RTTY

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NEWS OF AMATEUR RTTY

DECEMBER 1962
30 Cents
Vol. 10, No. 12

HORSE TRADES

This page of the Bulletin is for use of amateurs who have RTTY EQUIPMENT FOR SALE OR TRADE and those looking for equipment to buy or trade. It is a free service and may be the means of getting someone on the air.

RTTY, Inc.
372 WEST WARREN WAY
Arcadia, California
Return Postage Guaranteed

FOR SALE: W.U. 51C polar relays, $2.00 P.P. Two type 101 Teleprinters, page, AC motors, working cond. 16"X14"X12". Information on Morse Keyer, use TD as CW tape sender (CW ID) 55c P.P. Also complete description and circuits W.U. Model 82728 Electronic Regenerative repeater, 19 pgs., and foldout circuit, 55c. W2BVE, 834 Palmer Ave., Maywood, N.J.

FOR SALE: Two model 15 page printers, std comm type and keytops, 60 speed, sync motor, and XRT table $125.00 each, non-waivers. Two model 14 TDs, 60 speed, sync motors and slip base $65.00 each. Non-waivers/W6SCR, 11319 Farndon Ave., Los Altos, Calif.

WANTED: Model 12 keyboard, John Riley, 914 N. Cordova St., Burbank, Calif.

FOR SALE: Model 14 keyboard perforator, back space, auto-tape feed-out, W1BGW, 28 New Haven, Boston 32, Mass.

FOR SALE: Model 14 typing reperf with keyboard, sync motor, good condx, no cover, waiver required, $60.00. W8PHG, Route 6, Midland, Mich.

WANTED: Information on Berkely or equiv., counter, K9DOF, 922 Baldwin St., Elkhart, Indiana.

WANTED: Cover for model 14 typing reperforator. W1KKP, 148 Needham Street, Newton Highlands 61, Mass.

FOR SALE: Model 14 perforator, type GPEFY, with copy holder, metal table and REC power supply, $50.00. W6KEB, 3461 Tulane Ave., Long Beach 8, Calif.

FOR SALE: Model 14 TD with base, sync motor, $100.00. Model 26 printer, good condition, $50.00. W6LXG, 113 Madonna Lane, Newbury Park, Calif.

FOR SALE: Model 15 keyboards (NEW), waivers required, fraction key tops, $11.00. W9GRW, 8029 Keeler Avenue, Skokie, Illinois.

FOR SALE: AN/FGC-1 complete, $100.00. W6LSG, 69 West Wistaria Avenue, Arcadia, Calif.

AFSK FOR SSB TRANSMITTERS

By Irvin M. Hoff, K8DKC
1733 West Huron River Drive
Ann Arbor, Michigan

The basic W4MGT AFSK circuit for SSB Exciters appeared in the June 1962 issue of RTTY, page 5. Unfortunately there were some mistakes in the diagram which would cause it not to work. The transistor was pictured improperly and had the emitter in place of the collector. The diode was drawn backwards and as pictured would never conduct.

These inaccuracies have been corrected in the new diagram shown here. Also a few other minor modificaitons have been made. In the original circuit, there is no DC blocking condenser in the output; thus the battery voltage could conceivably be impressed on the mike input. This has now been corrected.

Also in the original circuit, the voltage dividing network on the diode presents a low-pass filter action that is not desired. This has also been corrected. In the original, the diode was conducting with only one ma. current, which is hardly enough for proper saturation. The new circuit provides for approximately 6 ma. saturation for proper transition between mark and space to eliminate clicks.

A 1N100 or a 1N270 will do an excellent job for the diode. Nearly any other germanium diode will work equally well, if the 27K resistor is changed to a value giving 5-10 ma. current through the diode during conduction (space).

This circuit has been broken into various sections to allow greater understanding. Fig. 1 and Fig. 2 hook together at points A and B. C_1 .03; C_2 .02; C_3 .03; C_4 .05.

Fig. 3 can be used if it is desired to hook the keyboard in series with the selector magnets for local copy. B plus is the output of the local loop power supply. M and N is the model 26 or model 15 with magnets and keyboard in series. R_1 and R_2 depend on supply voltage and current in loop:

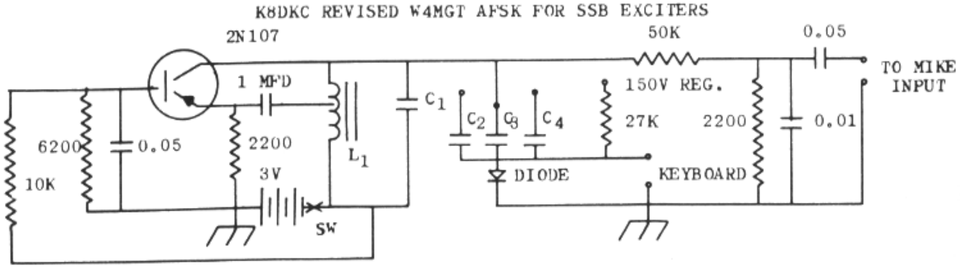
	R_1 (25 ma.)	R_2 (25 ma.)	R_1 (60 ma.)	R_2 (60 ma.)
100V	4000	16K	1600	18K
125V	5000	20K	2000	22K
150V	6000	24K	2400	27K

With Fig. 3, several machines can all be operated in series at the same time, for instance: a model 15; model 26; model 14 reperf and several TD's.

Since this circuit is self-contained, if desired, one can use a 1.5 flashlight battery in series with a dropping resistor as shown in figure 4. R_3 is selected to give a 5-10 ma. current through the diode, and SW_3 is part of SW_1, which then should be a DPST switch. For the 1N100, R_3 will be about 100 ohms. For the 1N270, use 180 ohms.

Fig. 5 corresponds with the original circuit, but has been slightly changed to give 6 ma. saturation instead of only 1 ma. This gives much better transition from mark to space and eliminates audible chirps. R_4 should be selected to give 5-10 ma. current in the diode—around 27K is about proper.

K8DKC REVISED W4MGT AFSK FOR SSB EXCITERS



C_1 0.03 C_2 0.02 C_3 0.03 C_4 0.05 For various shifts

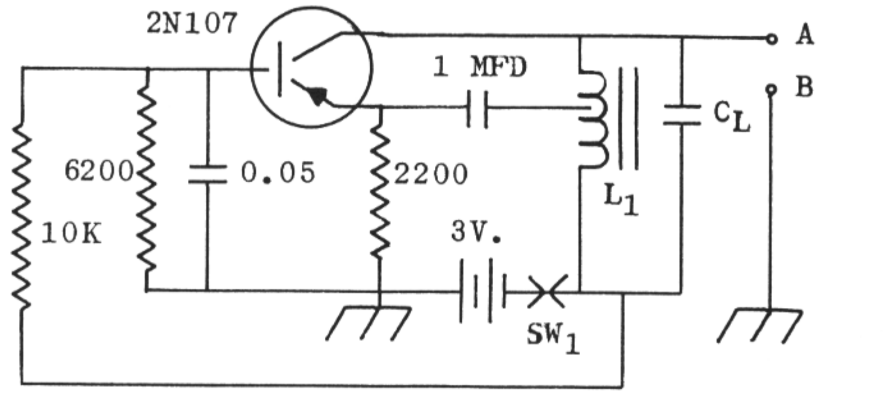


FIG. 1

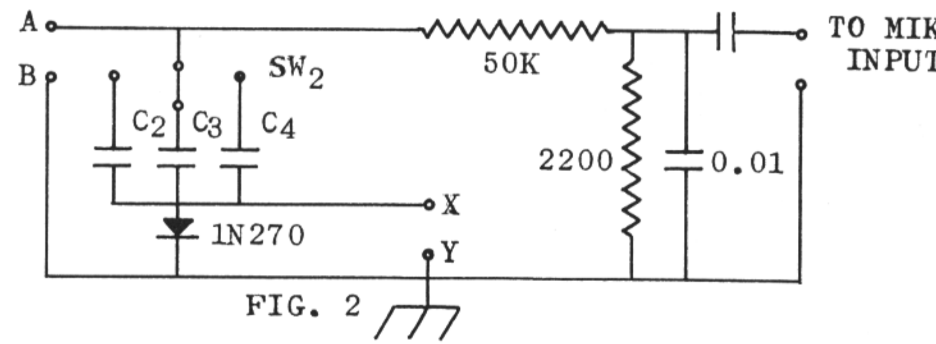


FIG. 2

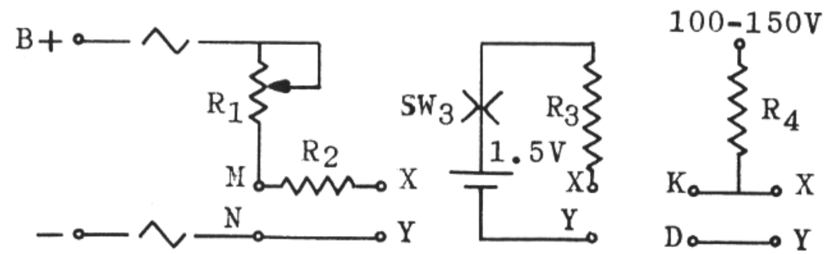


FIG. 3 FIG. 4 FIG. 5

K8DKC REVISED W4MGT AFSK FOR SSB EXCITERS

GETTING STARTED ON RADIOTELETYPE

IV — FSK KEYING CONSIDERATIONS

By IRVING M. HOFF, K8DKC
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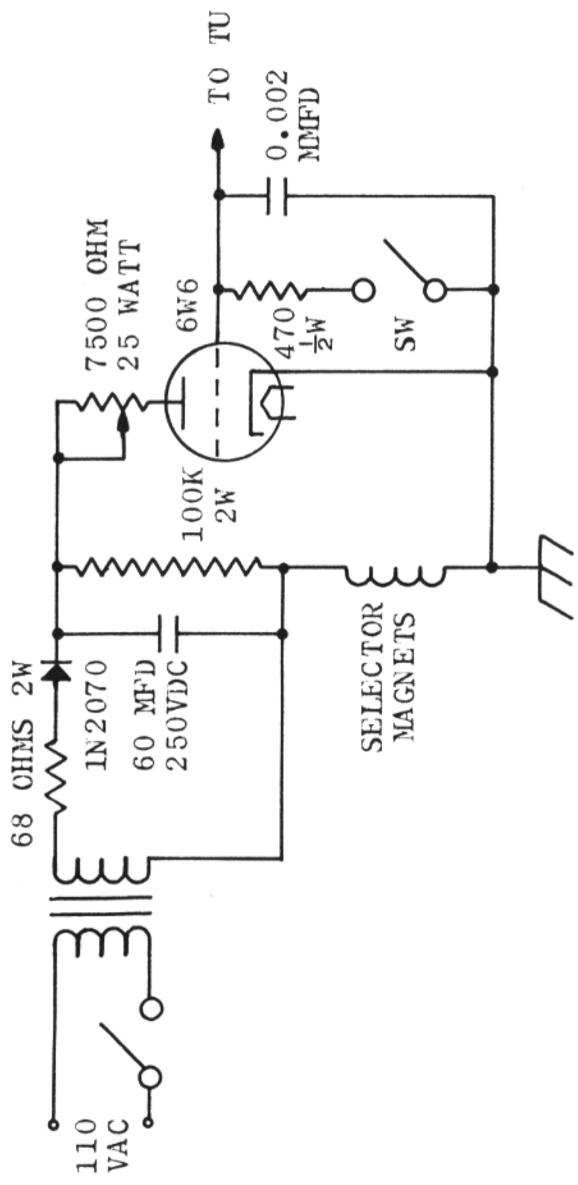
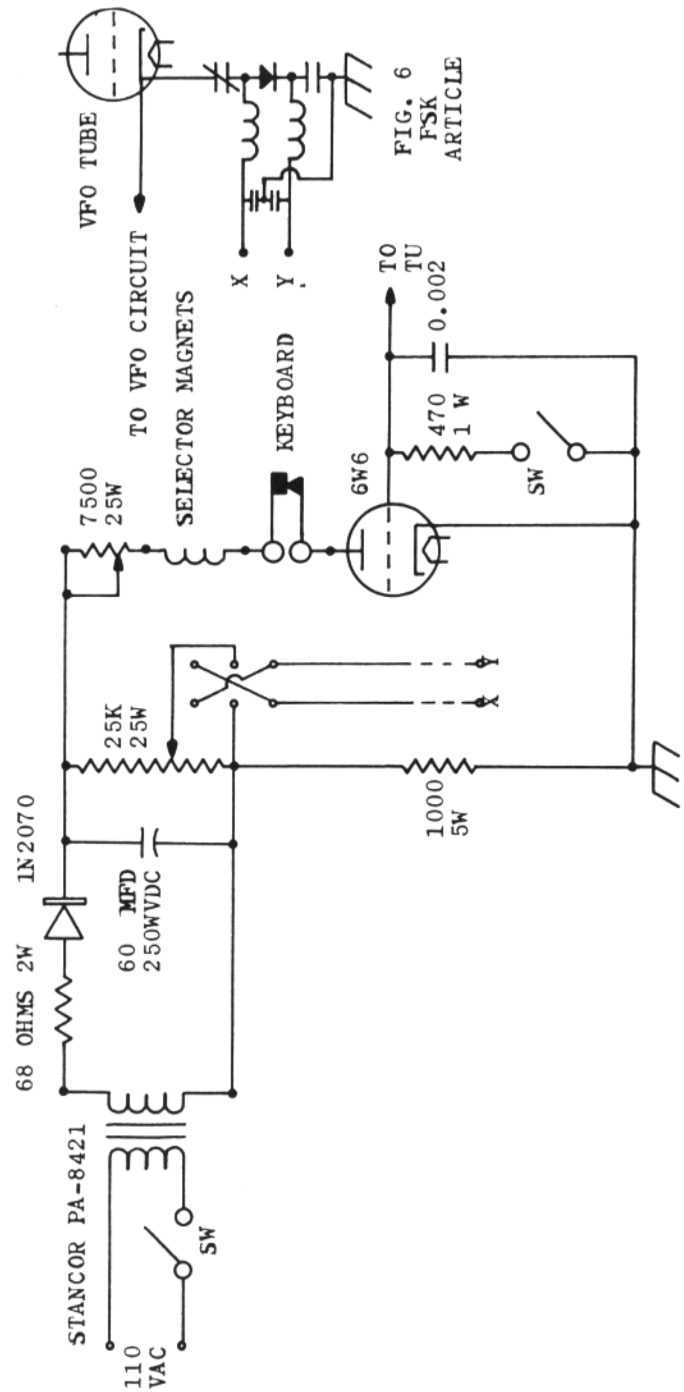
PART 2



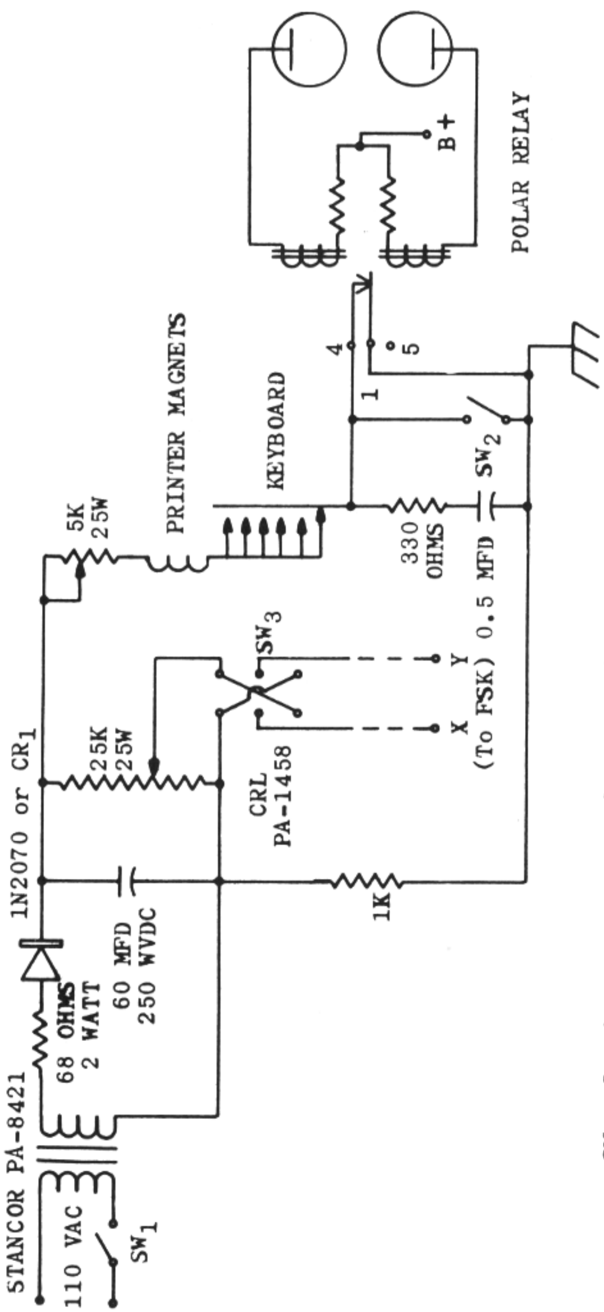
TYPICAL TU KEYER TUBE WITH MAGNETS IN PLATE CIRCUIT
(Keyboard may be in series with magnets or in FSK)



RECEIVER-TRANSMITTING USE OF SAME KEYER TUBE WITH KEYBOARD AND MAGNETS IN SERIES

K8DKC

THE "MAINLINE" FSK SYSTEM FOR CONVERTERS WITH POLAR RELAYS.



SW_1 Can be part of the Converter's main control switch

SW_2 is used to kill the converter's relay from operating the magnets during transmission; and at times no operation is desired, like during CW ID; changing the station on the receiver, etc.

SW_3 is part of a switch that will be used for reverse operations; the other two poles to be used in the narrow shift CW ID system.

(Points X and Y connect to the "MAINLINE" FSK Keyer System)

Adjust tap C on the bleeder resistor to give 5-10 ma. current through the diode on the Keyer system.

K8DKC

"NEW HORIZONS IN AMATEUR HF-RTTY TRANSMISSION" PART 2

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CREDIT

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Robert H. Weitbrecht, W6NRM, Stanford Research Institute;

M. J. (Don) Wiggins, W4EHU, Martin-Orlando, and, of course, W6AEE.

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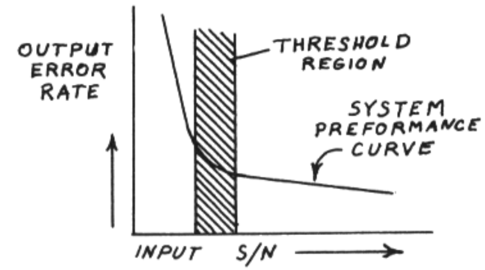


FIG. 1

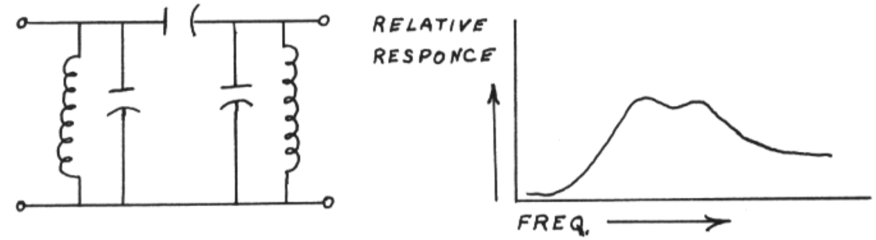


FIG. 2

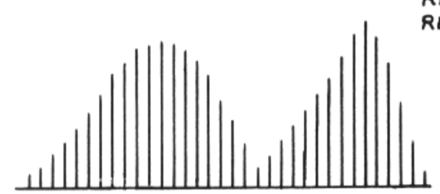


FIG. 3

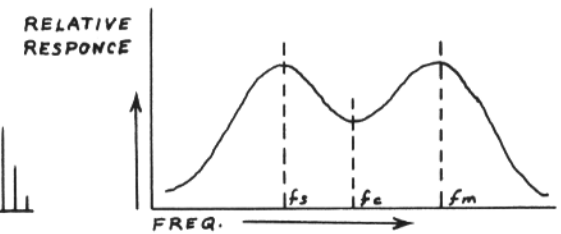
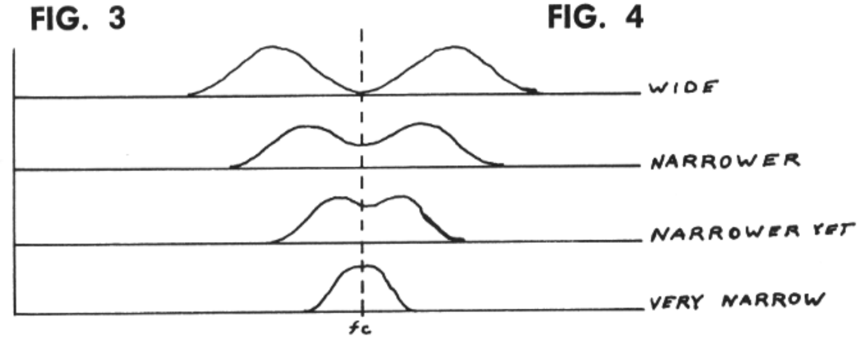


FIG. 4



SHIFT SPECTRA

"WHY USE HETERODYNE VFO'S?"

By R. H. WEITBRECHT, W6NRM

Introduction:

As the radio art advances and the employment of sophisticated modes of radio communication increases, so must equipment performance improve to match the increasingly stringent requirements of these new methods of communication. A typical problem is frequency stability of both transmitter and receiver. In fact this is the main problem that has faced radio equipment designers in the past few years. Witness the development and manufacture of crystal-controlled front-end receiving equipment using a low frequency tunable section in a double (or triple) conversion arrangement, as exemplified by the Collins 75A series and the Drake series. As a result we have had competently stable receivers for quite a number of years. A stable RTTY or SSB signal can now be held to within a few cycles/second for long periods of time without retuning. The operational convenience of this situation is obvious, as it is a considerable bother to have to "track" a drifty signal—drift as could be caused by deficient stability in either transmitter or receiver or both.

A representative tolerance of mistuning for SSB has been stated to be 50 cps. Possibly for higher fidelity SSB, 20 cps would be nearer the limit. For RTTY work, equipment and terminal unit characteristics are usually such that tolerance may be as much as 100 cps for 850 cps FSK operation. However, when working long and difficult RTTY circuits, or with TU's that incorporate sharply tuned circuits, it is necessary to work to a closer tolerance. And with the trend to NFSK operation, with values ranging between 50 and 170 cps, tolerances become tighter. Considering the overall picture, it now appears that stability requirement upon radio equipment is of order of 10 cps or better. Can this be achieved fairly economically, using essentially conventional oscillator circuits? The answer is YES! How? The secret of oscillator stability is to keep it running continuously and at a reasonably constant ambient temperature level. This is borne out by the experience shown in radio receiving equipment design. For instance any of the common types of superhet receivers can be made quite stable if it is allowed sufficient warmup time and given a chance to run essentially continuously. All in all, usually any receiver has sufficiently good "short term" stability for ordinary communications operation. Even though it may be "silenced" by biasing off the RF stages or in some similar way in order to permit the station operator to transmit, its HF and BF oscillators are kept running. And when the turn comes to receive, the signal is right there!

Transmitters present a story of another color. The past few years have seen single-oscillator VFO's designed into such equipment as Heathkit DX-100's, Viking I/II's, Collins 310B's, even their KW-1's and 32V's. What is wrong? These gear are typical older amateur radio equipment, and as such are employed with associated radio receivers for CW or AM Phone communications. Much of these operations are on the same frequency spot between two stations involved in a QSO, for instance. As a result it is necessary to disable the signal-generator in the transmitter when receiving the other fellow's signal. This means one has to turn off the transmitter's VFO, which means entirely disabling it by opening the B-plus connection to the oscillator involved. Only then can the operator "hear" the other station. True, it is possible to shield the single oscillator VFO rather completely so its output cannot be heard in the adjacent receiver at highest sensitivity, but it is impractical and expensive mechanically to do that. And moreover there are other considerations that dictate that the VFO be kept at a relatively low frequency where stability is fairly easy to achieve. But —obviously we do not wish to multiply the low frequency, as any drift will then be multiplied on the higher frequency output!

Turning on and off a single-oscillator type VFO invariably causes a certain amount of short-period "see-saw" drift effect. For instance, turning on the oscillator at the beginning of each transmission causes a certain amount of heating effect in its tube and components compartment. A small drift creeps in, which may be only 10 or 50 cps, or could be 200 or 300 cps, during the typical 10-minute transmission period. Turn off the oscillator, as when receiving the other station's signal, allows it to cool off for the next ten minutes. It then has an "invisible" drift backwards, and it becomes apparent only when it is again turned on and noticing a certain lack of "frequency spotting" upon the other fellow's signal. This effect is particularly worse during amateur RTTY operations.

The Heterodyne VFO:

The only solution to this problem is to use *two oscillators feeding into a mixer stage* which then can be keyed as required to make transmission or to silence its output at the desired output signal frequency. The two oscillators in this *Heterodyne VFO* arrangement then can be running continuously – 24 hours per day if necessary and convenient – thus enabling the entire system to be frequency-stable. With this set-up, even the simple Clapp/Colpitts oscillator circuits can have remarkable stability – even several orders better than compared with the single-oscillator set-up. With the mixer stage properly switched, one cannot hear the heterodyne VFO output at all with key open, yet the two oscillators are kept running and at a constant ambient temperature thus keeping them quite stable. And with the key closed, the output signal appears immediately and is highly stabilized on its resultant sum or difference frequency.

Since the advent of Single Sideband, transmitter frequency generation circuits by necessity have had to be of the heterodyne principle. Appropriate oscillators are used to translate the signal from a low RF frequency, where modulation and filtering are easily done, up to the final output frequency for communication purposes. Crystal oscillators have a higher order of frequency stability, for a given frequency, than do VFO's. Low frequency VFO's are more stable than those at higher frequencies, essentially because environment-caused frequency drift is a smaller value at a lower frequency. This suggests that any and all frequency tuning should be done at a low frequency where stability is greatest, and then mixed additively with a second (crystal controlled) higher frequency oscillator to achieve the result for transmission purpose. Voila! The Heterodyne VFO!

All of the current crop of SSB equipment, such as the Hallicrafters HT-32 series and the Central Electronics equipment, use the heterodyne principle of frequency generation. A sizable number of amateurs also use heterodyne VFO's in their home-constructed gear and achieve improved stability and reliability in their communications work, whatever mode may be used. At W6NRM, an heterodyne VFO has been in use since 1955, and it has proved out to be most wonderful. It is arranged for output on the 3.5, 7, or 14 Mc bands. The VFO portion uses a simple Clapp circuit with a 6C4 tube operation in the frequency range 5.25 to 5.5 Mc. For operating one of the three bands, an appropriate crystal, of 9, 12.5 or 19.5 Mc respectively, is switched and the 6SA7 mixed stage operates to extract the difference frequency. Tuned circuits in this mixer and in the next two stages (6K7 buffer and 807 driver) are switched along with the above mentioned crystals as required for the desired band-output. No multiplications involved anywhere. In this way, the exciter provides 250 kc coverage from the low end of any of these bands. Of course the VFO could be extended to permit full coverage of all the bands concerned, but W6NRM's interest is CW and RTTY only. The two oscillators are operated inside a wooden box, for reasonable thermal buffering, from off a small power supply run 24 hours a day. Thus the heterodyne VFO is kept running all the time, power drain being only 10 watts during station shutdown periods – about like that of an electric clock. In fact, electric clocks and continuously running oscillators have something in common – stability – provided power is not cut off! It is interesting to note that the 6C4 tubes used in both oscillators are quite long-lived, about 3 or 4 years before replacement is necessary due to weak cathode emission. Truly only a small price to pay for achieving "cold-start station equipment stability"! Why not run the oscillators continuously to keep them warm and ready to go on-the-air at a minute's notice?

In the W6NRM exciter, FSK is applied to the 5.5 Mc Clapp oscillator portion using a germanium shifter diode circuit on the 6C4's cathode point. The shifter circuit [1,2] is of the partial conduction type which permits smooth and linear shift adjustment from 0 to 1000 cps, and also permits wave-shaping to minimize RF click-sidebands around the RTTY frequency. As is, the whole exciter has very little drift of any consequence, as has been repeatedly checked against WWV. Normal drift appears to be less than several cps for operating periods up to an hour or more. This at 14 Mc output! The secret is continuous operation of both oscillators involved in a reasonable temperature environment, along with temperature compensation where required.

As a note, however, with regard to powerline voltage variations. A fair amount of regulation is necessary on the 6C4 oscillator circuit. A 105 volt regulator tube suffices to hold the B plus voltage, while a 12 volt Zener diode is employed to regulate the voltage fed into the two series 6C4 filaments. Also it was found necessary to isolate the VFO filament itself from RF ground by means of 100 millihenry RF chokes. With these simple hints, the Clapp oscillator circuit is adequately stabilized and will hold to 5 cps even at 5 megacycles! This is equivalent to 5 parts in 5 million! Adequate enough for amateur communications, hey?

The Hallicrafters HA-5:

A new heterodyne VFO has appeared on the amateur equipment market, in the form of the Hallicrafters type HA-5. It uses a 5 Mc Colpitts type oscillator circuit with a crystal oscillator mixing to provide output

[1] "The Useful Diode Modulator," *CQ*, April 1952.

[2] "W6NRM Mark III Terminal Unit", RTTY, Feb. 1961. (See FSK Diode Circuit section)

suitable for feeding into the crystal socket of any of the small contemporary transmitters such as the 60/90 watt Hallikit equipment. Direct heterodyne output is obtained, however, only on the 3.5 and 7 Mc bands, whilst for the higher bands, multipliers must be used in the associated transmitter equipment. It appears to be a good piece of VFO gear for operating RTTY on the lower frequencies, when fitted with a suitable diode shifter on the VFO portion. It would be desirable to run at least both oscillators in this HA-5 continuously, 24 hours a day, using a supplementary power supply of small dimensions to provide filament and B power. Also it would be desirable to rearrange the HA-5 tuned circuits for direct heterodyne output on 14 Mc to obviate need for doubling in the transmitter with its increased drift and shift adjustment problems. This could be quite easily arranged by causing the 5 Mc oscillator frequency to add to the 9 Mc crystal frequency to achieve 14 Mc output. This can be done by rewiring the tuned circuits involved – a detail left for someone to invesitgate. Or a 19.5 Mc crystal can be used, and then the entire system tunes forward as far as dial rotation is concerned on 80/40/20 meter bands, as is in the W6NRM exciter concept. All in all, this HA-5 unit appears to be a very nice addition for those people who may own DX-100's or similar equipment and do not desire to make extensive investment in SSB gear. Incidentally, the Hallicrafters unit is usable with 2 and 6 meter equipment and would be an interesting arrangement for FSK on VHF, in spite of the multiplication required from 8 Mc to the higher frequencies.

All in all, transmitter frequency stability is fairly easy to achieve, following the hints outlined above. A suitable heterodyne VFO can be either built up or purchased, and it can be improved as required by addition of supplementary power supply unit for continuous running and voltage regulation. The oscillator circuits need not be particularly fancy, but of course care is needed to provide rigidity and thermal stability as far as components are concerned. Further a good mechanical tuning system is needed, and in the W6NRM exciter a National NPW dial and drive system is employed. However, tuning gear assemblies as found in BC375 tuning units have been found very satisfactory and could be used to construct semi-fix-tuned VFOs for RTTY work.

RTTY COMPLETES TENTH YEAR

By the time you read this, RTTY will have made 120 trips to the Pasadena Post Office. Grown from 250 issues a month, to 1,700 plus each month mailed all over the world. From two small groups, one on the East Coast, and the other out West, it has grown to many across this country and in other part of the world. Many firsts in RTTY units of various types, FSK authorized on amateur frequencies, to name a few. DX has come to be an every day event. Articles have been printed in QST, CQ, Short Wave (English) and 73 to mention a few. RTTY has not missed an issue in its ten years. Thanks go to so many, that an attempt to express thanks to all who have provided the articles printed in RTTY, would perhaps overlook someone. There have been many who have taken equipment to many places to demonstrate RTTY, assisted in getting others on the air, attended convention and given talks on RTTY. To these, we say a big THANKS. We have lost several of those who did so much in getting our phase of amateur radio going, such as Boyd Phelps, WØBP, Leo Shepard, W6LS, Raliegh Winston, W6CZ to mention three, who did not live to see the growth of RTTY operations. To the Telephone Companies also a great big THANKS for their releasing of Teletypes to the amateurs. Also to the Teletype Corporation for its help with parts at a reasonable price. To MARS for their release of Teletypes to its members, and their assistance in obtaining RATT on the annual ARMED FORCES DAY activities. To the FCC for its help in the authorization of frequencies for FSK operations on amateur frequencies. Special thanks to our printer (W6DEO) for ten years of assembling the material into the bulletin you've grown to know. To my wife, Margaret, thanks for the many stamps placed on each copy of RTTY mailed. With help such as all those mentioned above, I trust that RTTY will continue to merit your reading in the future—Ed.

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For "RTTY" Information:
W6DEO W6CG W6TPJ W6AEE

REPORTS ON THE 1962 RTTY MEETING

SPONSORED BY CATS, HELD AT McCORMICK PLACE, CHICAGO OCTOBER 7, 1962

The general session started about 10:00 a.m. A lively crowd appeared and took care of the typing reperf units and others that were available. (30 TDs and typing reperfs.)

The regular session started at 1:30 p.m. after the informal get together.

Speakers at the regular session included:

George Boyd, Master of Ceremonies (Hallicrafters); Ray Morrison, Technical advice (Bell System); Phil Catona, Transistorized Teletype Equipment (RCA); Bob Paculat, Tone signaling equipment (General Telephone); Dave Chapman, Measurements for Amaetur Teletype (Telemet); Jack Doyle, Central Division Director of the ARRL, on recent regulations and pending petitions regarding RTTY; Burt Jaffee, on Automatic Identification Equipment (Electrocom).

One hundred and ninety-four persons attended the technical session, including Frank Gobel, the photographer.

One hundred and twenty-one persons attended the dinner afterward. Some could not attend as there were only 94 confirmed reservations as of Saturday.

Harold Kopta, Director of the Chicago Boys Club, W9YHG, Lawndale unit, won the 28 at the dinner.

There were fellows in from as far west as central Iowa, several from the East coast and three Canadian amateurs.

George Boyd introduced the speakers and acted as Master of Ceremonies. He, as always, did a good job and is to be congratulated for his interest, and the effort contributed to get the arrangements together.

Ray Morrison brought his equipment and loaned a helping hand to make the demonstrations possible. He also made available advice for people needing help.

Phil Catona came with W3CRO and brought his transistorized equipment for demonstration. He discussed the factors involved in its operation and the construction of the equipment. His talk was interesting and informative.

Bob Paculat from General Telephone talked on tone signaling. His talk keyed in well with Amateur Teletype thinking.

Dave Chapman spoke on Teletype measurements in the Amateur RTTY station. Several tapes were played on a magnetic tape recorder illustrating types of defective signals. Distortion and methods of measurement were discussed. A relay adjustment panel from an FCC-10 was demonstrated as was an audio oscillator method of bias checks in polar relays. A crystal 9 mc frequency shifter was shown.

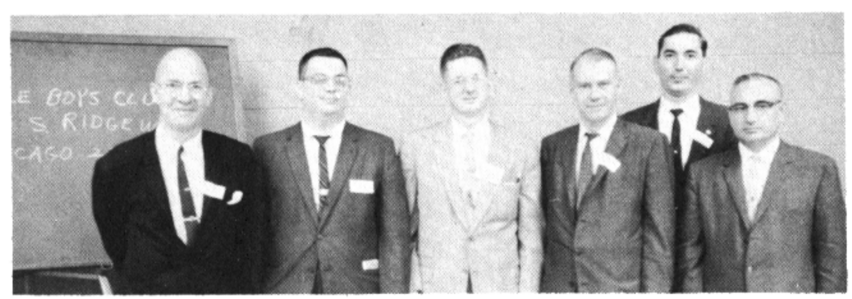
Jack Doyle, ARRL Central Division Director, spoke on recent rulings and pending petitions in regard to amateur RTTY rules. Jack attends many of the amateur functions in the area and always has interesting remarks.

Burt Jaffee spoke on methods of generating frequency shift signals and gave some very interesting and accurate measurements in his discussion of FSK generation by audio tones in SSB transmitters. His comments pointed up the difficulties of generating an FSK signal with AFSK tones and single sideband equipment. In addition Burt had an automatic identifier made up with a standard punched tape and a 14 type distributor. The unit was quite involved but it automatically added a cw ID when properly actuated. It was a nice demonstration of automation in the Amateur station, and was very well received.

Question and answer sessions interspersed the actual talks.

I think I speak for everyone when I say the program was enjoyable and that meeting old friends and new ones was real great. A big thanks to Jordan Kaplan, W9QKE, and the group who helped to put this fine meeting on. Let's look forward to next year.

—W9DPY



TELETYPE CORPORATION ANNOUNCES NEW PARALLEL-WIRE TAPE READER

Teletype Corporation's new Model 28 LX Tape Reader transmits parallel-wire signals from data punched in paper tapes.

The unit is available for use as a component in other Teletype equipment or as a self-contained set with motor, base and cover.

The LX can process 5, 6, 7 or 8 level codes in partially or fully punched tapes, and operates at speeds from 60 to 200 words per minute with various drive gears.

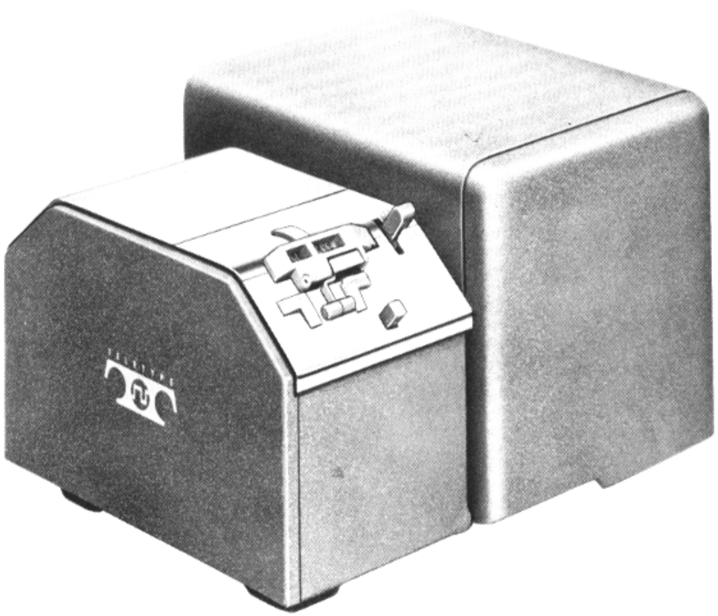
This set is equipped with a tape feed assurance mechanism, taut-tape switch, tape-out sensing control, Teletype's all-steel clutches and a set of auxiliary contacts to control external equipment.

Extended lubrication intervals allow the set to be operated for longer periods without downtime for maintenance.

Dimensions of the self-contained LX are 5⅞ inches high, 7½ inches wide, 9½ inches deep, weighing 15 lbs. It is available in a grey-green, embossed-like finish. The set operates on a standard 115 volt power circuit.

Teletype Corporation manufactures this equipment for the Bell System and others who require the utmost reliability from their message and data communications systems.

For more information on the Model 28 LX Tape Reader, write to Dept. SP-27, Teletype Corporation, 5555 Touhy Ave., Skokie, Ill.



DX-RTTY

Bud Schultz, W6CG
5226 N. Willmonte Ave.
Temple City, Calif.

Hi DX'ers:

For several reasons this one will be short and to the point. Your DX department is overflowing with logs—and more logs from the DX contest. So far I haven't been able to sort out the DX reports from the contest material. I'm in the midst of what could be called a real "pile-up"!! Jerry and I are putting together a blockbuster on all the different angles of the SS and hope to have it ready for next month or February at the latest. Suffice to say that the Contest was a huge success and we are very pleased by the favorable comments many of you sent in along with your scores.

European and African contacts have been continuing to improve here on the Coast in the early morning hours (1500 to 1800 GMT) on both 14 and 21 Mcs but the evening conditions have become nearly impossible.

Bill, G3CQE, writes that activity in Europe has really been building up rapidly with lots of new ones showing up in the UK, Germany, Norway and Holland. Bill received a Russian SWL card reporting one of his RTTY transmissions and the chap included some of the text to prove it! He is following the report up with a letter in the hope that he can come up with some info regarding the possibility of some RTTY activity from that part of Europe. DL1GP ran off 40 copies of the Contest Rules and mailed 'em to the entire German RTTY group! In one of his letters to DL1GP Bill mentioned that he was studying German and now Hans answers him in that language, Bill has to really do his homework now in order to translate them!! Reminds me of the first time I tried my text book Spanish on a Brazilian station. He had me under the keyboard after the first two lines of his transmission. I still haven't figured out what my signal report was!!

PAØLQ planned on attending the UK RTTY meeting in London. The annual meeting of the G RTTY group was held on the last day of the RSGB Exhibition last month and hope to have a report and some photos on this for next issue. Bill, ZS6UR, worked a Yugoslav station on RTTY who stated that he was running 8KW and had a rhombic antenna aimed at Borneo. This should be a good one to watch out for! Frank, W3PYW, managed to get down to OA4BR in Lima in time for the Contest and he and Zip had a real ball. Frank said they were so active they had to take turns waving a fan over the rig to keep it from burning up. Frank spent the last few hours of the contest attending a bull fight in order to relax! The strain couldn't have been that bad, Frank.

Please don't forget that if any of you DX'ers have any photos of yourself or your gear—send 'em along. Our rogues' gallery is just about cleaned out and we need some help. This applies to both the overseas and the Stateside gang. Don't be modest—remember one picture is worth 10,000 words. You can help cut down some of this drivel by sending some pictures to fill up the space.

Well, the Chief Ed needs the space and I have to get back to the Contest scores so just in case I don't see you before the Holidays—Season's Greetings from the DX Department!

73

Bud, W6CG