RTTY

NEWS OF AMATEUR RTTY

OCTOBER 1963

30 Cents

Vol. 11, No. 10

LU1AA

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.

TRADE: Altronics-Howard Model A terminal with seeing eye indicator. Especially good for AFSK reception. Trade for Heath monitor scope or Eico CW transmitter (unwired kits preferred) or sell for $60.00. W8QMI, 2911 Dartmouth Drive, Midland, Michigan.

FOR SALE: Teletype parts, order by teletype number. RA-87, $9.00. FGC-1 $75.00. 11/16" tape $8.00 per case. Single copy paper $12.00. Reperf $39.00. 88MHY Toroids $1.00 each, or 5 for $4.00 FOB. W5LCU, 7031 Burkett, Houston 21, Texas.

FOR SALE: Teletype Corp. REC-30 110 VOLT DC at 4.0 amps. $18.00 FOB. Details W4IYT, Box 501, Miami Springs, Fla. 33166

FOR SALE: Two scope tuning units from CV89A. Brand new, $15.00 each. Two less 1Z2 tube, $13.00 each. SP 600 JX17 will trade on 51J4 and add cash. CV60 audio TU. Very similar to CV89 with or without fancy power supply. Northern Radio narrow shift converter, dual channel. W3LST, 228 Plummer Street, Oil City, Pa.

FOR SALE: One complete Model 19 and one Model 15, also AFSK-FSK TU for sale or trade. Non waiver. K6PZT, 9337 E. Gotham Street, Downey, Calif.

WANTED: Model 15, also model 14TD, with sync motor. W4KCQ, 7 Druid Court, Tuscaloosa, Alabama.

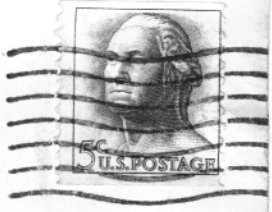
FOR SALE: OA-353/URT transmitter group (brand new) RTTY transmitter (with modulator for use on AM), 500 watt out or 100 watt out as desired. Completely automatic with 10 preset channels as desired. Shipping wt. about 1,200 lbs. Kleinschmidt TT4A, good condition, with case. Model 14 and TD with governed motors and table if desired. K5RTI, 3810 East Palfrey Drive, San Antonio, Texas 78223.

FOR SALE: CV57 frequency shift converter, $75.00 less tubes. Spera Electronics, 37-10 33rd Street, Long Island City, N.Y.

WANTED: 19ASR complete with TD, table, power supply, etc. Will pick up within 500 miles. Send details, condition and price. K0GXL, 2822 S.W. 9th, Des Moines 15, Iowa.

FOR SALE: URA/8A module and schematic for sale, $45.00. Add a power supply and keying tube and you can copy RTTY. WA6LZB, 595 Remington Drive, Sunnyvale, California.

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



THIRD ANNUAL "WORLD-WIDE RTTY SWEEPSTAKES"

This is a competition between all stations throughout the world to determine their ability to exchange messages via two-way radio teleprinter.

1. Test period:
0200GMT Oct. 19th to 0200GMT Oct. 21st 1963.

2. Bands:
This test will be conducted in the 3.5, 7.0, 14.0, 21.0, and 28.0 MCS Amateur Bands.

3. Stations may not be contacted more than once on any one band. Additional contacts may be made with the same station if a different band is used. In the interest of encouraging multi-band DX operation, the same country may be claimed more than once if contacted on different bands. The same state worked on more than one band may be claimed only once.

4. Country Status:
For the purpose of this contest KH6, KL7, and VO will be considered as separate countries in addition to the ARRL country list.

5. Stations will exchange messages consisting of:
   (A) Message Number.
   (B) Check (RST).
   (C) Time in GMT.
   (D) State or Foreign Country.

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

7. Scoring:
(INCLUDES ALL STATIONS)
   (A) Two-way exchange points times total states worked.
   (B) Total country points per band times number of continents worked.
   (C) Add item (A) and (B) above. This is your total test score.

8. Sample score sheet:

(A) Exchange points (196) times states (40) equals (7,840)

(B) Country points (800) times continents (3) equals (2,400)

(C) Add item (A) and (B) above (10,240)

(Total Test Score)

9. Sample Log:

Station Log of W6TPJ (Call) Date 19, Oct. 1963

	SENT					RECEIVED		STATE OR	EXCHANGE
NR	RST	TIME	BAND	STATION	NR	RST	TIME	COUNTRY	POINTS
1	589	0205	14	W6CG	2	589	0204	California	2
2	569	0230	14	VK3KF	6	579	0231	Australia	2
3	?	?	14	W6NRM	4	359	0240	—	0
4	599	0300	14	W2JAV	7	599	0259	New Jersey	2
5	579	0514	7	VK3KF	22	569	0514	Australia	2

Total Exchange Points (8) States (2) Countries (2) Continents (2)

Station Log of VK3KF (Call) Date 19, Oct. 1963

	SENT					RECEIVED		STATE OR	EXCHANGE
NR	RST	TIME	BAND	STATION	NR	RST	TIME	COUNTRY	POINTS
1	599	0201	21	ZL3HJ	1	599	0202	New Zealand	10
2	589	0204	21	W6CG	1	569	0205	California	10
3	589	0210	21	W6NRM	3	569	0210	—	10
4	569	0220	14	W6AEE	2	569	0222	—	10
5	579	0224	14	VE7KX	9	589	0225	Canada	10

Total Exchange Points (50) States (1) Countries (3) Continents (2)

NOTE:
Log the state only once, the first time contacted. Log the country on each band contacted. (See sample log; paragraph 9)

10. Logs and score sheets should be received by RTTY, Inc., 372 West Warren Way, Arcadia, California by December 1, 1963 to qualify.

RTTY TAPE EQUIPMENT

In reponse to many inquiries, RTTY, with permission from the TELETYPE CORPORATION, presents this material to assist the newer RTTYers to know what some of the others are talking about.

There are as many reasons for wanting tape gear as there are amateurs. It provides the most rapid means of handling traffic on amateur frequencies. It is accurate, reliable, and fast. It also provides a means of preparing an answer while receiving another station. This makes even the slowest typist sound like an "old-timer". Also it can be used for bulletins of general interest, such as the ARRL broadcast from W1AW's copy. Equipment lists of your station (BRAG TAPES), Hi. For MARS net and RACES net operations it can be used very effectively. Net rosters, net call ups and so on. Its limitations are those of the operator. Many circuits to enable cutting type from "local loops" and from the TU have been printed in RTTY.

Tape equipment, like many other items, comes in many forms. Fig. 1 shows the popular Model 14 Transmitter-Distributor (14TD). Teletype's description is given below.

DESCRIPTION OF THE TRANSMITTER DISTRIBUTOR

General

The transmitter distributor is a motor driven device which translates code combinations, perforated in a paper tape, into electrical impulses and transmits these impulses to one or more receiving stations. The tape may be perforated by any one of several models of Teletype perforating or reperforating machines.

There are two kinds of transmitter distributors; one for transmitting five unit code, and the other for transmitting six unit code. These two kinds are identical except that the six unit code machine accommodates a wider tape and provides for the transmission of an additional impulse. The following description pertains specifically to the five unit transmitter distributor.

NOTE: In all the figures of this bulletin, end views of fixed pivot points are designated by solid black circles.

Theoretical Transmitting Circuits

The portion of the unit through which the perforated tape feeds is known as the transmitter The transmitter prepares electrical paths from the signal line battery to the commutator segments of the distributor. These paths are controlled by tape pins which sense the perforations in the tape and thereby determine the positions of the contact tongues with relation to their upper and lower contact screws.

The distributor completes the connections to the signal line. Connections are made in sequence at a constant rate of speed by brushes which traverse the segments and the collector ring.

The Tape Sensing Mechanism

The contact levers are positioned vertically in the transmitter. They pivot on a shaft S and have extensions to the right C, left A, and downward B. The right-hand extensions project upward at the ends and have tape pins embedded in them. An opening is provided in a tape guide, located above the right-hand extensions of the contact levers, to permit the tape pins to enter the code holes in the tape. The left-hand extension of each contact lever carries a contact tongue which is attached to the contact lever by a pivotal mounting. Each contact tongue is positioned to move between two contact screws, a spacing contact screw above, and a marking contact screw below. A contact lever spring is attached to the mounting end of each contact and tends to hold it against the lower contact screw. A contact lever bail, pivotally mounted just below contact lever lower extensions, has an arm extending downward engaging a transmitter operating lever. This transmitter operating lever has a central pivot screw and moves in a horizontal plane. A roller on the rear end of the lever rides a transmitter operating cam mounted on the lower end of the distributor shaft. The motion imparted to the transmitter operating lever by the operating cam causes the contact lever bail to rotate the contact levers on their shafts sufficiently to move the contact tongues up and down between the marking and spacing contact screws. After the tongues strike the upper screws, any additional clockwise rotation of the contact levers is absorbed by the contact lever springs. When the distributor brush comes to rest on the stop segment the transmitter operating lever roller is on the peak of its cam, thereby holding the tongues against the spacing contacts and also holding the tape pins, located in the right-hand extensions of the contact levers, below the holes in the tape. As the transmitter operating lever roller rides to the low part of its cam, the tape pins rise. If tape perforated with code combinations is in the tape guide at this time, the contact lever pins will project through the tape wherever the tape is perforated and permit the associated contact tongues to rest on the marking contacts, while the pins will be blocked at the unperforated portions and the associated contact tongues will be held against the spacing contacts. The tape will be held stationary and the contact tongues will maintain their positions as determined by the code perforations while the distributor

brush is traversing segments one to five inclusive. The inner distributor brush will transmit marking impulses to the line from segments associated with tongues that rest on the lower contacts, and spacing impulses (for polar signal transmission) from segments associated with tongues that are on the upper contacts. When "make-break" signal transmission is used (battery applied only to the lower contacts), a no-current interval occurs when the contact tongues are against the spacing contacts.

The Distributor Mechanism

The distributor is made up of two concentric conducting rings mounted on a fiber disc. The outer ring is divided into seven segments. Segments Nos. 1 to 5, inclusive, correspond to the five intelligence intervals of the five unit code and are connected to the five contact tongues

Immediately preceding No. 1 segment is the start segment. The segment following No. 5 segment is the stop segment. The stop segment and the lower contact screws are permanently connected to marking line battery. The start segment and the upper contact screws are connected to spacing line battery only when it is desired to transmit polar signals; otherwise, the upper contact screws and the start segment have no battery connections. When the distributor brush passes over the start segment, a spacing impulse is always transmitted, whereas a marking impulse always results when the brush traverses the stop segment. These two invariable impulses cause the receiving mechanism to operate in unison with the distributor brush arm.

Tape Feeding Mechanism

Positioned to the rear of the contact levers and pivoted on the contact lever shaft is a feed lever which is similar in shape to a contact lever. The feed lever has a spring attached to its left-hand extension and a feed pawl mounted on its right-hand extension C. A feed pawl spring holds the feed pawl in contact with a feed wheel ratchet. Pins on the circumference of the feed wheel project through an opening in the tape guide and mesh with the feed holes in the tape. A retaining lid, under which the tape passes, holds the tape in contact with the feed wheel pins. When the action of the contact lever bail on the contact lever moves the tape pins downward, the feed lever responds in a similar manner, causing the feed pawl to engage a tooth on the feed wheel ratchet and rotate the feed wheel. With each downward motion of the feed pawl, the tape will be advanced from right to left, the distance required to bring the succeeding code combination over the tape pins. The setting of the feed pawl is such that it does not start to rotate the feed wheel until the tape pins have moved clear of the tape. A feed wheel detent is provided to insure alignment of the code perforations with the tape pins. The position of the operating cam with relation to the distributor brush is such that the contact tongues are not moved from the lower contacts until after the brush has reached the stop segment. While the brush is passing over the stop segment, the tape is advanced.

Starting and Stopping Transmission

The main shaft is driven by a motor through the medium of gears and a friction clutch. When the motor is running, transmission is stopped by blocking the rotation of the main shaft and started by unblocking it. This is done through the medium of a stop arm which is under the control of a tape stop magnet and a spring . The magnet, when energized, holds the stop arm clear of the lug. The spring holds the stop arm in the path of the lug when the magnet is de-energized. The circuit to the magnet may be opened or closed by means of the tight-tape stop contacts, tape stop switch, or the end-of-tape stop mechanism contacts which are described in the three paragraphs that follow.

Tight-Tape Stop Mechanism (Auto-Stop Mechanism)

When the slack in the tape between the tape perforator and the transmitter is taken up, the tape raises the tight-tape stop lever which opens the circuit to the tape stop magnet allowing the stop arm to engage the lug on the stop cam . A tape guide wire may also be employed to guide slack tape within close proximity of the tight-tape stop lever so as to raise the lever and stop transmission if the tape feeding into the transmitter becomes tangled, thus preventing mutilation of the tape feed wheel perforations.

Tape Stop Switch

Transmission can also be stopped by manually operating the tape stop switch This switch controls the release magnet in a manner similar to that of the mechanism described in the preceding paragraph.

NOTE: On some types of distributors, this switch is connected in the motor circuit and is then used to start or stop the motor.

End-of-Tape Stop Mechanism

Another means may be provided for automatically stopping transmission when a length of tape has passed through the transmitter. This is accomplished by another pair of contacts located beneath the tape guide which are operated by a pin that projects through the tape guide When the tape retaining lid is closed, the end-of-tape stop pin is depressed and the contacts are held closed so long as there is tape between the pin and the lid. When the end of the tape passes the pin, the tension of the contact spring raises the pin and opens the contacts, stopping transmission.

Fig. 1

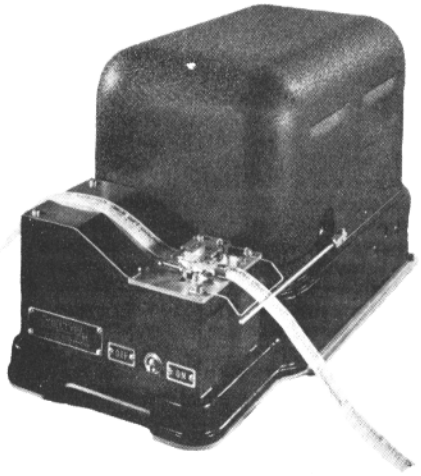


Fig. 2

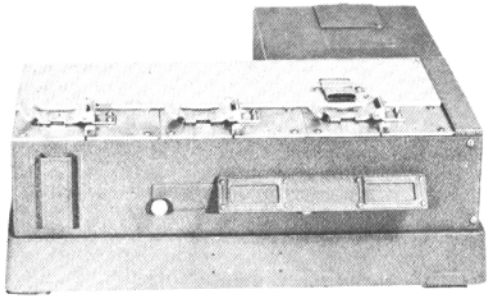
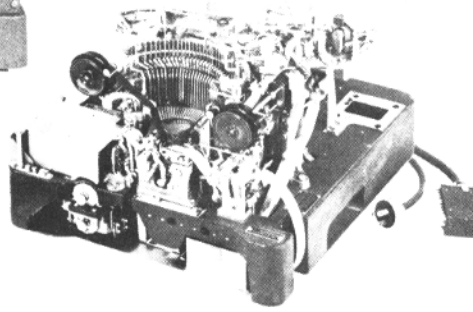


Fig. 3



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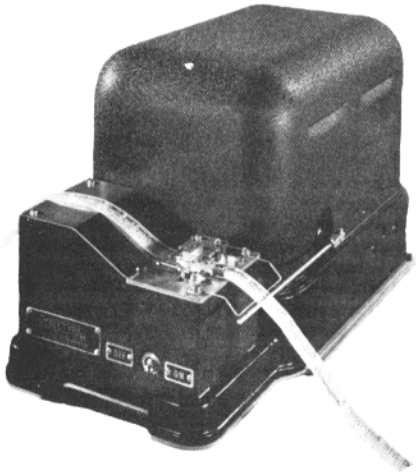


Fig. 2

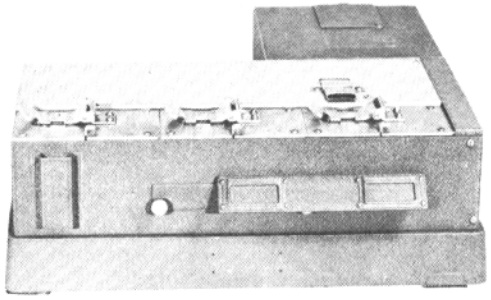
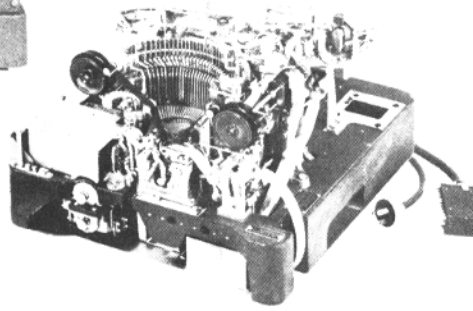


Fig. 3



Synchronous and Governed Motors

Where regulated A.C. power is available, a synchronous motor may be used, otherwise governed motors must be used. Governed motors are available for operation on either A.C. or D.C. The speed is controlled by a centrifugal contact mechanism having commutator rings or discs. In general, motors are mounted directly to the base casting and the resistors and condenser used with governed motors are mounted on the base and in the base cavity. However, some governed motors are mounted to a base plate having governor resistors and a condenser mounted on it so as to form a complete motor unit assembly.

When an A.C. governed motor is used, a contact assembly is provided which is operated by the tape stop magnet stop arm (figure 9). The purpose of the contact assembly is to provide better speed control by introducing a resistor in series with the motor when the distributor shaft is rotating, and by shunting the resistor when the load of the friction clutch is added to the motor.

In addition to the 14TD, many versions of the MXD have been issued through MARS channels. Also some have been found on the surplus market. Figure 2 shows one such unit. A description of the MXD is given below.

MXD

The multiple transmitter distributor set is a mechanism which, when used in combination with reperforators, provides combined sending and receiving facilities for tape message relaying. A complete set consists of three multiple transmitter distributor units and a motor unit mounted on a base which is equipped with cross shaft, gears and terminal strips. Two of these units are message transmitters and the third is a number transmitter. The function of the number transmitter is to insert automatically into the signal line successive numbers, from a number tape, which will identify each message before it is transmitted. The number transmitter is like the message transmitter except that it is equipped with a letter sensing mechanism which makes it responsive to the letters combination in the number tape causing stoppage of the number transmitter and starting of a message transmitter through external electrical control circuits.

The multiple transmitter distributors (message or number transmitters) are arranged to handle either perforated or chadless tape received from other stations on reperforators, or prepared locally on keyboard perforators.

The message transmitter consists essentially of the following mechanisms: a 7.42 unit code transmitting cam cylinder with associated transmitting contacts, a tape feed and tape sensing mechanism, a hinged tape lid, an automatic tape out control feature, a manual control mechanism, a magnet operated clutch, a driven gear, and a transmitting contacts filter. (See figures 3 and 4.) This unit is geared for transmission at the speed of 368.1 o.p.m.

The transmitting cam cylinder is normally held stationary because the clutch members on the transmitting shaft are held disengaged by the clutch throwout lever. When the clutch magnets are energized, the clutch members engage and the rotation of the transmitting cam cylinder begins the cycle of operation.

The transfer of the code combination in the perforated tape to the contact levers which control the transmitting contacts is accomplished by means of the selector lever bail, its cam, selector pins and selector levers.

The selector lever bail extension roller rises from the indent on its cam and causes the selector lever bail to move away from the selector levers. The selector lever springs pull the selector levers up toward the tape. The selector pins which encounter perforated holes in their path advance through the perforations, but the pins which do not encounter perforations as they come in contact with the tape, are blocked by the tape and are prevented from advancing farther.

Each selector lever is positioned through the medium of the perforations in the tape, to correspond with each signal impulse to be transmitted. Each selector lever controls the motion of a contact lever either by allowing the contact lever to close its contact when the cams revolve, or by restricting the motion of the contact lever. If the selector pin does not enter a perforation in the tape, corresponding to a spacing impulse, the lower end of the selector lever engages the associated contact lever and prevents it from rising into an indent of the cam, as the cam rotates, thus holding the circuit open for that impulse. If the selector pin enters a perforation in the tape, corresponding to a marking impulse, it does not interfere with the movement of the contact lever. Then, as the cam revolves, the contact lever rides on the cam periphery and drops into an indent, thereby allowing its contact to close and send out a marking impulse. As the cams rotate, the impulses, either marking or spacing, are transmitted in succession.

The start-stop cam controls a contact lever which, in turn, actuates the start-stop contacts. These contacts are opened at the beginning of each revolution of the cam cylinder to transmit the start impulse (spacing) and remain open during the transmission of the five impulses. After the fifth impulse has been transmitted, the start-stop contacts again close, sending the stop impulse (marking) to the line.

After the fifth impulse has been transmitted, the selector lever bail extension drops into the indent in its cam causing the selector lever bail to retract all the selector levers from their sensing position. At this moment the feed pawl arm roller drops into the indent in its cam and the feed pawl engages the feed wheel ratchet, stepping it forward, thereby advancing the tape one character space over the selector pins. A feed wheel detent establishes the relative setting of the feed wheel.

The transmitting cam cylinder rotates continuously as long as the clutch magnets are energized. An interruption of the clutch magnet circuit causes the clutch throwout lever to engage the cammed surface of the driven member of the clutch due to the action of the clutch throwout lever spring and, as the transmitting shaft rotates, the driven clutch member is cammed out of mesh with the driving member.

Within the unit there are two provisions for interrupting the clutch magnet circuit. The clutch magnets are connected in series with a set of automatically operated contacts and a set of manually operated contacts. The opening of either set of contacts stops the unit.

(A) AUTOMATICALLY OPERATED TAPE-OUT CONTACTS

The automatic contacts are a function of the tape-out feature. The unit has a tape-out sensing lever which operates in unison with the other five selector levers. The associated sensing pin is in line with and adjacent to the sensing pin for the first impulse. It has a larger sensing area and a portion of it senses along the edge of the tape during the transmission of each character. When the end of the tape has passed through the transmitter the tape-out sensing lever rises. Under this condition the lower end of the tape-out sensing lever does not interfere with the movement of its associated tape-out operating lever and this lever, in turn, is permitted to ride on its cam periphery. When it drops into the cam indent, a pin on the tape-out operating lever engages the tape-out contact lever, thus rotating it about its pivot until at one end of the lever the automatic contacts are opened, and on the other end, the lever is latched by the tape-out contact lever latch. This interruption of the clutch magnet circuit by the opening of the automatic contacts stops the transmitter unit and renders it inoperative.

(B) MANUALLY OPERATED TAPE-OUT CONTACTS

The manually operated contacts are controlled by depressing the release bar. The bar may be depressed momentarily or it may be latched in the depressed position with a slight forward pressure. Operation of the release bar accomplishes three functions: opening of the manual contacts to stop the transmitter, unlatching of the tape-out contact lever thereby closing the tape-out contact, and the disengaging of the feed wheel detent and the feed pawl which permits the feed wheel to spin freely to aid in the insertion or alignment of tape over the feed pins. When the release bar is released the manual contacts close and the transmitter operates.

The transmitter is equipped with a hinged tape lid (figure 3) which permits the use of perforated or chadless tape without altering its adjustments. Tape is inserted directly under the latched lid after depressing the release bar. For inserting tape loops, the lid may be unlatched.

NUMBER TRANSMITTER (MXD-9)

The functions of the number and message transmitters are identical with the exception of the letters sensing mechanism which is a feature of the number transmitter.

Letters Sensing Mechanism

The letters sensing mechanism is used to stop the number transmitter and to start one of the message transmitters when the letters combination is sensed in the tape.

During every operating cycle, when the selector lever pins are sensing the code combination in the tape, a letters operating lever senses the ends of the five selector levers. If one or more selector levers are in the spacing position, the letters operating lever is prevented from continuing its travel. If the code combination is letters (all marking impulses), the letters operating lever is not blocked by any of the selector levers and therefore is rotated through a larger angle. The letters operating lever has two extensions, one of which rides on a cam and permits the letters operating lever to sense the selector levers, while the other engages the tape-out contact lever when a letters combination is sensed in the tape and consequently opens the tape-out contacts. These contacts are opened momentarily since the tape-out contact lever is disabled in the number transmitter. The momentary opening of these contacts causes the number transmitter to stop and starts one of the message transmitters by means of an external electrical control circuit.

MULTIPLE TRANSMITTER DISTRIBUTOR BASE (MXB-8)

The multiple transmitter distributor base has facilities for mounting a motor unit and three transmitter units. The number transmitter is mounted on the left side and the two message transmitters are in the middle and right sides. A series governed motor is used for operation on 115 volts D.C. or A.C., 50 or 60 cycles. The motor is demountable as a complete unit and is equipped with a governor filter.

The motor power is transmitted to the individual units through a cross shaft. Each transmitter unit has an individual terminal strip to facilitate disconnecting the transmitter cable to remove the units. Underneath the base are the governor circuit elements, a terminal block for external power connections and three sets of spark protectors for the automatic and manual contacts on the three transmitter units. A two-conductor power cord and an eight-conductor cable, which terminates in plugs, provide facilities for external connections.

A complement of covers provides dust protection. Although the various sections of the covers are removable, a lid is provided in the motor cover which may readily be opened to provide a view of the speed target and access to the speed adjusting members. A guard is provided on the cover in front of the number transmitter through which the number tape will pass and be protected from damage from external sources. A tape chute is provided to direct the used tape from the unit on the right.

The front of the base is equipped with a card holder.

Another version, which incorporates a typing reperforator, is the FRXD series. Several versions of these units have shown up recently. A brief description is given. See Figure 3.

FRXD

General

a. The Reperforator Transmitter Distributor is a motor driven mechanism which combines in a single unit the functions of a typing reperforator and a tape transmitter distributor.

b. The unit provides a fully automatic mechanism in which the perforated tape may be stored in the form of a loop to accommodate any delay in transmission, or in which all the combinations in the tape up to and including the last character perforated may be immediately transmitted. This is accomplished by means of a pivoted tape transmitter which moves along the tape, as it becomes taut, until it reaches a position one character space (.100″) away from the point at which code perforation takes place. Standard 11/16″ wide perforator tape is used.

c. The FRXD9 and FRXD10 reperforator transmitter distributors have the same mechanical features with the exception of the pull-bar-operated switching contacts which are provided on the FRXD9 only.

d. The reperforator transmitter distributor receives and retransmits signal combinations of the start-stop five-unit code
This code utilizes five selecting elements in combinations of current and no-current intervals to form thirty-two code combinations. In order to maintain synchronism between transmitting and receiving units, each group of five selecting intervals is preceded by a START interval and followed by a STOP interval. Intervals during which current is transmitted are designated as MARKING intervals and those during which no current is transmitted are designated as SPACING intervals.

Typing and Reperforating Mechanism General

(1) A method of tape perforating known as chadless perforating is used to permit both printed and perforated characters to occupy the same portion of the tape. The punchings, or chads, are not completely severed from the tape but remain attached to it at their leading edges so as to form lids over the holes. The printed characters are legible because the perforating does not eliminate any portion of the tape.

(2) Typing and perforating occur simultaneously, but due to the fact that the platen is to the right of the perforator die block, characters are typed at the right of their respective perforations. The separation between the printed character and its associated perforation is six character spaces. This separation must be taken into account when tearing message tapes from the unit or in cutting the tape. When the tape is to be used for transmission by means of an external transmitter distributor, the end of the tape should include all of the printed characters in the message and the first printed character of the message must be preceded by at least six sets of code perforations in order to transmit the entire message.

(3) When a message tape is inserted in the tape guide of an external transmitter distributor, and the printed symbol of the character to be transmitted is positioned opposite the tape locating mark impressed in the tape guide, the code perforation for that character will be over the tape sensing pins in position for transmission. Under this condition, if the tape retainer of the transmitter distributor is fastened over the tape, the tape locating mark will be covered, but the printed character will be visible immediately to the right of the tape retainer.

Later models of the TD series used with Model 28 equipments are shown in Figs. 4 and 5. Single and dual versions are available for such operations.

Several manual tape perforators are available, one such unit is the Model 14. Fig 6. A DC supply is required to operate the punch magnets, and "end of line" indicator lamp.

DESCRIPTION OF THE FIVE-UNIT TAPE PERFORATOR Model 14

The Five-Unit Tape Perforator is a unit of apparatus that is used to prepare perforated tape for automatic telegraph transmission. Combinations of holes are perforated in the tape, which correspond to the key lever depressed. The perforator tape with the code combinations thus recorded may be fed automatically through a tape transmitting device, operating a printer unit at a distant point.

The Five-Unit Tape Perforator is a self-contained magnet (solenoid type) operated, portable unit. It consists essentially of a set of keys and key levers; perforating, tape feeding, and end-of-line indicating mechanisms. The unit is equipped with a power cord and attachment plug for making connections to a source of direct current power supply.

Fig. 4

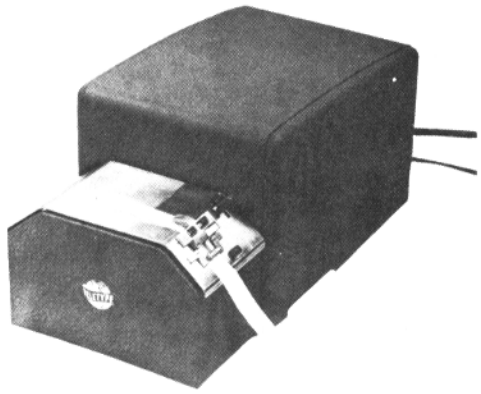
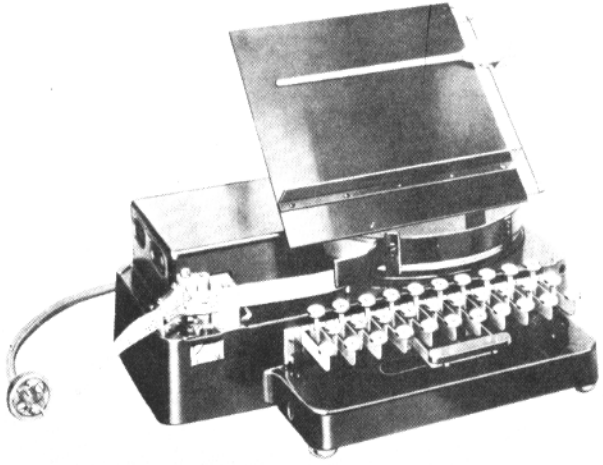


Fig. 5

Fig. 6



Signaling Code

The signaling code used to transmit characters is the "Five-Unit Code," which consists of five selecting impulses used in various combinations of spacing and marking intervals. The large holes in the tape represent marking impulses, whereas the impulse positions on the tape that are not perforated represent spacing impulses. The small holes are feed holes, which are used to feed the tape through the perforator and the transmitting device.

Perforating Mechanism

The perforating mechanism consists essentially of a set of punches for perforating the tape; a pair of punch magnets and a punch hammer for operating the punches; a set of punch bars and bell cranks; and loops and combs attached to each key lever used in selecting the punches. The five punch bars are fitted in guide slots in the punch hammer, just behind the punches and in line with them. The right end of each punch bar is attached to a bell crank and the opposite end of each bell crank engages a notch in a loop extension. Each character or function key lever has a comb with notches arranged so that its particular code combination will be selected and perforated. The combs are cut out in such a manner that the depression of a key will cause the comb to strike the top edge of one or several of the loops, moving them downward.

In addition to the five loops controlling the five punch bars, there is a sixth or power loop which is operated by the depression of any key. The downward movement of this loop closes the punch contacts, energizing the punch magnet, and thus operating the punch hammer.

The depression of a loop causes the punch bar connected to it to be moved away from a punch so that when the punch hammer is operated by the magnet, the tape will not be perforated at this position; but when a loop is not depressed, the punch bar connected to it will be allowed to remain in the path of a punch and a hole will be perforated. A feed hole is perforated with each forward movement of the punch hammer.

For instance, if the "K" key lever is depressed, only the #5 punch bar will be moved away from its punch. All the other punch bars, however, will be driven against their punches, causing the first four impulses to be perforated in the tape.

Tape Feeding Mechanism

The tape feed roll is located to the left of the punches. Spaced at equal intervals around the tape feed roll is a series of projecting feed pins which mesh with the feed holes punched in the tape. A tape tension lever holds the tape against the tape feed roll, keeping the feed holes in the tape in constant mesh with the tape feed roll pins.

During the forward movement of the punch hammer, the tape feed pawl, which is attached to the punch hammer, engages a tooth on the tape feed roll. When the punch hammer moves back, the tape feed roll will revolve, advancing the tape one character space. A star wheel affixed to the lower end of the feed roll and a detent insure equal spacing of the tape.

End-of-Line Indicating Mechanism (Nonadjustable)

The end-of-line indicating mechanism is intended for use in connection with page printer reception. When sixty-four or sixty-five combinations have been perforated in the tape, a red lamp, under the keyboard, is lighted by the closing of contacts. These contacts are closed by the action of the indicator gear. This gear meshes, through an idler gear mounted on a lever, with the tape feed roll pinion on the tape feed roll. Whenever the tape feed roll moves the tape forward one space, the indicator gear is advanced one tooth.

Mounted on the indicator gear is a pin "A". When the indicator gear is advanced sixty-four or sixty-five teeth from its starting position, pin "A" will move the lamp contact lever so that its contact spring will touch the lamp contact screw, lighting the lamp.

The advancing of the indicator gear winds up an indicator return spring, one end of which is attached to the indicator gear. When the operator depresses the "Carriage Return" key, the key lever strikes a bell crank which moves the release rod to the left. This throws the indicator idler gear out of mesh with the tape feed roll pinion and the indicator gear is returned to its starting position by the indicator return spring.

Since the "Carriage Return" key may not be held depressed long enough to allow the indicator gear to completely return to its starting position, a release rod holding pawl is provided to insure that the gears stay out of mesh while the indicator gear is returning. This holding pawl moves into a notch in the release rod when the release rod is in its left-hand position. When the indicator gear is almost returned to its starting position, pin "B" (on the indicator gear) moves the holding pawl out of the notch in the release rod and permits the gears to again mesh.

End-of-Line Indicating Mechanism (Adjustable)

The adjustable end-of-line indicating mechanism is similar to the non-adjustable end-of-line indicating mechanism described in the foregoing.

The adjustable end-of-line indicating mechism has an adjustable stop plate mounted on the indicator gear. A projection, extending downward from this stop plate, is used instead of pin "B" to move the release rod holding pawl out of the notch in the release rod.

The adjustable stop plate moves the release rod holding pawl against an adjustable stop screw which determines the stop position of the indicator gear. The adjustable stop plate may be positioned so that the lamp contacts close on any operation from the sixty-fourth to the seventieth.

Backspace Lever

A backspace lever is provided for moving the tape backwards for the correction of errors. When the backspace lever is being moved from left to right, it engages a pin projecting from the tape feed pawl and cams the tape feed pawl out of engagement with the tape feed roll ratchet. Toward the end of the travel of the backspace lever, the backspace pawl (which is mounted on the backspace lever) engages a tooth of the star wheel, rotating it backwards one space. The "Letters" key may then be depressed, causing five holes to be perforated over the previous perforation. This combination may be passed through the tape transmitting device without causing any character or letter to be printed on the receiving printer. However, if a character in the upper case is corrected, it will be necessary to strike the shift key (Figures) again, because the "Letters" combination will unshift the receiving printer.

Repeat Mechanism

The repeat mechanism provides a means of continually perforating a desired code combination in the tape. With any key lever and the repeat push button simultaneously held depressed, the code combination corresponding to the key lever depressed will continue to be perforated until the repeat push button is released.

When any key lever is held depressed, the punch magnet circuit is completed through the punch magnet contacts. The operation of the punch magnet permits the magnet yoke contacts to close, completing a circuit through the winding of the repeat relay if the repeat push button is depressed. The operation of the repeat relay breaks the punch magnet circuit. The punch magnet yoke is released, opening its contacts, which open the repeat relay circuit. The repeat relay releases its armature, closing the punch magnet circuit, thus setting up a repeated cycle of operation. Repeat action will continue as long as any key lever and the repeat push button are simultaneously held depressed.

Another manual tape perforator is the Model 15 perforator transmitter, keyboard, which is used on the Model 19 set. Fig. 7. It also requires an external DC supply to operate the punch magnets.

General

The Model 15 perforator transmitter is a combination transmitter and perforator with an electrically operated character counter. It is inserted in the base of a Model 15 printer when the Model 15 printer is used in conjunction with a Model 19 table and a Model 14 transmitter distributor. When this combination of units is used together, it is known as a Model 19 printer set.

The perforator transmitter is furnished with the character counter mounted either to the left or to the right of the unit. When the counter is mounted to the right of the unit, a separate cover is provided for it. When mounted to the left of the unit, the counter is covered by an extension of the printer cover.

A manually operated, three position keyboard control operating lever is mounted at the right-hand end of the unit. The selection of any one of the four methods of operation may be made by placing this operating lever and the line test key in one of the following positions:

(A) OPERATING LEVER IN UPPER OR "KEYBOARD" POSITION

Direct keyboard transmission to the line with a printed record being produced at the transmitting point. The maximum speed of the keyboard is limited to the predetermined speed of the set.

(B) OPERATING LEVER IN MIDDLE OR "KEYBOARD AND TAPE" POSITION

Simultaneous direct keyboard transmission to the line and perforation of tape with a printed record being produced at the transmitting point. The maximum speed of the keyboard is limited to the predetermined speed of the set.

(C) OPERATING LEVER IN LOWER OR "TAPE" POSITION

Perforation of tape only, with the associated printer either reciving messages from a distant station, or monitoring the message perforated in the tape as it is being transmitted to the line by a transmitter distributor.

The character counter registers each time a character or space key is depressed and returns to its zero position when the "Carriage Return" key is depressed. Operation of the "Letters," "Figures," or "Line Feed" key levers does not cause the character counter to register. The counter is provided with a signal lamp to indicate when the end of a line is being approached. The maximum speed of the keyboard in this case is not limited to the predetermined speed of the set and the operator may, therefore, perforate tape at speeds much higher than the speed at which a tape transmitter would send to the line.

(D) OPERATING LEVER IN MIDDLE OR "KEYBOARD AND TAPE" POSITION AND SET CONNECTED FOR LOCAL OPERATION

It is also possible to perforate tape and print a home record without transmitting directly to the line when the set is connected for local operation. This method is helpful in preparing perforated tape for use in connec-

tion with printed forms. The maximum speed of the keyboard is limited to the predetermined speed of the set.

Signaling Code

The signaling code used to transmit characters is the "Start-stop" five-unit code, which consists of five selecting impulses used in various combinations of current and no-current intervals. Each group of five selecting impulses is preceded by a start impulse and followed by a stop impulse, which are used to maintain synchronism between stations on the circuit. Impulses which energize the selector magnets on the printer are known as marking, and those which do not are known as spacing.

The Model 14 Typing reperforator is shown in Fig. 8. This is by far the typing reperf to be found in most amateur RTTY stations who have tape equipment. Several of the typing reperf units only, less base and cover. have been listed in the Horse Trades section of RTTY in the past. Both type of selectors magnet assemblies are found on these units. Hence, provision for either 20 or 60 mils can be had on the units with the holding type of selectors, and some have the series or parallel switch which is found mounted behind the selector unit. Some also have an "end of line indicator" assembly which operates a lamp after 72 or what ever number of characters it has been set for, has been perforated. The unit shown has a keyboard, but many 14 typing reperfs have been issued by MARS which are receiving only, in other words, no keyboard.

Another version of the 14 reperforator is shown in Fig. 9 which is called "Single Magnet Reperforator". It also is made in a six level tape version, which has been used on the TELETYPESETTER, in news service.

DESCRIPTION OF THE SINGLE MAGNET REPERFORATOR 14 AND 20 TYPE

There are two types of Teletype single magnet reperforators; the 20 type, which operates on the six unit code and the 14 type which operates on the five unit code. This bulletin mainly covers the 20 type six unit reperforator. However, the mechanical parts of the 14 type reperforator are the same as the 20 type except the parts associated with the "zero" pulse are not used, such as the zero selector lever, sword, "T" lever, transfer lever, and punch lever. Also, different range scales, punch blocks, selector cams, feed rolls and guides are used on the five unit reperforators.

The Teletype reperforators are motor driven tape reperforating machines which receive electrically transmitted signals and translate these signals, through the medium of selecting and perforating mechanism into code combinations of holes in a paper tape. This tape may then be used for retransmitting these code combinations on other similar printing telegraph circuits; thus eliminating manual preparation of tape with a perforator at the relaying station.

Signaling Code

The signaling code used for the 20 type single magnet reperforator is a six unit start-stop code which consists of six selecting impulses used in various combinations of current and no-current intervals. Each group of six selecting impulses is preceded by a start impulse and followed by a stop impulse to maintain unison between the sending and receiving apparatus. Impulses which operate the selector magnets are known as marking and those which do not operate the selector magnets are known as spacing. Figure 1 shows graphically the six unit code.

The signaling code used for the 14 type single magnet reperforator is the same as the six unit code except that the zero impulse is omittted.

RTTY is indebted to the TELETYPE CORPORATION for permission to reprint portions of this material. Their current equipment is being widely used for TWX service (MTWX) and also in association with many computers. An example of such advanced equipment is the Model 33 ASR which was shown on the cover of the July 1963 RTTY. If your non-hobby needs are for such equipments, write to them at:

TELETYPE CORPORATION
5555 Touhy Avenue
Skokie, Illinois

OWENSBORO, KY. — Several innovations feature the tenth edition of the General Electric receiving tube, capacitor, and picture tube handbook, "Essential Characteristics".

Type numbers of receiving tubes with the same base pin connections now are listed together alongside the respective basing diagrams. This is particularly useful in finding substitutions.

In addition, the basing diagrams are on separate "strip" pages at the bottom of the book—which permits the use of larger diagrams and still allows the basing diagram for the tube under consideration to be viewed at the same time as the essential characteristics at the top of the page.

The book includes typical characteristics curves, outline drawings, circuit diagrams showing typical applications, and construction data for loudspeaker enclosures.

Tube classification charts have been expanded to facilitate reference to similar types. Cross-reference lists of prototypes for Five-Star and other special purpose tubes also are included.

Priced at $1.50, the book is available from authorized distributors of General Electric receiving tubes or from the General Electric Company, 3800 N. Milwaukee Ave., Chicago, Ill.

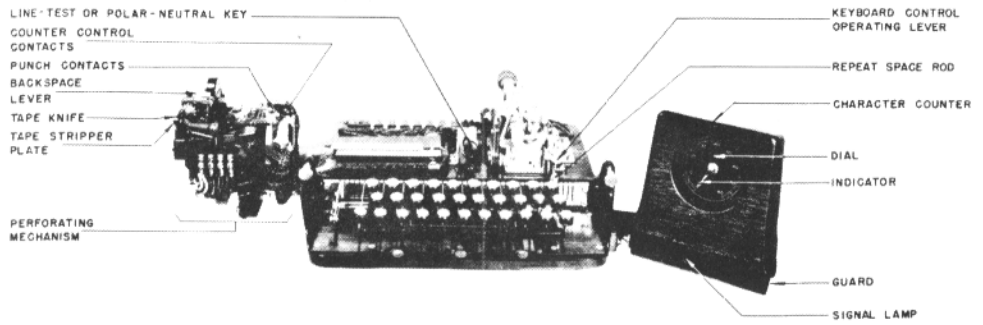


Fig. 7

Fig. 8

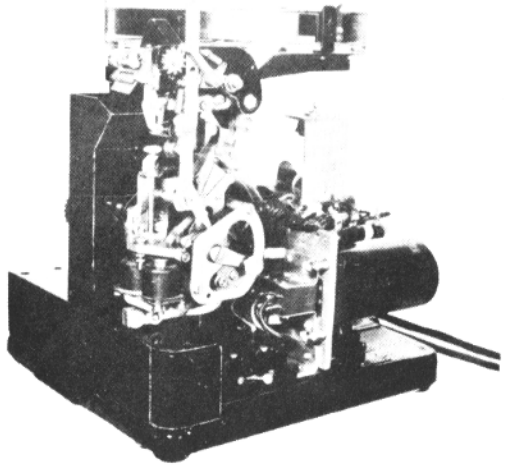


Fig. 9

The "TIKI"

Will Connelly, W6QID/NØTLJ
Box 485, La Mirada, California

No single operating component causes as much grief in commercial and ham RTTY operation as the polar relay. Contact adjustment is critical. Continuous maintenance is required. Operating parameters must be carefully controlled, and small variations result in bias or characteristic distortion. Contacts may bounce. And the input side is an inductance capable of reflecting nasty transients back into the circuit to which it is connected. So why polar relays? Why suffer all these grievous faults?

Because the input and output circuits are completely isolated, *that's* why.

Now, thanks to the availability of semiconductors, there is a better way. The device described in this article was built to solve the specific problem of feeding the FSKer on a 100V transmitter, but the principle of operation is applicable to other TTY relaying requirements.

Figure 1 shows the device in use at W6QID. The input side of the "Tiki" (a term evolved, with slight poetic license, to indicate "transistorized isolator-keyer) connects to a teleprinter neutral DC loop. A Hartley audio oscillator, operaitng at about 5 KC and consisting of transistor Q1, transformer T1, tuning condenser C3, and feedback capacitor C2, is operated by the voltage appearing across R1 whenever the loop is in MARK condition. The secondary of T1 is *completely isolated* from the DC loop side (up to the point at which the transformer insulation breaks down). During MARK, however, an audio tone appears on the secondary side of T1 and this tone is bridge-rectified, filtered and applied as saturation bias to Q2, the switching transistor The DC circuit to be switched is connected between the emitter and collector of Q2. The "relay contacts" are closed.

In operation, the presence of MARK current in the input loop results in saturation, or full conduction, of switching transistor Q2. When the input loop goes to the SPACE, or no-current condition, the oscillator stops and the base of Q2 is unubiased. The collector current falls to zero and the "relay contacts" are open.

The TIKI ("tee-kee") described operates into the FSK-1 jack on the 100V. This particular unit is slightly specialized for this application, and other applications will require other slight modifications. Diodes D1 and D2 are simply to protect the TIKI against inadvertent application of reversed polarities to the input and output circuits; if either circuit is connected incorrectly, it will remain "open". The diodes are not essential and may be omitted if desired; but a mistake can cost one or both transistors.

R1 establishes the voltage applied to the oscillator section. In operation, R1 is initially adjusted to zero resistance, then after power is applied, turned just far enough open to provide unbiased oscillator start-stop operation on RY's. This will occur with 3 to 6 volts drop across R1. Most transistors useful for Q1 have 12 v. breadown; be sure the setting of R1 does not permit excessive voltage on Q1. C1, in conjunction with R1 and the base-bias network (R2-R3) for Q1, has a time constant far shorter than any desired signal and is included to smooth out transients reflected by the print magnet in the DC loop. Full wave rectification provides a 2-times ripple frequency which is easily filtered by R4 and C4. It is important that the control voltage at the base of Q2 be ripple-free. The presence of residual tone at the 100V FKS jack will result in the transmission of an FM tone—a situation definitely to be avoided!

In addition to its other function, C1 operates with L1 as an RF filter. Output RF filter is also provided. These filters will be necessary if there is any RF in the shack and are an admission by the author that his 80 meter antenna is not exactly a perfect load for his transmitter. If there's no stray RF in *your* shack, this filtering may be omitted. Evidence of RF pickup is steady MARK or heavy marking bias at the output when the transmitter is "on".

TIKIs provide these advantages:

- Resistive input
- One control, one-time, adjustment for 20, 30 or 60 mil loops
- Complete input-output isolation
- Either side of the input or output may be grounded, or both sides may 'float", as desired.
- Zero maintenance
- Rapid and faithful reproduction of the input signal at the output.

The one possible disadvantage is leakage current in the output transistor, i.e., current flowing in the "cut-off" condition. With most transistors designed for switching, this leakage current will be inconsequential, 20 to 100 microamps being common.

Other Applications

Basically, a TIKI is a *unidirectional repeater*. As such it can be used as an FSK driver (as in the specific application described above), as an isolator (to split the print or reperf magnets out of the local loop) or as an actual repeater (to inject a land-line TTY signal into a radio circuit or conversely, for example). The adjustment of R1 will, within limits, permit the correction of bias-distorted signals. By placing an ordinary DC relay in the output circuit, and adjusting the time constant of R4-C4, it can be used as an automatic motor start device which will turn the printer motor on when the first pulses appear in the loop, off when a steady mark or no signal is received. The TIKI will require special modification for special conditions, but this article is intended to suggest the *form* rather than the *specifics* of a solution. In general, however, the oscillator and transformer-rectifier circuitry can be used "as is" while Q2 may have to be changed to accommodate different load impedance, voltage and current requirements. If the output side is to work into a 130 volt loop, or if it is to be used in conjunction with a separate supply as a print magnet driver, then Q2 should have 130 volt minimum breakdown characteristics . . . or several lower voltage-rated transistors may be used in cascode. If the load is inductive, a diode (any ordinary 400V P.I.V. silicon is fine) should be reverse-connected across it to eliminate the spikes. Transients on the input side may be similarly treated if the R1-C1 combination is inadequate to smooth them out.

CONSTRUCTION AND COMPONENTS

TIKIs can be constructed on perforated board stock such as "Vector board". Small silver-plated "flea-clips" can be used for connection points. The whole works will fit easily easily into a Vector C-12 can or into an old polar relay housing.

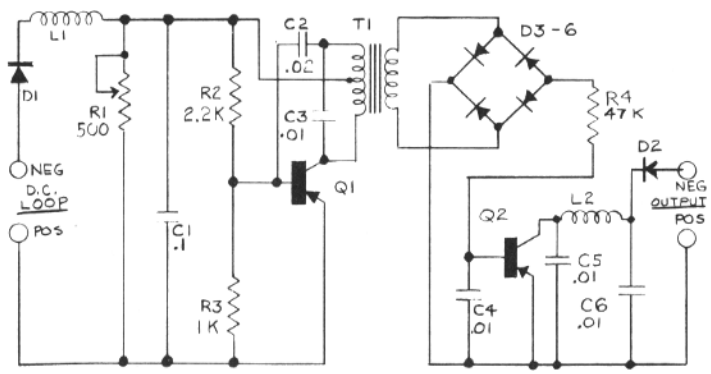
Most components for this TIKI were picked up at S-J Radio, 6306 Beach Blvd., Buena Park, California. For the convenience of other builders, the S-J Radio part numbers and prices are included in the Parts List although substitutions are perfectly feasible.

In the 100V driver application, the 2N525 was selected for Q2 because it was on-hand; several of the 2N1265's were also tried in the Q2 socket and about half worked. E1, WePEE, used a 2N404 in this application in his 100V driver (RTTY, July, 1963) which should also be useful in this TIKI. The choice of other transistors, for high-voltage and/or high current switching will be left to the user. Bendix's "DAP" series reportedly contains some fine, low cost units and it is probable that many inexpensive power-supply switching units would work with diode and/or zener protection. It is expected that TIKIs will win some popularity and that others will report their mutations for the benefit of all.

PARTS LIST

R1	500 ohm W.W. pot
R2	2.2K, ½ W.
R3	1K, ½ W.
R4	47K, ½ W.
C1	0.1 mfd, low voltage
C2	.02 mfd disc or tubular
C3, 4, 5, and 6	.01 mfd disc or tubular
T1	Oscillator Transformer, 2000 ohm C.T. primary, 1000 ohm secondary — S-J Radio #XFM2/ST21 ($1.05 ppd) or similar small transistor transformer
D1, 2	Any 400 V. P.I.V. silicon diode, 100 ma or more—S-J Radio #S400 (2/$1.10 ppd)
D3, 4, 5, and 6	Any glass germanium or silicon rectifier—similar to 1N34, 1N68, etc. — S-J Radio #S35 (4/$0.50 ppd or $0.15 each)
L1, 2	RF chokes — anything from 500 uhy up — S-J Radio #RFX (2/$0.90 ppd)
Q1	Any AF small-signal transistor similar to 2N1265, 2N107, etc. S-J Radio #TR-25 ($0.30 ppd)
Q2	2N525—See Text

"TIKI" RELAY



Comunicaciones entre Radioaficionados con Teleimpresoras

HORACIO MARTINEZ SEEBER - LU1AA

Muchos radioaficionados argentinos ignoran que, además de comunicarse con otros colegas en telefonía (AM o SSB) y telegrafía (CW) pueden hacerlo también por radioteletipo (RTTY)*, como lo hacen cientos de estaciones en otros países. En su aspecto técnico, la adaptación para RTTY de un equipo común no presenta mayores dificultades que las habituales para obtener una correcta transmisión en CW o buena modulación en telefonía; el problema es del orden material; conseguir la máquina teleimpresora a precio accesible. Los demás elementos son de uso común en una estación de radioaficionado medianamente equipada, donde no falta el típico cajón o armario de rezagos, en el que siempre se encuentran algunos condensadores, resistencias, zócalos, cables, etc. En estas condiciones poco queda por adquirir.

Circunstancias especiales me han permitido disponer de una máquina Teletype modelo 15 para las pruebas que estoy realizando. El conversor y el desplazador de frecuencia para OFV o cristal los monté de acuerdo con los circuitos originales de W2PAT y W6OWP publicados en el Handbook (Edición en castellano año 1960, páginas 369-371) con algunas correcciones, adaptaciones y agregados.

Mi amigo D. Adolfo Glucksmann, LU3BAC, me refirió al regreso de uno de sus viajes a Estados Unidos lo que había visto allí sobre la actividad en RTTY de los colegas del norte; su relato me decidió a hacer algo en esa materia y he logrado resultados muy satisfactorios. Los primeros contactos en RTTY renovaron las emociones experimentadas hace ya años (¹) al salir al éter por primera vez con un equipo en AM o CW y luego de un "CQ" oír la respuesta de colegas de algún país lejano. Así fue cuando el 11 de junio últ'mo a las 00.30 hice mi primer llamado en 14.090 kilociclos, tecleando en la máquina varias veces "CQ de LU1AA Buenos Aires". Al pasar a recepción oí una señal en RTTY, indescifrable auditivamente, pero que el conversor se encargó de transformar en impulsos del teclado y la máquina comenzó a escribir: LU1AA de K6QGR Redlands California: El contacto quedó completado no sin los consabidos inconvenientes del QRM que, por supuesto, también afecta a este sistema de comunicación. A continuación apareció en mi máquina un nuevo llamado: "LU1AA de W6CG Temple City California"; se trataba del colega Carl Schultz, encargado de la sección "DX" de la revista "RTTY" que se edita en Arcadia, California. El siguiente comunicado fue con K3GIF, Edward Clammer de Bethesda, Maryland, con quién he seguido manteniendo contactos periódicos. Edward me envió varios ejemplares de la revista "RTTY" con informaciones muy interesantes sobre esta actividad, prácticamente desconocida entre nosotros.

El Sr. Horacio Martinez Seeber LU1AA, operando su máquina teleimpresora

Luego, una nueva emoción; mi máquina comenzó a escribir: "LU1AA de I1ZZG aquí Milán, Italia". Supongo que la emoción debe haber sido recíproca, porque el colega Carlos me informó que hacía solo tres días que actuaba en RTTY. Además de otros comunicados con estaciones de Estados Unidos, conecté con DL3IR de Munich y posteriormente en 7.002 kilociclos con OA4BN de Lima.

Contrariamente a lo que pueda suponerse, la actividad en RTTY entre radioaficionados no es reciente; en febrero de este año se realizó un concurso en los Estados Unidos en conmemoración del décimo aniversario de la iniciación del sistema y se utilizaron las frecuencias de CW en las bandas de 3,5 hasta 30 megaciclos.

Hay varias asociaciones que agrupan a los colegas estadounidenses que actúan en RTTY; una de ellas es la "RTTY Society of Southern California". También en Gran Bretaña existe otra llamada "British Amateur Radio Teleprinter Group". En el ejemplar de "RTTY" del mes de febrero de este año se publica el resultado del "Second Annual World-Wide RTTY Sweepstakes", concurso en el que intervinieron estaciones de Estados Unidos, Islas Hawai, Alaska, Puerto Rico, Canadá, Perú, Méjico, Venezuela, Alemania, Gran Bretaña, Noruega, Italia, Sud-Africa y Australia. El mayor puntaje lo obtuvo la estación italiana I1RIF.

Resulta interesante mencionar la invitación formulada por el Departamento de las Fuerzas Armadas de los Estados Unidos (Ejército, Marina y Aviación), para realizar contactos de entrenamiento en RTTY, CW, AM y SSB entre radioaficionados y las respectivas bases de las tres fuerzas. Las pruebas se realizaron el sábado 18 de mayo del corriente año bajo la denominación "Armed Forces Day Communications Tests". Las estaciones del ejército, marina y aviación transmitían en sus frecuencias normales y utilizaban sus habituales señales distintivas: los radioaficionados contestaban en las bandas que les corresponden, eligiendo las más próximas a las frecuencias de emisión de las estaciones oficiales.

La mayor actividad en RTTY la he observado en la banda de 14 Mc/s donde se utiliza la frecuencia de 14.090 kilociclos y sus proximidades; en 21 Mc/s se ha adoptado la frecuencia de 21.090 Kc/s y en 7 Mc/s la de 7.040. Por el momento no dispongo de información sobre las otras bandas pero, lógicamente, las frecuencias deben estar dentro de la porción reservada para CW. Lamentablemente, para nosotros no resultan muy apropiadas las frecuencias próximas a la zona de telefonía de las respectivas bandas ya que la delimitación no es muy respetada y la incursión de telefonía y "splatters" en la zona de CW es constante, no solo por parte de los colegas argentinos sino también de países vecinos. Por ello he consultado al colega Carl Schultz, W6CG, sobre la posibilidad de utilizar para "DX" en RTTY las frecuencias más bajas de las bandas de CW.

Espero que en un futuro próximo haya otros "LU" activos en RTTY; para información de los interesados debo decir que tal vez sea posible adquirir a buen precio máquinas teleimpresoras de segunda mano en alguna de las compañías locales que renuevan su material y que, convenientemente reacondicionadas, rendirán un servicio eficiente. Por otra parte, en los Estados Unidos hay siempre disponibilidad de máquinas usadas cuya importación en la Argentina está libre de recargos aduaneros.

very suitable for our transmission or reception because once again, unfortunately, not many radio amateurs pay attention to the splatters or overlapping into the CW zone, a situation that exists with the Argentine radio amateurs and neighboring countries, creating a terrific QRM. That is why I have consulted my friend Karl Shultz, W6CG, of the possibility to use lower frequencies on the CW bands when trying to contact DX stations on RTTY.

My hope is that in the very near future many LU should be active on RTTY. For those interested in this activity, I want to tell them that it is possible to obtain at an economical price teleprinters reconditioned or second hand from some of the local companies that renew their equipment. These old machines, perfectly overhauled, can give a very efficient service for amateur use. On the other side there is always a disponibility of used machines in the United States and the importation of these has no surcharge at customs in Argentina.

Reprinted from
REVISTA TELEGRAFICA ELECTRONICA

TELEPRINTER COMMUNICATIONS BETWEEN RADIO-AMATEURS

Horacio Martinez Seeber, LU1AA

Many Argentine radio amateurs ignore that they can also QSO with other amateurs by RTTY outside of AM, SSB or CW as many other stations do it in other countries. Adapting a regular equipment for RTTY does not mean difficulties in the technical situation, not more than those needed for good CW transmission or a perfect modulation in fone; the problem is only in equipment, that is to say to obtain a teleprinter at a reasonable price. The other parts needed are always at hand in a radio-amateur station where there is a junk box filled with condensers, resistors, sockets, cables, etc. In these conditions very little has to be bought.

Under certain circumstances I was able to obtain a teleprinter "Teletype Model 15" for the tests I am doing. The converter and the frequency shift for VFO or crystal control were assembled in accordance with the circuits of W2PAT and W60WP published in the Spanish edition issue of 1960, pages 369-371, with some corrections, adaptations and adding certain new parts.

My friend Adolfo Glucksmann (LU3BAC) upon his return of one of his visits to the United States told me of the activity in RTTY of the radio-amateurs in USA. His information decided me to do something in this matter and I am very happy of the results obtained. The first contacts in RTTY gave me the same emotions I had many years ago when I first started to transmit in AM or CW and after a "CQ" I could copy the answer of some amateur in a far away country. That is how on the 11th of last June at 0030 after doing my first call on RTTY on 14090 Kc/s typing in the machine "CQ de LU1AA Buenos Aires", when turning it over to the receive position I heard a signal which was impossible to decipher by ear but which the converter did transform it into pulses in the keyboard and the machine started to write "LU1AA de K6QGR Redlands, California". The contact was established, of course, with the always present inconveniences of QRM that also trouble this system of communication. Nevertheless, another call was immediately typed in the machine "LU1AA de W6CG Temple City, California" who is nobody but Carl Shultz who is in charge of the DX section of the magazine "RTTY" that is printed in Arcadia, California. After that I contacted K3GIF, Edward Clammer, of Bethesda, Maryland, with whom I have been in weekly contacts since. Edward was kind enough to mail some copies of the magazine "RTTY" with very interesting information of this activity, practically unknown in our country.

Later on I had another new emotion; my machine started to print "LU1AA de I1ZZG Milan, Italia". I suppose that Carlos had the same emotion I did because he told me that he had only three days ago started in RTTY. Further, I had the pleasure to establish contact with some other stations in the USA, DL3IR in Munich and afterwards with OA4BN Lima, Peru, in 7.002 Kc/s.

Contrary to what may be believed, the activity on RTTY between radio amateurs is not recent; in February this year a contest was organized in the USA commemorating the tenth anniversary of the activities by radio amateurs with this system and during the contest the frequencies allocated for CW in the bands of 3.5 to 30 Mc/s were used.

There are many associations that group all the USA hams that operate in RTTY; one of them is the "RTTY Society of Southern California". Also in Great Britain there is another one called "British Amateur Radio Teleprinter Group". In the February issue of "RTTY" this year is published the results of the "Second Annual World-Wide RTTY Sweepstakes", a contest in which stations of the USA, Hawaiian Islands, Alaska, Puerto Rico, Canada, Peru, Mexico, Venezuela, Germany, Great Britain, Norvege, Italy, South Africa, and Australia intervened. The highest score went to I1RIF, Italy.

It is interesting to mention the invitation by the Armed Forces USA (Army, Navy and Air) to establish training contacts in RTTY, CW, AM, and SSB, between civilian radio amateurs and the respective bases of the different armed forces. These tests took part Saturday, 18th of May, this year under the name of "Armed Forces Day Communications Tests". The stations of the Army, Navy and Air Force were transmitting in their own frequencies with their own call letters while the radio amateurs answered in the bands allocated for them trying to use those nearest to the frequencies of the armed forces stations.

The highest activity in RTTY that I have observed is on 14 Mc/s where the frequency of 14.090 Kc/s and the proximities is more used. On 21 Mc/s the most used frequency is 21.090 Kc/s and on 7 Mc/s it is 7.040. I do not have any information yet of the frequencies in other bands but, of course, they must be in the portion reserved for CW. Unfortunately for us the frequencies near the edge where the fone bands begin are not

DX-RTTY

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

Hi DX'ers:

This is the month of the 'big smoke" so I won't waste too much of your time with chit chat. I suspect most of you are busy getting things in shape for the World Wide SS contest so far be it from me to slow you down!! The truth of the matter is that I am trying to get the junk here ready for the big blow off. If you haven't started to get the rust and cob webs out of your gear, better get started—only a few days left to the count down. Two more WAC-RTTY awards were issued during the past month. Nr 34 went to W3DJZ and nr 35 to WB2CVN. Both of these awards were the direct result of the recent appearance of HZ1AB on the RTTY mode. Asia still seems to be the chief hurdle to the WAC-RTTY award and when ever a station shows up from Asia the applications start to roll in. Kent, WB2CVN, is the first typer to qualify for two WAC-RTTY awards. He also is the holder of nr 26 received when he was WØPHM/4 down in Kentucky!! Via W6AEE/W6ZH comes word that Jean, F8KI, is making serious inquiries about obtaining some TTY equipment. This is indeed excellent news!! The RTTY ball is really rolling through Europe these days. Wonder who will be the first to add France to the list?

Talked to Arnold, KH6COY/KW6, a few days ago and he is all set for another busy season on the keyboard. Arnold's call is now KW6DS and is much easier for bad typers like myself!! This reminds me of the W8 who told me he was printing Arnold very well but gave up trying to raise him because by the time he had managed to type a row of "KH6COY/KW6" the band had folded up!! hi. Another call change comes from Alec, ZL3HJ. He has moved to Wellington and is now signing ZL2SN. Bruce ZL1WB reports working Alec on CW so guess the indoor antenna at ZL2SN is working. Alec is anxiously awaiting the arrival of a 19 keyboard and a Drake 2B receiver. Eric, VK3KF, should be back on from his new shack by the time this reaches the printer and Bruce ZL1WB still continues to pound in every night on 14.090Mcs. Many of the East Coasters report fine signals from Chuck, VK4RQ, on twenty. Evidently Chuck has his new printer in operation. Bill, VK2EG, writes that during his vacation a thief broke into his shack, stole his receiver and scattered the rest of his gear all over the place. Bill says the worst of the deal was the fact that his Model 26 was thrown to the concrete floor and pretty badly broken up. He would appreciate hearing from anyone who can assist him in the purchase of a Model 15 with a series governed motor. If you can help Bill out please drop him a line.

Bob, TG9AD, retutrned to the keyboard this past month with his usual fine signal. Bob reports that he has been spending a great deal of time on CW trying to get his code speed up a bit. He says they finally got their radio laws modified down there so third party traffic is allowed with countries having a third party treaty with TG. Bob expects to be available for the SS Sweepstakes. LU1AA continues to do a fine job on FSK and puts a big signal into the States on both twenty and forty meters. Several of the gang also report working YV1EM so evidently Frank is still keeping things going in Maracaibo.

African signals are still on the scratchy side here on the West Coast but several of the Midwest gang have been heard making contacts with the ZS stations so perhaps things are on the way up. It has been a long dry spell for African contacts out here and all of us are keeping our fingers crossed that the drought will end before the Contest this month.

European activity is still at a high level. Rene, DL3IR, reports via K6QGR that he is looking for West Coast Stations around 1800 GMT on 14.090 Mcs. Rene has some of the best European signals ever heard out here in these parts so if you are still needing Europe for your WAC DL3IR is your man!! Piet, PAØYX, writes that he is very anxious to get reports on the weekly RTTY bulletins sent out from PAØAA. If anyone reading this has been copying the VERON Bulletins from PAØAA, please let PAØYZ know about it. The BARTG Newsletter, edited and published by Doc, G2UK, is crammed with news of British RTTY activity this month. He reports that the RGSB Communications Exhibition is being held from October 30th to November 2nd and it is hoped to have an RTTY station in operation there.

Well, friends, it's time to get this to the editor's desk and finish getting the gear in shape for the SS ruckus. Keep a cool head and plenty of aspirin on hand for the big event of the RTTY year. Take one more look at the rules now so you won't waste any time after the starting rocket goes up. Good luck to all of you!

73
Bud, W6CG

PS. Editor just gave a letter from W1BGW who advised RTTY that he has received WAS RTTY from ARRL. Number three according to Ed Handy, W1BDI. WØBP received number one and W2JAV, number two. Congratulations, fellows.

HORSE TRADES

FOR SALE: Four Boehme Model 5-C FSK converters. Use with single receiver or dual diversity. Standard rack mounting, built in scope. 500 ohm audio input VT keying. Choice of neutral or polar output, many excellent features. Used, good, complete. $60.00 each. K6QQL, 4 Corte Nueva, Millbrae, California.

FOR SALE: Five only, precision telemetry discriminators (EMR MO 67E) converted to WB or NB RTTY TU's. Original cost over $10,000.00 ea. Used but in exc. condx. These are the ultimate in FSK keyers. Write for details. Quenstedt, W3MKZ/4, 1001 Plantation Parkway, Fairfax, Va.

WANTED: Paper crank for Model 26. K6PNW, 13150 Dericx Drive, Mt. View, Calif.

WANTED: Top cover for Collins CV116A/URR TU. For sale: Northern Radio TU. Two chan. diversity combining, audio type, with scope, power supply, and loop meter. Rack mount. Excellent. $150. (Includes instruction book.) WILWV, 99 Water Street, Milinlocket, Maine.

FOR SALE: 0-5/FR frequency shift exciter, or trade for two channel TD or possibly other items. W4NZY, 119 North Birchwood Avenue, Louisville, Ky. 40206.

FOR SALE: Teletype Model 15, excellent condition. Complete, $100.00. Sync motor. Toroids 88MHY, 60 cents each or five for $2.50. WA6VVR, 850 Linden Lane, Davis, California.

FOR SALE: QSL cards, $6.00 per thousand. The Monitor, P.O. Box 4133, Dallas, Texas 75208.

FOR SALE: Collins 75S-2 with RTTY IF crystal and four RF crystals for commercial RTTY coverage, $475. John C. Wells, 3700 Olentangy Blvd., Columbus 14, Ohio 43214.

FOR SALE: Model 28 KSR, good operating condition. Write for description, picture, and reasonable price. W6FYM, 4211 Wilkie Way, Palo Alto, California.

FOR SALE: FGC-1 BAY complete with AFC unit original tech manual. Purchased unused, and is in perfect working order. Also associated FRR-3 dual diversity receiving BAY which needs some work. Reproduced tech manual for FRR-3 included. $75.00 for both units. Picked up only. Unable to ship. W90KS, 146 Fairfield Ave., Elmhurst, Ill. 60126.

WANTED: Model 14TD. K0AEK, 4551 East Dakota Avenue, Denver 22, Colorado.

WANTED: MXD and MFD units for multiple transmitter-distr. Communications type box for Model 28, information and/or equipment on six level teletypesetter gear. Model 21A or similar strip printer. K8VDU, 2918 Langfield Drive, Columbus 9, Ohio.

FOR SALE: Hammarlund HX-500 transmitter with FSK (upside down or right side up, as you choose), FM, AM, and side band operation. First class condition in all respects. K8WYF, 2055 West 87th St., Cleveland 2, Ohio.

FOR SALE: Keyboard Perferator with stand and Western Electric power supply. $50.00 plus crating and shipping. K0UMY, Box 238, New Ulm, Minnesota 56073.

FOR SALE: Model 15 complete, like new and in excellent working condition, $75.00. Model 14 TD, in perfect condition, like new, $50.00. Model 19 complete, in same condition as above items, $125. WV6VVP, 1920 Downey Pl., El Cerrito, Calif. Phone 232-4900. Area 415.

AMATEUR RADIO ON DISPLAY AT THE 1963 NATIONAL ELECTRONICS CONFERENCE

The Chicago Area Radio Club Council will present a complete operating amateur radio single sideband, and radio teleprinter station at the 1963 National Electronics Conference to be held October 28 through 30 at the Chicago Lakefront Exhibition Hall, McCormick Place.

The station will be set up and operated by radio amateurs of the Chicago area from the Ladies' Amateur Radio Klub, (LARK) and the Illiana Teleprinter Society (ITS). An added feature of the amateur radio display will be the first time showing of a device to transform punched printer tape into embossed braille material for the blind.

This is the invention of Mr. Ray Morrison, W9GRW, an active teleprinter enthusiast. Mr. Morrison has been at work on this device for several years, and will also give a talk and demonstration of the new machine during the annual "CHI-RTTY" meeting on Sunday, October 27, at McCormick Place. This meeting is sponsored by the Chicago Area Teleprinter Society (CATS), a group of radio amateurs interested in communications via teleprinters.

The display will be under the direction of Eve Cudia, K9EMS, of the LARKS and Bill Soich, W9HXW of the ITS.

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Subscription Rate $3.00 Per Year
RTTY is the Official Publication
of the
RTTY Society of Southern California
and is published for the benefit of all RTTY Amateurs and Experimenters

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