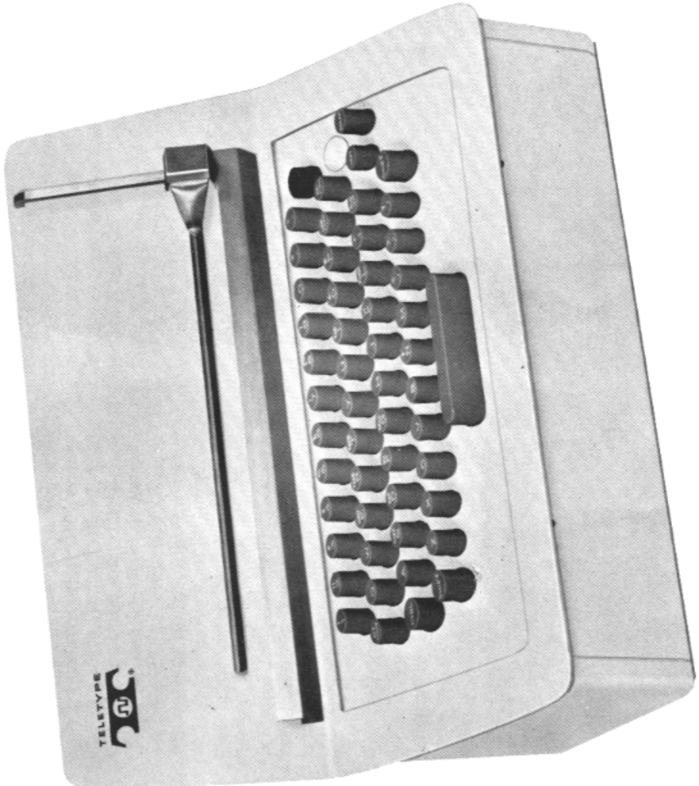
RTTY



TELETYPE'S NEW SELF-CONTAINED KEYBOARD ENTERS VARIABLE ALPHA-NUMERIC DATA DIRECTLY INTO COMPUTERS AT 100 WORDS A MINUTE

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NEWS OF AMATEUR RTTY

JULY 1964
30 Cents
Vol. 12, No. 7

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.

WANTED: 87.7 VPS fork for governed (60wpm) motor. K6PNW 13140 Dierickx Drive, Mt. View, California

FOR SALE: Very good model 15, complete with table, covers, keyboard, and auto carriage return/line feed installed. Has lights over type. Manuals included. Recently adjusted. $110.00 FOB, also Teletype without Tears and 2" CRT monitor scope (home brew). Make offer. K7BON, 419 Russell Drive, Billings, Montana 59102

WANTED: FRXD typing reperforator-transmitter distributor in new condition. K2MVR, 33 Laurel Place, Upper Montclair, N.J. 07043

FOR SALE: Collins 75-A-2 very stable and accurately calibrated, with xtal cal and Collins speaker, $220.00. Keyboard tape perf., $30.00. W1BGW, 28 New Haven Street, West Roxbury 32, Mass.

FOR SALE: TT-63A regenerative repeater in perfect condition, $22.00. Will not ship. Jerry Murphy, 2547 18th Avenue, San Francisco, California 94116

FOR SALE: 88mhy Toroids, 50c; 5 for $2.00. K5BQA, 11040 Creekemere, Dallas, Texas 75218

FOR SALE: Model 14 typing reperf, 60 wpm, sync motors, excellent condition and exceptionally clean, with tape reels, separate polar relay deck and gliders for mounting in rack or desk, but less covers $25.00 each. Same, with tape windup reel driven with separate motor. $35.00 each. Late model Teletype power supply $16.00 each. Action Surplus, 1200 West Mississippi Ave., Denver, Colorado

FOR SALE: Model 15, excellent condition, sync motor $100.00. 14 printing reperf, $60.00. 14 TD sync motor, $50.00. CV-89 TU, $200.00. W2JAV TU (no scope) with new type sealed relay, $50.00. 14 typing and printing reperf., sync motor, $80.00. Want 28KSR. Will ship, no charge for crating, W4AIS, 7 Artillery Road, Taylors, S.C.

FOR SALE: Two CV-89A, new condition at $175.00 each. P. J. Amico, 188-05 50th Avenue, Flushing, N.Y.

SELL OR TRADE: Excellent 32V3 with book, $225, or trade for gear of equal value, W1LWV, 99 Water Street, Millinocket, Maine

RTTY, INC.
372 Warren Way
Arcadia, California 91007
Return Postage Guaranteed

TWO TONE RTTY SIGNAL CONVERTOR

G. E. Blanchett, VE3BAD
10 Glen Muir Drive,
Scarborough, Ontario, Canada

This convertor makes use of the same principle discussed by K6IBE, Frank Gaude in his excellent article published in the June 1963 RTTY. I have incorporated some changes however, which I feel improves the overall design. Like W6NRM I felt that the inclusion of a limiter would be beneficial in certain circumstances and I also felt that voltage regulation was a must. You will note also different time constants used in the unit. I felt Frank's a bit too short. Although this terminal unit does not have many of the refinements of W6NRM's modified MARK IV, it does contain all the requirements for a complete station installation.

By placing a gain control before the limiter a simple method is provided for adjusting the limiter depth to take advantage of full two tone operation or a facsimile of discriminator operation, depending on the particular band condition. In an attempt to obtain optimum noise immunity, a balance potentiometer was provided so that both channels could be balanced and thus cancel any noise at the trigger input. Following the balance potentiometer you will note a high impedance isolation network. This in effect improves the selectivity of the filters and at the same time prevents adjacent circuitry from interfering with their operation. This same circuitry allows the filters to be tuned up outside of the terminal unit without the worry of the possibility that they will be detuned when they are installed in the unit. To further preserve the "Q" of the coils they have been placed in the grid circuits so they will not be saturated.

The printer magnet current is derived from the mid point of the two voltage regulator tubes. This is quite practical because we have made use of 20 ma. operation for the teletype magnets, there being no advantage to wiring the magnets in parallel and operate them at 60 ma. Most printers are arranged so that they can be connected either way, some with a switch some by rearranging strapping. No other than 20 ma. operation was allowed for however, if one must use 60 ma. an auxiliary rectifier can be used to supply the 150 volts at 60 ma.

Two options have been provided to obtain monitor copy and also shift the VFO. The most simple is to connect the printer magnets and keyboard in series and take the keyed voltage, through an isolating resistor, to drive the shifter circuit. This keyed point contains some distortion of the square wave printer code caused by the magnets inductive kickback however, no apparent problem is evident by the time the pulses are converted to frequency shift. The other method of obtaining monitor copy makes use of the fact that a keyed positive voltage is available at the battery side of the keyboard contacts in the normal shifter circuit. This keyed voltage is applied to the grid of the schmidt trigger through an isolating resistor and to make sure that your monitor copy has no bias, we have provided an adjustable bias potentiometer for the monitor circuit. Although this circuit requires a few more parts it provides a distortionless signal to the shifter circuit and probably most important will work very nicely with many of the shifters in use at the present time, without modification.

I have tried many methods to assist tuning an RTTY signal and I have yet to find a better method than the cross presentation provided by an oscilloscope. Because of this, leads have been brought out at a level that will drive a 3 inch tube without amplifiers. In fact, one could very easily install a small tube right in the convertor.

The convertor is very easy to set up after completing construction. The first item that should be checked is the current flowing through the NE 51 neon lamps. These are only 1/25 watt lamps and too high current flow will make them fire erractically. With the CW/RTTY mode switch set to CW (SW3) the 100k potentiometer should be adjusted so that approximately .6ma. flows through these lamps. To adjust without a ma. meter, adjust the 100 k potentiometer until the lamps go out and then rotate it slowly until they just light. Rotate slightly further to allow a margin. The lamps should glow orange, if there is a tendency to violet too much current is flowing which will eventually lead to problems. Following this adjustment, the magnet current should be adjusted to 20 ma. by the magnet adjust potentiometer.

After completing the above adjustments, switch the CW/RTTY switch to RTTY. Adjust the input potentiometer to maximum gain and connect a source of 2125 cycle tone to the input of the unit with sufficient level to saturate the limiter, about 2 volts A.C.

Connect a vacuum tube volt meter or a 20,000 ohm per volt meter between test point 1 and ground; a reading will be observed. Change the input tone frequency to 2975 cycles and a reverse potential will be observed. Adjust the balance potentiometer until both frequencies produce an equal voltage of opposite polarity. When this adjustment is completed both MARK and SPACE amplifiers and filters are balanced for equal signal and lowest noise sensitivity. To adjust the schmidt trigger circuit for its most sensitive condition and also lowest signal bias condition, send a string of RY's through the unit and while reducing the level to the unit by turning down the input potentiometer, adjust the trigger bias potentiometer to keep the printer reproducing RY's. By carefully adjusting this bias potentiometer you will be able to print right down to the point where you cannot see an indication on the tuning oscilloscope. (a signal can be produced for this test by turning your VFO on alone and listening to it on your receiver. For the test to be valid, of course, your transmitter must be set to shift 850 cycles). By alternately reducing the input and then re-adjusting the trigger bias potentiometer, the most sensitive position of the trigger bias will be found.

If you have installed option "B", the bias potentiometer associated with this circuit should be rotated clockwise until the printer will not produce perfect RY's (set the CW/RTTY switch on CW before making this adjustment), then rotate it counter-clockwise until again errors appear in the RY pattern. Note the two positions and reset the potentiometer midway between the two positions. A more precise adjustment may now be made to this circuit by checking the range of your printer and if necessary touching up your previous adjustment until a good wide range is obtained, 25 to 105 on a holding magnet machine and 10 to 90 on a pulling magnet machine.

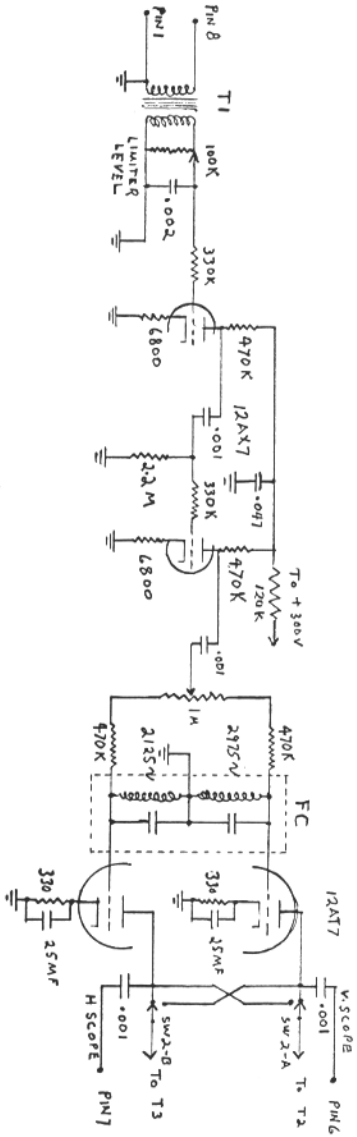
The basic circuit is arranged for 850 cycle shift, however, plug in filters were used and it is possible to provide an additional filter to look after 170 cycle shift. It is possible to copy narrow shift by switching to MARK only and make use of one tone, however the redundancy of the system is lost. The most convenient method is to provide a combination 850/170 cycle filter. This can be accomplished by changing the space filter from 2125 cycles to 2805 cycles by switching out capacity. Although it will take a little longer to adjust this combination filter initially, the operating convenience will more than pay for the extra effort. Because of the complete isolation of the filters from the circuitry of the convertor it would be easy to mass produce filters. Perhaps someone will come up with a nice combination filter at a reasonable price.

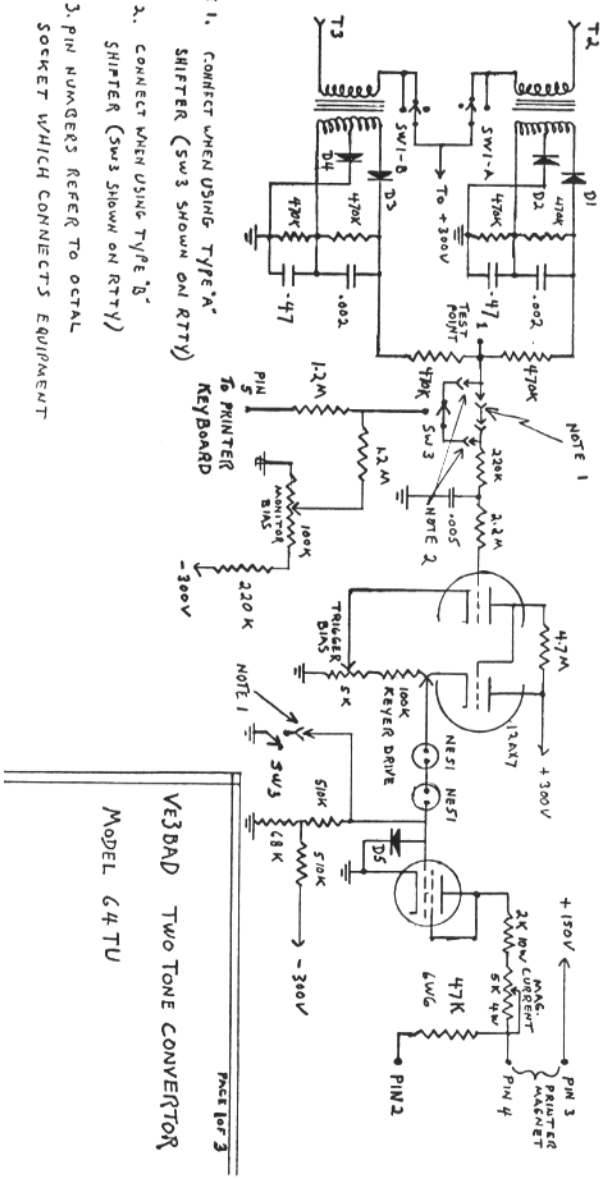
Several of these convertors have been built in the Toronto area, and all have worked very well. As W6NRM noted in his article, there is about 15% bias on MARK only or SPACE only, however a normal machine is able to absorb this small discrepancy. Tests have been run using a normal discriminator type convertor which uses a comb filter ahead of the unit and double tuned MARK and SPACE filters with good skirt selectivity. This particular two tone unit, using single toroid filters and no input filter was able to print many less errors than the unit using a discriminator type of circuit. During several extremely severe selective fading periods, this unit was able to make readable copy whereas the other unit's copy could not be decyphered.

By making use of the adjustable input control and providing an input comb filter, very excellent results can be obtained. During flat fading periods the limiter control (input potentiometer) is operated wide open whereas during selective fading the control is brought back until no limiting takes place and the first stages are used merely as amplifiers.

The next modification will perhaps have to be fully adjustable filters, most likely using a hetrodyne principle proposed in earlier copies of RTTY. Actually this additional complication would be competely unnecessary if we were all to take a little more care in setting up our shifts. Generally speaking, over the past few years the signals on RTTY have continued to become more sloppy. If *you* want the other fellow to read your copy it is your responsibility to properly adjust your shift. The shift is your modulation. Those people who undermodulate their rigs cannot work out as well as those who keep their modulation right up. Many have gone to the trouble to install audio limiters or compressors to accomplish this. What's happening to the RTTY gang? I have no beef with narrow shift, say 170 cycles. By all means let's make use of it, but let's pick a shift and stick to it. Possibly 120 cycles would be an even better choice because we have a handy frequency standard available to check our shift.

We have two solutions. Refuse to copy the guy who is too lazy to set his shift within reasonable limits or build complicated monstrosities to get around this operating problem. Because I like to tinker, I am in the process of putting together a hetrodyne type convertor, but I don't think it is the answer to the problem. Can you justify a complicated variable tuned convertor to prove what is already known. The land line companies are using a shift of 70 cycles in their 43A1 telegraph carriers. The only thing that prevents amateurs from using these narrow shifts is stability of equipment.





NOTE 1. CONNECT WHEN USING TYPE "A" SHIFTER (SW3 SHOWN ON RTTY)

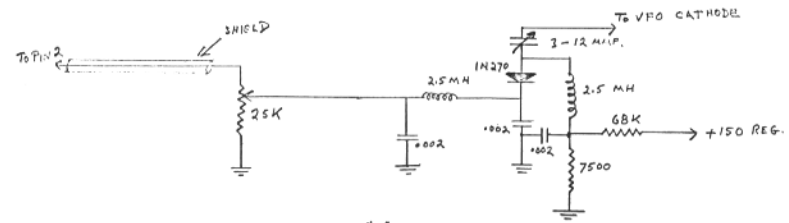
NOTE 2. CONNECT WHEN USING TYPE "B" SHIFTER (SW3 SHOWN ON RTTY)

NOTE 3. PIN NUMBERS REFER TO OCTAL SOCKET WHICH CONNECTS EQUIPMENT

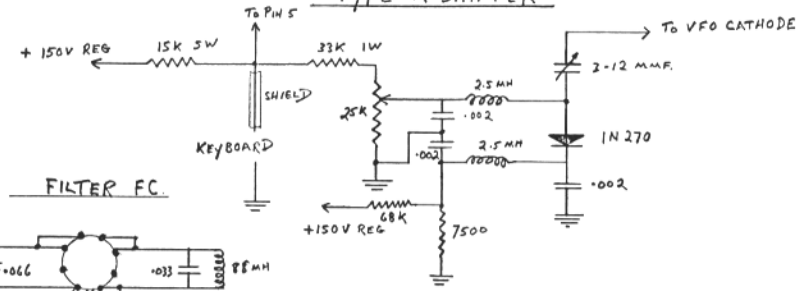
PAGE 1 OF 3

VE3BAD TWO TONE CONVERTOR

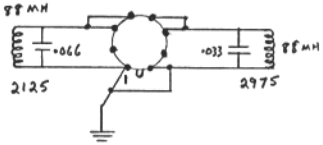
MODEL 64 TU



TYPE "A" SHIFTER



FILTER FC

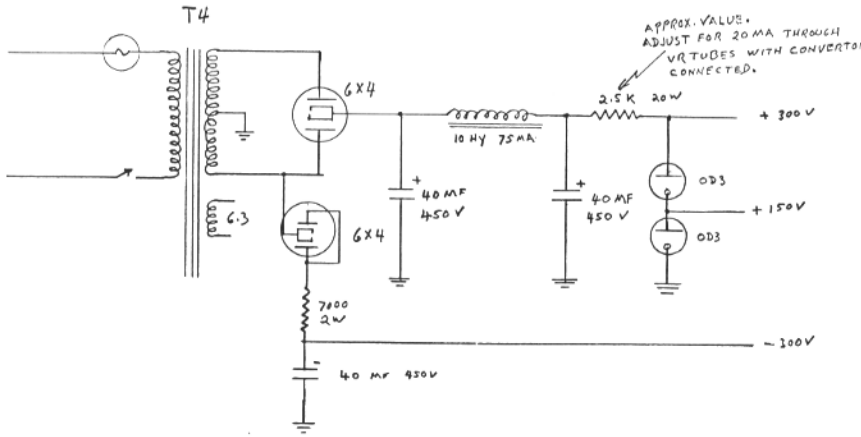


TYPE "B" SHIFTER

CAPACITORS AND INDUCTANCE APPROXIMATE. TUNE FOR PRESISE FREQUENCY

PAGE 2 OF 3

TWO TONE CONVERTOR SHIFTERS AND MISC.



T1. 3.2A To GRID.

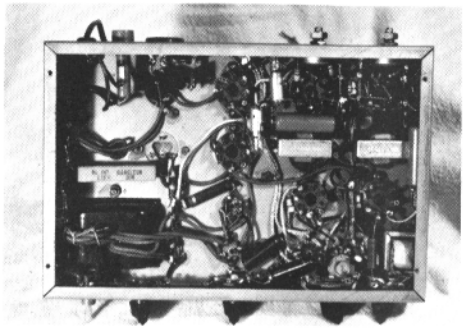
T2-T3 PLATE TO P.P GRIDS — #134 HAMMOND OR A52C STANCOR

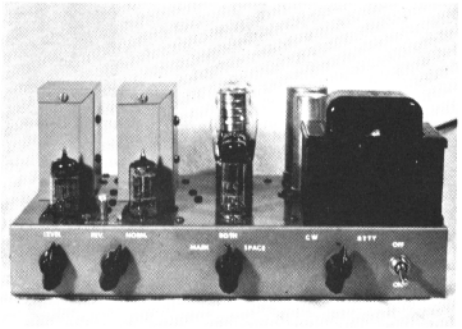
T4 300-0-300 V, 75 MA. 6.3 V, 3.5A.

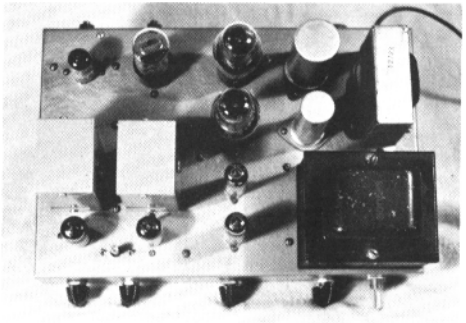
D1 To D5 IN459 OR EQUIVALENT

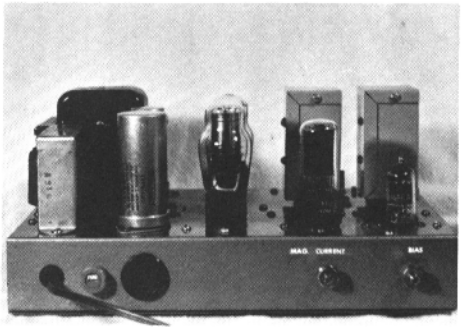
PAGE 3 OF 3

TWO TONE CONVERTOR POWER









AUTOSTART FOR THE HF BANDS

Victor D. Poor, K3NIO
430 Center Street
Frederick, Maryland

For years many amateurs have enjoyed Autostart operation on the VHF bands, and several attempts have been made to do the same thing on the lower frequencies, but generally without success. In designing a circuit for Autostart that will work on the lower frequencies, a number of things have to be borne in mind. First of all, simply sensing the presence of a signal by measuring its amplitude would never work. Any signal, whether it is teletype or not, would easily turn on the printer and print pages and pages of garble. Using special codes also has a disadvantage. Should temporary interference cause the receiver to fail to recognize the start code, the entire message would be missed. If the receiver failed to recognize the stop code, the printer may never shut off again. Time clocks and the like can alleviate some of these problems but they only add to the complexity of operation. Instead, an entirely different approach was taken to the recognition of a valid teletype signal in the receiver.

Teletype signals have one characteristic which distinguished them from all other signals and from noise. This is simply that every character begins with a start pulse that is always SPACE and a prescribed number of milliseconds later, ends with a stop pulse that is always MARK. Now all that is required is a circuit that will recognize the presence of such a pattern and will, in turn, control the operation of a printer. Figure 1 is a block Diagram of one device that has been built to work on this principle. This circuit bears a little on the complicated side, but I'm sure there are many ingenious amateurs who could do a great deal to simplify it.

The system works something like this. An isolation circuit is placed in series with the station loop to act as a buffer between the high voltage on the tube and the low level in the transistor circuitry in the Autostart control. The output of the isolation circuit triggers a one-shot multivibrator 145 milliseconds in length. If a valid signal is present, this one-shot fires on the leading edge of the start pulse. 145 milliseconds later is the middle of a stop pulse. If a stop pulse is present as it should be, then there is a pulse at the output of the up gate which in turn fires the up one-shot, causing the five stage (32 count) reversible binary counter to count up one step. If the binary counter reaches the upper limit of its count, it activates an up-limit gate which, in turn, inhibits further firing of the up one-shot. Reaching this upper limit also sets a control flip-flop which, through a relay, starts the printer being controlled. If it should occur that a SPACE is present at the end of the 145 milliseconds (which would occur about half the time if noise or some non-teletype signal were present) then the down one-shot fires. When the down one-shot fires, it in turn keys a free running multivibrator for exactly five pulses. These five pulses cause the reversible counter to count down five steps. If the reversible counter should reach its lower limit, the lower-limit gate is activated which clamps the free-running multivibrator preventing further pulses to be applied to the counter, and also resets the control flip-flop, which in turn shuts off the printer. You can see then that upon receiving 32 consecutive good characters from your receiver, the Autostart will turn on the printer. After receiving seven invalid characters in quick succession, the printer will be shut back off.

The number of stages in the reversible counter and the ratio of the number of down counts to the number of up counts was determined empirically. If the counter were made longer, it would take longer to turn on when a valid signal was present. On the other hand, if it were made shorter, it would become more sensitive to being turned on by a temporary CW or noise pattern that looked like a teletype signal. Likewise, if the free-running multivibrator generated only two pulses each time the down one-shot fired, there would be little difference in the reversible counter between signal and noise. On the other hand, if the free-running multivibrator generated say, ten or fifteen pulses, the slightest bit of disturbance to a normal signal would shut the printer off.

In its present form, the circuit will hang onto a signal which has dropped into the noise to the point where it is not readable on the printer and yet will very rarely turn on for noise or CW signals. Even on those occasions when it does respond to a non-teletype signal, it is only temporary and quickly shuts down again. I find that when everything is properly adjusted, I typically get less than a line of false copy in 24 hours of operation. Care must be taken when using this circuit that the output of the TU is care-

fully balanced, that is, when no signal is present the output is about 50% of the time in MARK and 50% of the time in SPACE condition. Many TU's are unbalanced with heavy pre-dominance of MARK or SPACE. If there is a heavy predominance of MARK, the unit will have a tendency to turn on, regardless of whether a valid signal is present or not. If it has a heavy predominance to SPACE, it will tend not to follow weak signals into the noise. In any case, if your TU has to be unbalanced, it should be unbalanced in favor of SPACE rather than MARK.

Figure 2 is a schematic diagram of the unit. Transistors Q1 through Q6 form the isolation circuit. Transistors Q1 and Q2 form a multivibrator which oscillates when a MARK signal is present. This signal is transformer-coupled (which provides the isolation) to amplifier/detector stages Q3 and Q4. The output of Q4 is sliced by stages Q5 and Q6 to form the MARK and SPACE outputs. Transistors Q7 through Q10 form the 145 millisecond one-shot. The up gate is formed by R25, C8, and CR10. The down-gate is formed by R40, C9, and CR8. The up one-shot is formed by Q11 and Q12. The down one-shot is formed by Q13 and Q14. The output of Q14 gates the free running multivibrator consisting of Q17 through Q19. The length of time that the down one-shot can fire is adjusted by R31. This adjustment is made to produce exactly five pulses out of the collector at Q17 when the down one-shot fires. Q22 through Q32 forms a straight forward reversible binary counter. Resistors R53, R66, R78, R90, and R107 into the base of Q15 forms the up-limit gate. This up-limit is applied through R112 to the control flip-flop consisting of Q33 and Q34. It is also applied to Q16 to clamp the up one-shot when the up-limit is reached. Resistors R122, R67, R79, R91, and R108 into the base of Q21 form the down limit gate. The down limit is applied to the base of Q34 through R120. It is also applied through R49 to the base of Q20 to prevent further down-counts when the down-limit is reached. The control flip-flop operates the output relay through Q35. The output relay is energized when a valid signal is present and is de-energized when an invalid signal is present.

At the time of writing, this unit has been operated several weeks with tremendous success. With the unit operating continuously on 80 meters, signals from as close in as a few miles away, to as far as Guayaquil, Ecuador have reliably operated the system.

As Merrill, W6AEE can testify, coast to coast Autostart operation has become a routine thing. I would like to offer my special thanks to VE2HY and K8DKC for their invaluable assistance in evaluating this system on the air.

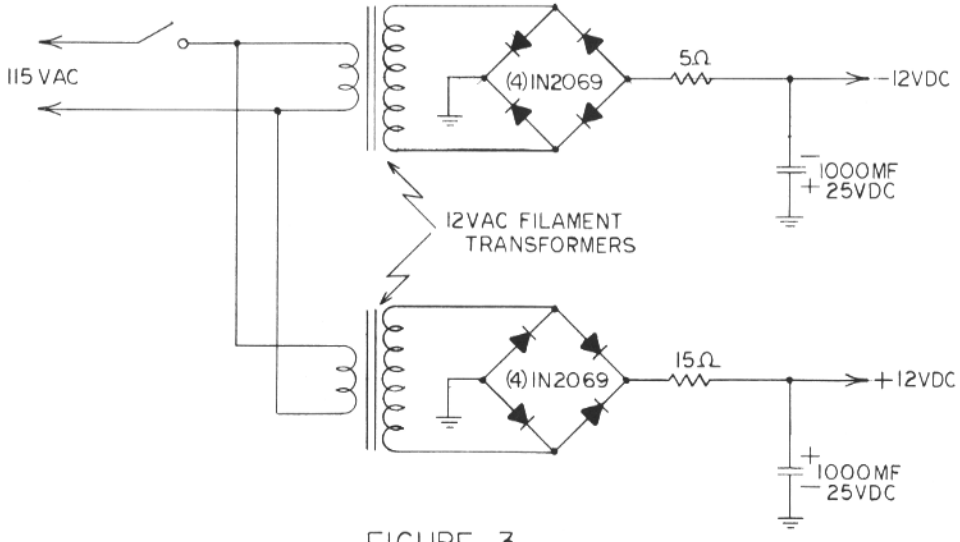


FIGURE 3
POWER SUPPLY
SCHEMATIC

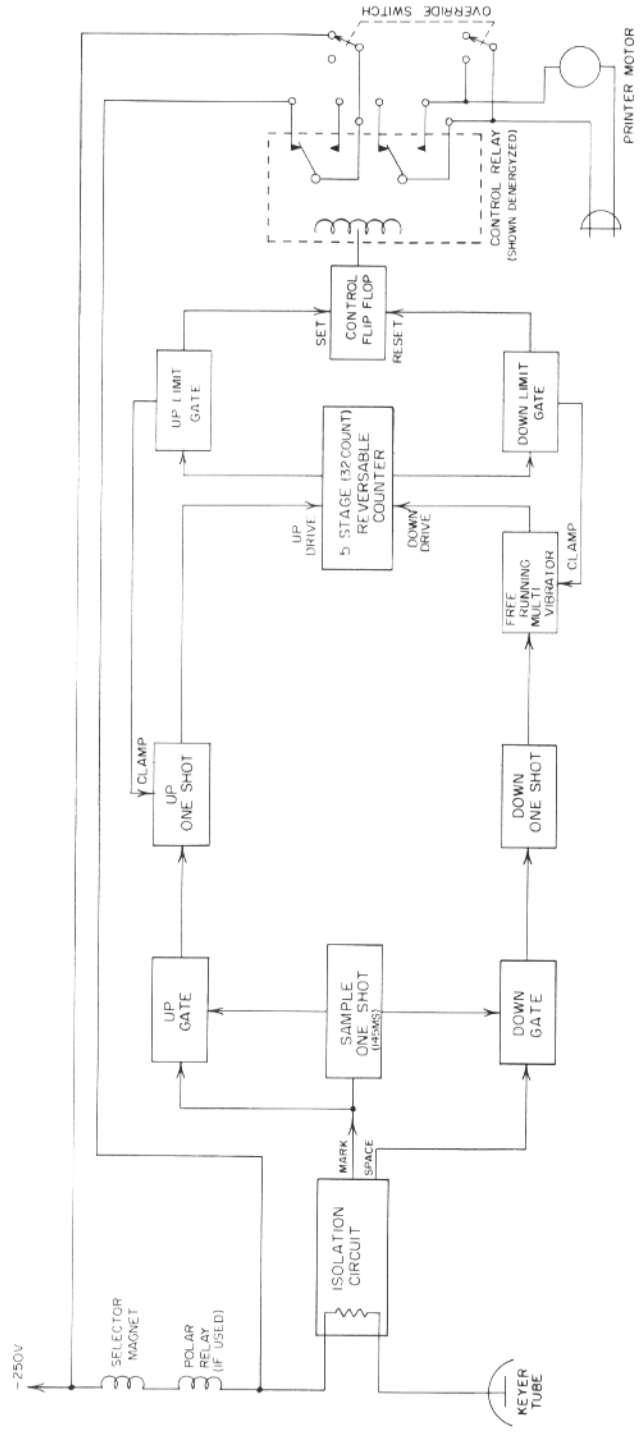
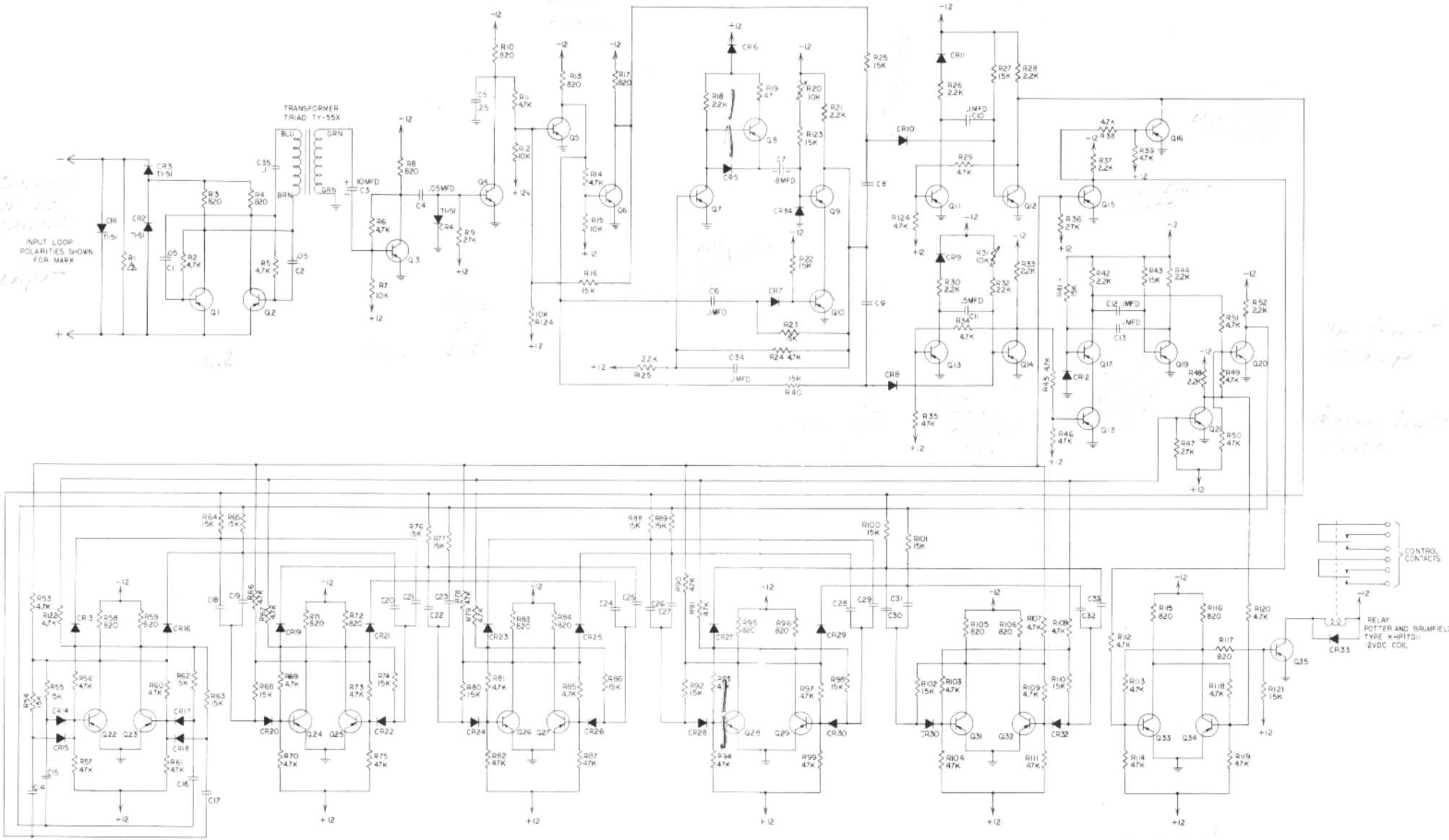


FIGURE 1
AUTOMATIC PRINTER CONTROL
BLOCK DIAGRAM



NOTES 1. ALL TRANSISTORS ARE 2N404 OR SIMILAR,
ALL DIODES ARE TYPE TI-51 OR SIMILAR,
2. UNLESS OTHERWISE NOTED: CAPACITORS ARE
.001 DISC CERAMIC
RESISTOR VALUES ARE IN OHMS, ALL 1/4W.
⚠R1 SHOULD BE 33 OHMS FOR 60MA LOOP
68 OHMS FOR 30MA LOOP
82 OHMS FOR 20MA LOOP

FIGURE 2

AUTOMATIC PRINTER CONTROL
SCHEMATIC

GETTING STARTED ON RADIOTELETYPE
IX. FSK FOR THE HEATH MARAUDER (HX-10)

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

The Heath Marauder makes an excellent RTTY transmitter. Due to the system being introduced on the crystal oscillator stage, few of the usual problems arise, making the unit very convenient to use in general.

However, as those of you already using the transmitter know, it has two minor drawbacks: (1) Once the shift is set at 850, it is quite difficult and impractical to re-set the shift for occasional narrow shift use; and (2) it was designed for direct keyboard operation, forcing one to use a polar relay or the inconvenient method of receiving local copy through the receiver.

The basic Mainline FSK system can be readily adapted to this transmitter with only one minor change in the circuit. In fact it can be adapted directly with no changes, but would not give the ability to conveniently change shifts. So although several different methods are possible, we will only show the most versatile.

Figure 1 shows the present FSK system in use. With nothing plugged into the FSK jack, the B-plus goes through the 100K resistor; through the 47K and winds up on the diodes which then conduct with approximately 2 ma. current for full saturation. The shift is set with the 1.5 to 7 mmfd. trimmer. This is the space situation corresponding to an open keyboard pulse.

When the jack is shorted to ground (mark —closed keyboard) the B-plus is dropped through the 100K 2W resistor to ground, and no conduction results (actually a small amount results from the self-rectifying action of the diode since it now has a DC path to ground through the 47K. This is typical, and is what causes the frequency to change during mark as the trimmer is re-set.)

The only change necessary in the Marauder to use the new system would be to change the circuit as shown in figure two, by removing the 100K and 47K and hooking the FSK jack directly to the diodes through a 2.5 millihenry RF choke. This will give us the ability to introduce external voltages for full-shift or partial shift, and retain a special feature of the basic Mainline system which is reverse bias to keep mark from changing frequency as the shift is set.

Most modern converters use a keyer tube for directly operating the printer tube magnets. The most recent normally use a separate power supply for this purpose. Thus figure 3 shows the method used to drive the HX-10—with the circuit shown, the tap on R-2 is set initially at about 40% from the bottom—then adjusted to give about 3 ma. conduction during space. At this point, the voltages will be approximately —45 during mark giving a back bias on the diodes; and about plus 50 during space, giving about 3 ma. conduction through the 18k resistor to the diodes. No other type of keyer tube circuit commonly used will give this change in voltage. If your TU does not use a separate power supply, just use this circuit as shown and make sure R-3 has a common ground with the tu chassis. If you use a polar relay (why?) just substitute in place of the vacuum tube to ground.

For easiest operation, it would be necessary to slightly modify the push-to-talk circuit in the HX-10 so that it could be remotely at the printer location. However, we don't have the space to include this modification. Thus the easier method would be to have the antenna change-over relay control switch S-1 in the grid circuit of the keyer tube, so that the keyer tube would be locked automatically into a mark condition during transmit. Thus the incoming signal in the receiver would not affect the transmit loop. Otherwise "feedback" could result from the receiver trying to trigger the converter.

The R-4 pot is the shift pot, and should be around 3 meg. For most convenience try to locate a RIGHT-HAND 20% log type. If you can't find one, then most any three-meg pot is ok, but preferably some sort of right-hand log.

R-3 can be a fixed resistor if desired rather than variable. Try a 5K 10 watt for 20-30 ma; or a 2500 ohm 25W for 60 ma. Or if you are a purist and want exact current; use a 7500 ohm 25W adjustable for 20-30 ma; and a 3000 ohm 25W adjustable for 60 ma.

R-1 is a surge resistor to limit current during "spikes" from the rectifiers. The rectifiers are any silicon type good for 400 PIV.

R-6 is a 500 ohm pot used for setting CW narrow shift ID during normal 850 cps operation. During the occasional times the shift pot is in use, though, the 25K will be needed.

In this circuit, mark frequency will remain constant throughout the entire range of R-4.

This system will give a shift capability to the HX-10 of down to around 20-30 cps minimum. A larger pot will go closer to zero.

Thanks to Bill Pearre K5MMP of Huston for taking measurements for us and trying out the circuit to assess its characteristics. It should be noted that this system can be adapted to the W6NRM series rather qiuckly by replacing the voltage presently going to the plate with this connection; adapts immediately to the Mainline Converter of January 1963 RTTY; adapts immediately to the Electrocom FSC-250; adapts immediately to the K6IBE TU-D of June 1963; and will adapt immediately to the new K6IBE TU-E which will be published in a month or so. It will adapt immediately to the W2JAV units also with a little careful planning.

This system, then, greatly enhances the desirability of the HX-10 as a superb RTTY unit.

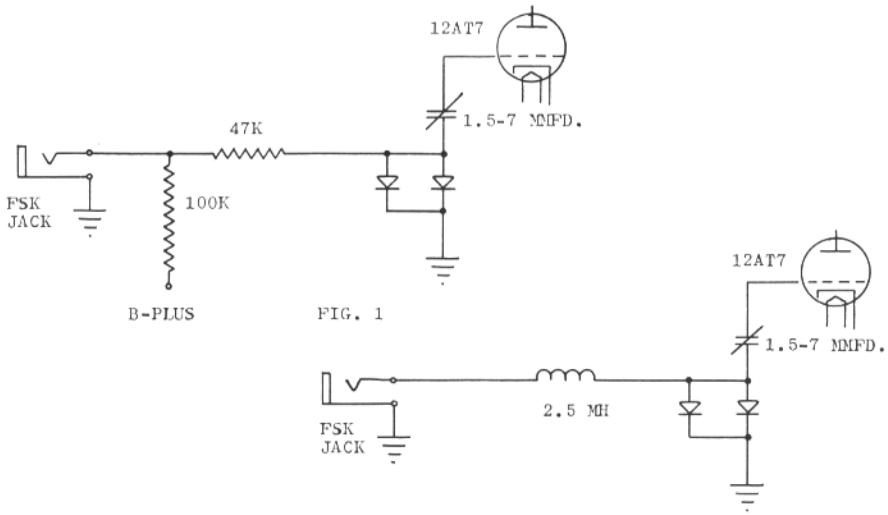


FIG. 1

FIG. 2

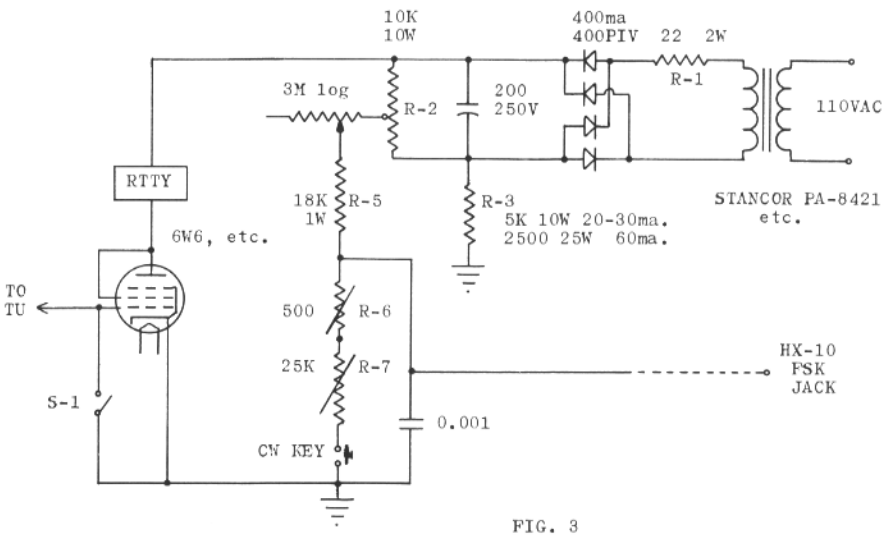


FIG. 3

MAINLINE-B FSK SYSTEM FOR THE HX-10 MARAUDER

METHOD OF EXTERNALLY ADAPTING THE HEATH HX-10 MARAUDER FOR NARROW FREQUENCY SHIFT RTTY AND CW

Ed Bruening, W8DTY
1611 Creal Crescent
Ann Arbor, Michigan 48103

In a 1963 issue of CQ Magazine (RTTY column), a note appeared about some slight wiring changes to the Heath Marauder transmitter. The changes permitted break-in FSK operation, whereas the original wiring called for the rotation of a switch before the transmitter could be put on the air.

Well, sir, I incorporated this change in my Marauder . . . and incidentally, I have to agree with a lot of fellows that it is a real nice rig for RTTY . . .

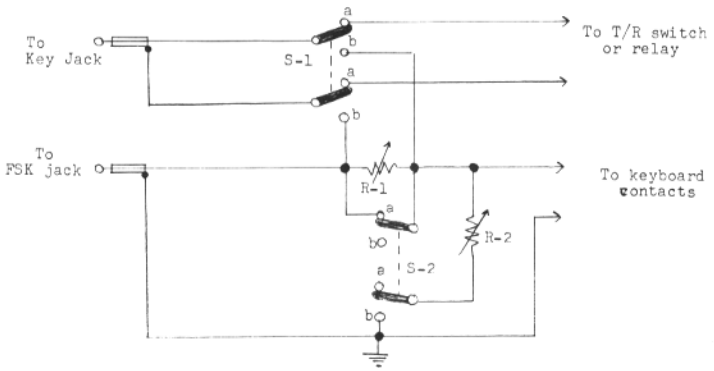
Then . . . I started looking for a way to put the Marauder on narrow shift FSK . . . without going into it very further. I soon came up with the following simple gadget that may be of interest to some of your readers.

It permits the standard 850 cycle shift, adjustable NFSK (I use it at about 170 cycles), make-break CW I.D. on the mark frequency, or ultra-narrow CW I.D. on the mark frequency.

Since many hams don't like to modify their gear, I think this external gadget may really catch on. I suspect it can be adapted to several other transmitters as well.

A diagram and explanation are given below.

A Method of Externally Adapting the Heath HX-10 Marauder for Narrow Frequency Shift RTTY and CW



R-1 5K Adjusts shift for NFSK CW

R-2 2.5K Adjusts shift for NFSK RTTY

S-1 CW mode selector switch
a position: CW make/break on mark frequency
B position: CW NFSK on mark frequency(upward shift)

S-2 FSK mode selector switch
a position: standard 850 cycle shift (down, or to space channel)
b position: preset NFSK shift (170c),(down)

NOTE: The transmitter must first be capable of operating in the FSK mode when the function switch is set at PTT/VOX. (See info from K8JIC in RTTY column, QST, May,1963)

RESULTS ANNIVERSARY SS CONTEST 1964

Many may have wondered when the results of the 1964 RTTY SS would be printed. Your editor has waited, hoping that enough logs would be sent in to make a good report. Such has not been the case. In fact in many areas, not enough logs were received to meet requirements for issuance of a certificate. It may be that local SS contests do not at this time seem worth the effort to send in log or to have a report printed in RTTY. Remember, it's your contest, and what it will be in 1965 depends on the RTTY group as a whole.

Top scorer again is W7ESN, with a total of 7350 points, followed by: W7VKO, 5112; W2RUI, 4470; W3PYW, 3422; W7YWF, 2752; WA4GTA, 2700; and W6EV with 2254 points. W6EV is the memorial RTTY station of RTTY, INC. Lester Hammond, W6EV died last year, and the Southern California RTTY Society applied for his call to remind our fellow members of all that Ham did for the group.

Scores are:

	POINT	SECTIONS	TOTAL SCORE
W1BDI	7	4	28
W1BGW	19	6	114
W1OUG	12	4	48
K1ZPX	58	17	986
W2FAN	56	14	784
W2RUI	149	30	4470
WA2ZVL	56	16	896
W3PYW	118	29	3422
WA4GTA	90	30	2700
W5APM	80	22	1760
K5MMP	69	19	113
W6EV	98	23	2254
WB6INV	32	13	416
W6LVQ	40	16	640
W6VPC	16	6	96
W7ESN	210	35	7350
W7HFH	40	12	480
W7VKO	142	36	5112
W7YWF	118	24	2752
K8DDC	42	10	420
W8GPB	48	13	624
K8JJT	70	21	1470
W8KJK	30	14	420
W8PHG	57	20	1140
K8RJI	26	11	286
K9QNV	20	7	140
VE4BJ	16	6	96

VERSATILE, NEW SELF-CONTAINED COMMUNICATIONS KEYBOARD DEVELOPED BY TELETYPE CORPORATION

A new, low-cost self-contained communications keyboard that provides direct parallel-wire entry of variable data into computers and associated business machines has been developed by the Teletype Corporation.

The Model 33 Self-Contained Keyboard, in most cases, will replace costly space and time-consuming punched card systems for data collection and transmission. It can also be combined with other Teletype equipment for complete communications flexibility.

Teletype's self-contained keyboard is uniquely different from conventional keyboards because its reset mechanism, which allows the next key to be depressed, is triggered automatically by an external source established by a simple electrical connection.

The unit contains a universal contact which closes with each key depression, and may be used to trigger the external reset circuitry.

Key arrangement is similar to that on an ordinary four-row alpha-numeric office typewriter.

The keyboard output conforms to the newly adopted 8-level ASCII code for information interchange, and requires only a 115 volt, AC pulse of approximately 12 milliseconds to actuate the reset mechanism.

Included with the keyboard is an "ON-OFF" push button with built-in "POWER-ON" lamp, a convenient copyholder, and a 36-point connector. The entire unit weighs only 13 pounds and measures approximately 10⅜ in. high, 16¼ in. wide, and 6½ in. deep.

This equipment is manufactured for Teletype's parent company, Western Electric, Bell System affiliates, and others who require dependable message and data equipment.

For descriptive literature on the Model 33 Self-Contained Keyboard, write Teletype Corporation, Dept. SP-40, 5555 Touhy Ave., Skokie, Ill. 60078.

WB6DBD/AL6DBD

(EX W7LVR/A7LVR)

Albert H. Steinbrecher
4538 Camino Molinero
Santa Barbara, California 93105

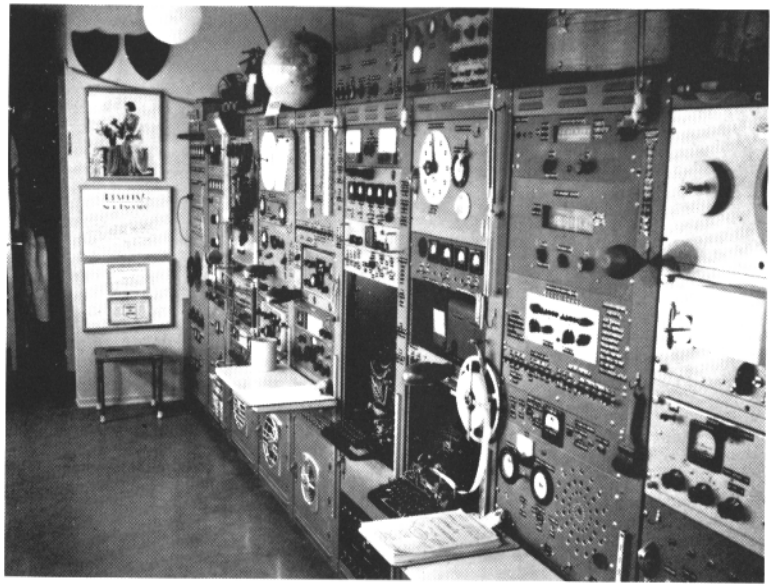
These photographs show the RIG which consists of NINE BUD ADD-A-RACKS across the center of the shack. The Racks are numbered –left to right–from one thru nine and are shown in photographs numbered "A" and "D". Photos "B" and "C" are close-ups of RTTY equipment, etc.

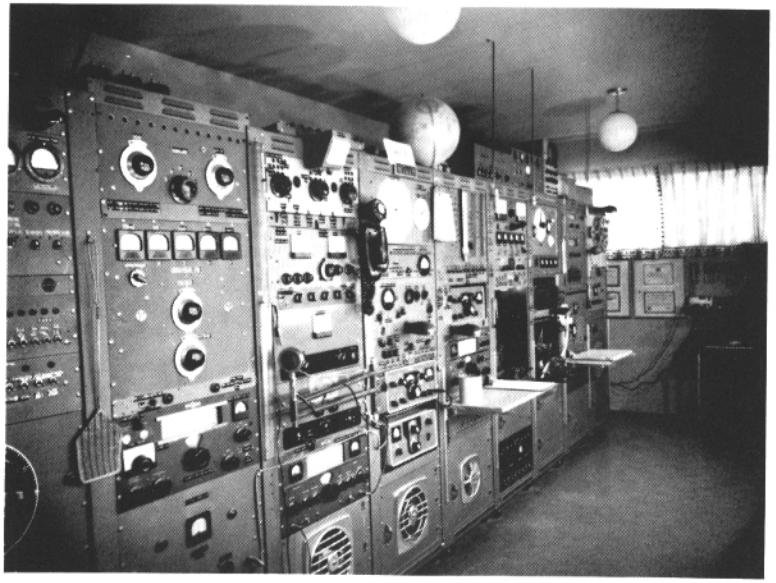
The Panels are numbered from Top to Bottom. Each Rack is named and designated by its main function.

Rack #	Panel #	DESCRIPTION
1		MAIN POWER CONTROL RACK Power enters shacks at 220 volts AC and power switch selects either side of the line for 115 volt operation.
	1	Power meters, showing incoming voltage, total current, controled voltage and current to KW Xmitter, etc.
	2	Fused main breakers controlling each rack for power.
	3	Switchboard for control of fans, lights etc. in shack.
	4	Antenna Relay and Receiver Disabling controls from Xmitters.
	5	Main Power Control Powerstat, for raising or lowering controlled voltage.
	6	Power stats to control power for bias, screen, filament and plate of KW Xmitter.
	7	Bias and screen power supply for KW Xmitter
	8	Modulator power supply for KW Xmitter
2		TRANSMITTER RACK
	1	Johnson KW Matchbox, Antenna Tuner and Band Transfer
	2	KW Final–Pr 4-250's in Class C. Meters for Filament Screen, Grid, Plate on both tubes, grid and final tuning controls.
	3	Collins 310-B driver and VFO for KW Xmitter.
	4	KW Modulator. Pr 5514's in Class B
	5	KW Final high voltage power supply.
3		TRANSMITTER RACK
	1	SWR Bridge, Antenna Transfer from Xmitters and Receivers to antennas and dummy load, antenna relays, etc.
	2-3-4	Globe King 500-C Xmitter–used for Linear on RTTY and SSB or AM or CW.
	5	Collins 32V-1 Xmitter
	6	Cooling Fan for entire rack.
4		MAIN STATION CONTROL RACK
	1	Clocks showing GMT, PST (PDST). Behind door–KW Final Coils.
	2	Antenna Rotator controls and Direction meters.
	3	Model PCA-2 Panadaptor, CW Monitor Controls.
	4	Main Station Control–Fone Patch–Mick Control switches to all Xmitters–recording controls from receivers–fone patch to all Xmitters and receiver control–remote control for all Xmitters. Side tone for all Xmitters monitor, etc.
	5	Collins 32S-1 Xmitter.
	6	Collins 30L-1 Linear.
	7	Cooling fan for rack with 32S-1 Power Supply in rear.
5		RECEIVER RACK
	1	Speakers for AM and SSB Receivers. Frequency Standard in rear with front panel controls.
	2	Switchboard for control for switching SSB to RTTY to SSB to CW, etc.
	3	Collins 77-S-1 Receiver.
	4	Collins 75A-1 Receiver.
	5	RTTY Power Supply for Converter and FSK.
	6	Cooling Fan for Rack.
6		RTTY RACK
	1	Electronic Weather Station control panel.
	2	Meter Panel and switches for RTTY. Meter show line voltage, loop voltage and current, diode current and audio level. Switches control lights, motors, loop break, key switch, etc.
	3	Electrocom FSC-250 Converter.
	4	Electrocom 100K FSK with control switches for loop switching of Models 15 Page Printer, 14 TD and 14 Reperf. Send-receive switch and linear in and out control.
	5	Model 15 Page Printer.
	6	Universal Power Supply for experimental and test purposes.
7		RTTY RACK
	1	Timers for SSB and Recording operations.
	2	Switchboard and meters for control of 14TD and 14 Reperf.
	3	14 TD .
	4	14 Typing Reperf.
	5	Tape and Film Reel Storage.
	6	Power Supply for 14 Typing Reperf, etc.
8		RECORDING CONTROL RACK
	1	A.M. Broadcast Detector.
	2	F.M. Broadcast Detector.
	3	McIntosh M-30 Amplifier and Compensator.
	4	Control Switchboard for recording and distribution of tape recorder output to speakers in house, and input from record player and portable recorders, and output to record cutters, etc., and playback, etc.
	5	Monitor Speaker and elapsed time meters for recording needles and oiling of recorders, etc.
	6	Reel, record and tape storage.
	7	Reel, record and tape storage.
9		RECORDING RACK
	1	Magnacord PT6M 10" Outboard spooling Rack.
	2	Magnacord PT6A Tape Rock.
	3	Magnacord PT6V Amplifier and controls.
	4	Switchboard controls for above recorder.
	5	12" Coax Speaker, with tweeter and woofer, etc.
	6	Reel, record and tape storage.

The RTTY Society of Southern California will hold its Summer Meeting at the home of W6AEE, 372 Warren Way, Arcadia, August 8, starting at approximately 1 p.m. Bring your swim trunks and towels, your new gadget and swap items. Organ music by Ray W6MLZ or Bill W6NAT. Technical talks and discussion. Hamburgers and refreshments. Wives and XYL's welcome.

Warren Way is two blocks north of Las Tunas Blvd., which is the main east/west street in Temple City. W6AEE's QTH is on the southeast corner of Holly and Warren Way. Phone 447-2521.





DX-RTTY

Bud Schultz, W6CG
5226 N. Willmonte Ave.
Temple City, California 91780

Hi Gang:

It's great to be back with you once again. My sincere thanks to Ed Clammer, K3GIF, for the fine job he did on the DX news during my absence. It was indeed a privilege to have the top DX'er handle the column for me. I would also like to express my deep feeling of gratitude to all of you for the many messages of sympathy and concern that literally swamped this desk. It just reaffirms my belief that the RTTY'ers are the greatest bunch of hams in the hobby.

K3GIF reports that the hottest new one to show is F9RY/FC on the Island of Corsica. Ed says that Pierre comes through with a real fat signal from a KW linear and a 3 element beam. FG7XT was responsible for getting F9RY/FC on RTTY and so far he has been doing very well. Ed also tells of being involved in a juicy five-way QSO with 5A5TR, 5A5TX, SVØWL and DJ4KW. SVØWL is a new one operating out of Salonika, Greece and he puts in a fairly consistent signal to the East Coast. Recent converts to the narrow shift group are such as DL3IR, DL1VR, VK3KF, OZ5EL, OZ5JT and YV5AVW. They all seem to feel it is a better way to work DX thru the heavy CW qrm and the summer qrn. 170 CPS is the frequency most of them are using for NFSK. DL1IN, Hans, from Cuxhaven has licked all his transmission troubles and is now excellent copy in the States. Several of the gang have reported working SM6CKV from Goteborg. His name is Olof and he is using the same gear that SM6CSC uses at Chalmers University of Technology. In a letter to Russ, K6ZBL, Ingemar (SM6CSC) writes that the Denmark group recently got 22 Creed 7-B printers released from their Post and Telegraph Service and activity is picking up rapidly. OZ5HO and several others are already on the air with the new machines. Ingemar also reports that OZ8US has solved his problem of speed conversion with two governors tuned to 45 and 50 bauds respectively which he simply attaches to the printer—one at a time.

South and Central American activity also is holding up in good shape. Horacio, LU1AA, continues to put in consistent signals to all parts of the Globe. OA4BR is back on the green keys again and YV5AVW is heard quite frequently. FG7XT on Guadeloupe has one of the outstanding signals from this area and is very active. FG7XT hopes to be on from St. Martins and St. Bartholomew Islands during the end of June. This should provide some real interest because both of these spots are still considered quite rare among the DX'ers.

Activity from the Pacific is really picking up with some new ones on and others getting geared up for RTTY. KB6EPN on Canton continues to roll into the States with a tremendous signal. KG6AJP on Guam has obtained a model 19 and hopes to have it operating very soon. KW6DS has been heard here recently with the usual fat signals. KA5MC and KA9MF are both active from Japan—if you still need Asia this might be your answer! KH6AX can be heard nearly every evening booming in from the Sandwich Islands around 14,090Kcs. VK3KF and ZL1WB are having one of the best seasons on RTTY that they have experienced in their long and checkered careers on this mode. Band conditions "down under" have been quite favorable and both Eric and Bruce are making the most of it. Bruce has now finished his requirements for WAC-RTTY and the confirmations are on the way to this office for the certificate. Congrats on a good job, Bruce! Both ZL1WB and VK3KF report that they are making good copy on European stations but cannot seem to get anyone's attention for a QSO. Eric says that Bill, VK2EG, is back on the keys once more and should be working the Stateside gang soon. At the present time he is on forty meters only.

Rumor Department — OZ5JT hints that OX3KW (Iceland) is in the process of putting one of the recently released Creed printers on the air. Jon, W8BZB/HC2 is moving out from Guayaquil shortly for a stop at NY and then on to Guinea, Africa where he will anchor at Conakry. Two UAØ stations have been answering RTTY stations on CW and apparently are making good copy from the transmissions but for some unexplained (?) reason are not able to transmit FSK.

As usual this month I would like to include an interesting bit or two from some of the mail bag goodies. Here's a couple of paragraphs from a letter "RTTY" received from Arthur, G2FUD—"RTTY gets more popular every day on this side of the ocean. Seems a long time since the summer of '59 when BARTG got going to nurture the early activity, and the great shortage of printers kept membership down for some time. Even the keenest RTTYer gets impatient if he finds no printer after months of hunting. By now, things are much better: BARTG is up to about 170 members (and more coming at the rate of about three per week) and there is certainly a great deal more gear hitting the market—printers, terminal units, perfs/reperfs but TD's are still rare items." Arthur reports that Bill G3CQE is slowly getting settled in his new QTH and should be active on the RTTY channels soon. G2FUD also was proud to announce the arrival of a brand new daughter this month. Congratulations, Arthur and Gwen, from all your RTTY friends! Here's a few lines from one of VK3KF's interesting letters; "I have been providing a few of the boys with a new country on RTTY during the past week or two, among them being K7VGW, W8JIN, W7LI and just had a QSO with WØHFX which was rather a "turn up" as I was playing around with narrow shift on the transmitter and after a few lines of RY's, sent my c/s and blow me if he didn't come back. To make a QSO it usually takes a few hours of concentrated calling and listening for the guys 'down under' ".

Well, that's about the lot for this month. The committee is busy working on the rules and announcement of the Fourth Annual World-Wide RTTY Sweepstakes and I'll give you some info on that in next month's effort. I also want to continue the feature that Ed Clammer started while he was conducting the column of saluting certain outstanding DX'ers for their individual efforts in fostering the RTTY effort in their particular part of the world.

Hope to see all of you back here next month—73

Bud, W6CG

DX-RTTY . . . Continued

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RTTY is the Official Publication
of the
RTTY Society of Southern California
and is published for the benefit of all RTTY Amateurs and Experimenters

For "RTTY" Information:
W6DEO W6CG W6TPJ W6AEE

FOR SALE: SX-111 receiver and manual, Johnson Adventurer and manual, GO-9 and LO section with manual. SELL or TRADE: GP-9 transmitter with three tune units and manual. Two Page printers, two narrow strip printers, 60 cycle motors. Can use Model fourteen printer perforator or? W6ERV, 2711 Marengo St., Los Angeles, Calif.

WANTED: Gold and Stock ticker, also Grey private line printer. Western Electric Five A Teletypewriter equipment and any communications equipment of ninteenth century American manufacture or Eighteenth century world wide production. W2UUI, Box 257, RR 1, Pennington, N.J. 08534

FOR SALE: FSK Transmitters AN/SRT-15 and AN/SRT-16. Exciter is synthesizer controlled in 10 cycle increments from 300 kc to 26 mc (2,570,000 frequencies) with internal standard. Variable calibrated shift, 500 watts output, 4-400A final. Made by Federal, cost approx. Sell for $900 each or lot of three for $2,000.. Buyer. must. pay. shipping. W4YHD, Route 2, Box 35, Herndon, Va. 22070

FOR SALE: Comparator unit for URA8A, $25.00. WANTED: URT2 or similar transmitter, W3LST, 228 Plummer, Oil City, Pa.

FOR SALE: Teletype gears No. 97576, 50c ppd. WA8ANI, 610 Webb, Jackson, Mich. 49202

FOR SALE: One 14 w/keyboard/end of line, etc. Like new. Two Model 15's 30/60 MIL. Aluminum. For Sale or Swap, W6O tF, 9337 Gotham Street, Downey, Calif. TO 9-3292

FOR SALE: Mod. 14 strip printers SPECIAL $29.95 Polar relay and socket $3.45. Large rolls teletype paper $12.50 case. 2" core tape $8.00 case. Model 14 TD $60. Model 15 and table $125.00. RA87A power supply $8.00. KY-58/GRT Keyer $100. 88 mhy Toroids 80c ea. Send for new teletype parts list. Madison Electronics Supply, 1508 McKinney, Houston, Texas 77002

FOR SALE: Or Trade, Eldico SSB-100 complete with rack brackets. Immaculate condition $350, or? Will consider Teletype equipment in exchange, but must be clean and operating. K0GXL, 6701 Hickman Rd., Des Moines, Iowa 50322

FOR SALE: RITTYLITE,. an. 8-watt. fluorescent lamp on special bracket, for mounting inside of Model 15 or 19, covers to fully illuminate printed copy and interior. Installs easily without drilling or splicing. Complete with lamp, $4.85 plus postage on two pounds. See August 1963 Horsetrades.

WANTED: Model 15 without keyboard for monitoring. Harry E. Legler, W0PB, 304 Miami St., Hiawatha, Kansas 66434

SWAP: Excellent Model 14 typing reperf for equal excellent mod. 15 KSR. W1LWV, 99 Water Street, Millinocket, Maine.

FOR SALE: OR SWAP: TG-7B with XRT Table, TM-11-352, And RE 12 Power Supply for Commercial Converter and cash, Model 26 and table. WA0GUN, 231 South Jasmine Street, Denver, Colorado 80202

FOR SALE: Model 14 TD, 60 cycle sync motor, unit like new, $60.00. K6HDF, 8701 Firestone Blvd., Downey, California 90241. Phone TO 9-7911, TO 9-7436

FOR SALE: Printed Circuit board, for W2JAV narrow shift convertor with printed circuit connector, $2.50 postpaid from W2JTP, 431 Woodbury Road, Huntington, New York 11743. See CQ Sept. '63, Oct. '63 and June '64.