let me know how much I owe you.—I believe that I am the only amateur RTTY operator in England with a private station. Considering this, I would like to know who your second request was from in England. I operate an amatuer station (G3JNG) and BRS-12959; this latter being the RSG No., of which I am a member. Location is Bournemouth on the South Coast.—Practically the entire station is comprised of American equipment. Two AR-88 Receivers work into a TG-26 Teletype, and I have been unable to obtain an American Converter here, I am using the British two-tone shifter (TM-11/486, page 105, pars. 346), which is only 640 cycles and one has to wangle it a bit. The relays are 299's, equivalent of the WE-215. Other equipment in use is, the RA-87, the BC-77. I am also using a BC-1016 undulator and an RD-2 facsimile printer.—but as I said, I cannot find anyone else privately interested in this in the United Kingdom."—H. Harris.

RYRYRYRYRY

"Not too much doing up here in the land of Christmas trees and snowballs as far as radio-teletype is concerned, 40 has been dead at night but have noticed that for the last feew days W6's are starting to poke signals up this way. Heard W6DOU the other evening and have heard you a couple of times so maybe conditions are beginning to improve. We have regular Sunday skds with W1BGW, Jack Berman at Boston and VE3GL, Rube Hadfield in Toronto, Ontario. Both grand guys to work with. As you may recall Canadian amateurs are only authorized to use 7150-7200 for teletype, but we are hoping to receive the same privileges as you chaps within a few weeks."—Lou Buck, VE2ATC

Many thanks for sending the bulletin with log sheet air mail. It arrived today —Opr MP at W1AW, 4 miles says he has his: Will tr y to do more in this contest (RTTY on 40 & 80 & worked cw to a 20 RTTY yesterday tho we don't shift for that yet.)—F. E. Handy, W1BDI

RYRYRYRYRY

". . . Do you know of anyone that has a circuit of a VFO or other FSK circuit that will let them switch rapidly from 80 to 40 and to 20 query I will never be happy until I have a layout that will do that, and what bothers me is how to keep the frequency 850 cycles when shifting from one band to the other and frequency multiplying from the VFO that you are using to shift the frequency."—Scottie, W5GPD

RYRYRYRYRY

"I was receiving United Press three hours after I got the machine in the shack. I built the converter in QST Jan. '53, pg. 44. Works very good. Have copied OCB 52 in Lima, Peru, J.A.Z.6, Tokyo, S.F. and numerous other RTTY Stations. You can't imagine the thrill I got when intelligence began to show up out of a mad scramble of the English alphabet, and I do mean Mad. Myself, W6FDJ, W6ASJ, and W6PYH are copying now."—Roger Wixon, W6FDJ.

RYRYRYRYRY

"I see by the December issue of RTTY that theer are some model 26s available. And from the description you gave, they sound like a great improvement over the model 12s. Say, are these available to the East Coast gang? If so, from where? California or New York?"

—Neal Sheffield, Jr., W4ZPZ.

RYRYRYRYRY

These machines are available when we have them on hand, but have a waiting list of over eighty at this time. Anyone interested in one when we get more at a much later date. Write Lewis Rogerson, W6SCQ. We cannot say how long one will have to wait.—Ed.

"Connected it up to the Williams Converter as you suggested. Put the coil in series with the mark amplifier tube and had it printing."—Jack W1BGW
With the selector magnets of the 26 in series, operation can be had LESS the POLAR RELAY by operating magnets in series with the mark amplifier of John William's Converter for those who already have this unit.—Ed.

"Fine on your plans to expand the size of RTTY. I am sure that you will make it even better than in the past and it has been a very fine then too. I want to wish you all kinds of success and want to give you and your staff full credit for doing a real bang up job. Theer seems to be more enthusiasm out on the west coast than here in the east. I, of course, include your XYL in the staff.—I am sorry that the trip that I had in mind did not pan out. That is to your town, instead a fellow that works for me is leaving for there by plane tomorrow night. But I expect that there will be another trip coming up soon."
—Marvin Bernstein, W2PAT

"Here I am again on a business trip. My fourth time in England in a year. Recently made a number of trips to Montreal, Canada and had a wonderful visit with Lou Buck, VE2ATC; Bennie Halickman, VE2AKT and Tommy Lott, VE2AGF. That Montreal gang is a swell bunch of fellows. I expect to be back in USA in a couple of weeks. I enjoy the RTTY magazine very much—regards."
—Bill Auld, W2DXD
"Many thanks, Bill for note—Ed.

"We have since decided to put RTTY in our club station (1KW Collins KW-1 with five V beams) and I am going to have to come forth with the RTTY gear. So if you can't make it this time, don't worry but accept my thanks for the effort."
—R. C. Bohannan (Bob), W8AV, Columbus, Ohio

"I am almost dependent on the west coast stations for RTTY contacts due to the fact that very few of the east coast fellows are on forty meters. As for W5ENH, I have not heard him or anyone working him in several weeks. WZeroNME has been on a few times but I have never worked him. W5QAN/5 and K5WAT have been copied here but not when I was prepared to work them. The rig here is 350 watts into a single wire fed 75 meter antenna which is to be replaced shortly by one that I hope will be better for forty meters. TVI is nil, surprisingly. No effort whatever has been made to suppress it. There "warn't none." The printer is mod 12 with a mod 15 keyboard, to which I have geared a motor externally. It works but is inconvenient. No special trouble getting gear working. Even the noise problem surrendered quietly to VT tube keyers."
—Hugh H. Watson, W5BFX

"There are only two cords from the printer machine, one is for the 110 AC line and the other is for printer. There are only two leads for the printer. How can I hook it up for receiving and xmitting? Could I use W6NRM/9-W9TCJ AFSK Converter on the 26?"
—Frank Azvedo, Jr., W6ZNU
YES—Bob's T.U. works very fine with the 26. Look up under the table top on the left hand side for the circuit of your table.—Ed.

"The keyboard was an old model 11 which Ray Morrison W9GRW, found in the junk heap, and fixed it up with a 14 xmitting distributor.—I got it from him and not wanting to pay for a Teletype Corp. motor, dug up a motor from an old beauty shop hair dryer that was floating around the house. The easiest answer to running the distributor was thru a belt drive. Speed adjustment was easy, just count the RPM with an electromagnetic counter and turn down a pulley on a lathe. Runs at 364 RPM right now; haven't gotten around to making the final cut of .007 on the jackshaft pulleys. Works OK thru my 21A, though."—George,W9SPT.
This really is a fine idea. Ed.

VE3GL OXX in Toronto, Canada SK SK VE3GL and VE2ATC de W1BGW . . . Roger Rube and you are right on the button . . . Your shift measures exactly 850 cycles here so guess your trolley is on the wire O.K. . . . Hi.

W6AEE, W6AEE W6AEE Pasadena, Calif. de W1BGW, W1BGW, W1BGW Boston, Mass. . . . oger Roger Roger and solid solid Merrill . . . Also got this message solid last night . . . Many thanks Merrill . . . onder if it would be possible for you to order the paper chute at the same time . . . (Some of the model 26s which RTTY placed with its members did not have the paper chutes when received.—Ed)

W1BGW de W6AEE with W7CO on the side . . . Mostly O.K. Jack and fine on getting as much copy last night as you did . . . QRX fone here . . . That was W7AVC calling Hi.

W6AEE de D1BGW . . . Land Line Merrill . . . Fine copy . . . Sure is thrilling to receive that kind of stuff from Calif . . . But don't ring my bell so lote at night . . . Hi . . . you will wake up the folks ringing it . . . Hi . . . that should make good tape off the floor . . . Hi . . .
(Sure did—Ed.)

Hope that you are still with me. That was W2NSD at the airport just leaving . . . Wayne has been out here in Los Angeles for the audio fair and is on his way back to New York . . . How do you copy Don up at Seattle????

W6PNW de W5BFX Shreveport, La. All okay Ray and the name here is Hugh Hugh. I do not believe I passed it ot you last time. I wish I had tape gear here so I could show you how well you are coming in here, it is nearly perfect . . ..

"Northern California RTTY Society—We plan to hold our first organizational meeting this Thursday, February 18, 1954, 8 p.m. at the Red Cross building in Oakland. Speaker of the evening will be Mr. Al Prien of the Pacific Telephone and Telegraph Co . . . Who will present a talk on the Servicing and Maintenance of the Model 26 . . . We will have a unit present for demonstration . . . Talk will be followed by a movie showing RTTY operation of the East Coast gang . . .

W2BDI de W8BYB Detroit O.K. and fine all the way E. | | | You were absolutely perfect and the mux did not miss a letter . . . . Will send you the copy if you wish . . . . Give me the address as I only have the 1950 edition of the Call Book . . .

Merrill Swan W6AEE
3769 East Green Street
Pasadena 10, California
Scottie and I have not yet received the machines but we are working on the terminal units best 735 to you and the gang . . . Sig Mac . . . Cont'd . . .

W3PYW with W8BYB Roger Traffic and Bob you will be interested in this (W8AV) here she reprefs Kiddo . . . NR.1 W5ESV CK24 Tulsa, Okla., Jan.

Received by W9TCJ Wiliams Bay, Wisconsin Ja 30, 1954
Received by W3PYW 1 February 2230.
(This is what we can do if we take the time . . . Handle some traffic. . . Ed.)

Bob—W8AV Received your letter and one off to you today. Think that Rod's idea on W6AEE converter is best deal. Key an audio OSC with keyboard — I hesitate to mention that I wrote an article on the way I think it should be done or at least its the way that W2JAV W4JCV, W3LMC, W9TCJ and W2PAT and myself do it — How many more I really don't know . . .

KL7CK KL7CK Juneau de W6AEE W6AEE fairly good copy Jerry. Did not hear Bud come back . . . Neither did Dick

Dinner on table here so must sign Rod Sorry can't stay family is mad now . H. 73 es BCNU W8BYB de W9SPT, Chicago

Many thanks fellows for FB QSO . . . I hear W4GXL on . . . He may want a QSO . . . So will QSY over to his frequency . . . So what say fellows? Well 73 and good night MNI TNX . . . W9UAU W9GRW W9SPT de W9TCJ standing by

W9TCJ de W9THE O. K. Bob and TNX for the EXXXX report . . . Didn't realize it had been that long since we had those skeds time sure does FlyDOSXX doesn't it?

W8HP W8HP d eW9TCJ W9TCJ . . . Good afternoon Walt and Many thanks for the FB call . . . I have installed the paper guide you most kindly sent me and and it is working FB and keeping the paper straight . . .

W7LU de W6OWP . . . Roger and good afternoon Wallace . . . Wire copy on your sigs. It is Emile's Turn. So will cut this short. GA short shifter . . . W6FLW and the gang de W6AEE

W6IZJ and W6BWQ W6CYR W6CYR Santa Ana de W6EV GA Jim . . .

W6SEW W6SEW de W6NCO W6NCO Lakewood fine business and good evening to you sure glad to hear you on YL N N Wash my fingers and start overRYR YYRYRYRYRYRYRYR

W Six NCO in the side car Ga KKKKKK

"Bet you think I have a pair of boxing gloves onmvmmopoelaiz VVVMEBQ W6AEE de W6PYH Oakland

W6CG de W6DMK well Bud something is feeding back and messing up the printer

RTNET de W6CL the Station is R9Plus here but only a 60 cycle hum that time If the station is copying this whats the matter with the audio? This is W6CL acting for Net Control GA

W4OYG W4OYG de W6AEE ND ND ND GIL . . . Three stations on at same time . . . . Could not separate any of you too well . . .

Roger your number four our NR10 Ten K6FCT CK 589 San Fran Section Time 2254 Feb 54 and Roger have about 10 or so only four on tape so go ahead and take a transmission and will get the TFC . . . . W6AEE de K6FCT HamiltonAFB

W6CND W6CND de W0CIH W0CIH — I got that absolutely solid . . .

This is W6LDF Pasadena testingRYRY RYRYRYRYRYRYRYRYRRYR

W7KWB W7KWB de W6UPY W6UPY

RYRYRYRYRY

INTENTIONAL GENERATION OF DISTORTED TELETYPE SIGNALS AND USE OF RANGE FINDERS

(Continued from page 7)

of the face plate an orientation range reading of 40-100 might be obtained. This is a spacing bias of 30 per cent. The position of the receiver distributor face plate was noted for each bias that was produced and the unit was ready for use.

The complete circuit diagram of this set-up shows a two-position switch which was provided to switch the distortion generating unit "in" and "out" of the circuit. In the "bias" position the receiver distributor AND the transmitter distributor are used. Of course, there is a "no bias" condition that can be generated even when the receiver distributor is used the condition of no bias is midway between the mark and space ends of the scale.

For those of you that have access to a stenographer's dictaphone playback unit, I would be glad to loan you a "memobelt" recording of biased and unbiased signals. This recording explains, as it sends a teletype signal of 2125 (mark) and 2975 (space) tones exactly how much bias is being inserted. It will enable you to adjust and test your printer and converter. But of course I would prefer to work you on the air.

/s/F. C. White W3PYW

A GATED BEAM RADIO TELETYPE CONVERTER

(Continued from page 10)

The power supply is not too complicated a device. A suggested supply is shown below.

If it is desired to use this with AFSK or copy upside-down stations, that is, with marks and space reversed, a polarity reversing switch may be inserted in the input leads of the discriminator.

The unit has been in use at the writer's station and has given very good and consistent copy under adverse conditions, and it is felt that the unit adequately fills all the requirements which were established.

Subscription Rate $2.50 per year

RTTY
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For Information regarding the Society contact the following:

W6CLW—Ed Simmons
W6AEE—Merrill Swan
W6SCQ—Lewis Rogerson

For Traffic Net Information:
W6FLW **W6IZJ**

For 'RTTY" Information:
W6CL **W6DEO** **W6AEE**

Traffic Net News

EMILE DUVAL, W6FLW

The Southern California RTTY Society Net operates every Tuesday evening at 8:00 p.m. on 147.85 mc.

Activities for February:

Feb. 2 — W6RL, N.C. — 9 Checkins

W6AEE	W6IZJ
W6CAP	W6SCQ
W6DEO	W6WYH
W6EV	W6ZBV
W6FLW	

Feb. 9 — W6SCQ, N.C. — 10 Checkins

W6AEE	W6KNI
W6CAP	W6NWM
W6EV	W6ORV
W6FLW	W6RL
W6IZJ	W6ZBV

Feb. 16 — W6IZJ, N.C. — 16 Checkins

W6AEE	W6JAV
W6CAP	W6NWM
W6EV	W6ORV
W6FLW	W6RCM
W6IIV	W6RL
W6IZJ	W6SCQ
W6KNI	W6WYH
W6NAT	W6ZBV

Feb. 23 — W6ZBV, N.C. — 17 Checkins

W6AEE	W6NAT
W6CAP	W6NWM
W6EV	W6RCM
W6FLW	W6RL
W6IIV	W6SCQ
W6IZJ	W6ZBV
W6JAU	W6ICS
W6KNI	