Additional Classified on Page 15

KING OF THE CONVERTERS the Mainline TT/L-2 FSK demodulator with/without scope indicator with 850 and 170 cycle shift filters tuned and adjusted in your unit with AK-1 AFSK all on same chassis. combination solid state ST-3 with AK-1 AFSK, with or without scope indicator. Mainline TT/L-2 filters in vector C12 cans. J * J Electronics, Communication specialists using lab equipment, Canterbury, Conn. 06331. OM, John F. Roache W1SOG, Prop.

RTTY GEAR For Sale; List Issued monthly. 88 or 44 mh toroids - 5 for $2.50 postpaid. Elliott Buchanan and Associates. 1067 Mandana Blvd., Oakland, Calif. 94610

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I HAVE FOUND ANOTHER DEN-35 demod; for RTTY, Twinplex, Fax, with scope, all plug ins, excellent shape. This is a Security Agency special unit, $49.00 G. Waite, 5716 N. Kings High., Alexandria, Va. 22303

VECTOR PLUG IN UNITS. Octal, C12 (no turret) 3" high, 2" square. ideal for RTTY filters. New, 75 cents each. Howard Fasold, WØVQM, 138 Palisade Cir. Manitou Springs., Col. 80829

WANTED: SOURCE of palets and key caps to convert Stock Market Model 19 to standard. H.W. Lingenfelter W8NFD, 21352 Kenwood Ave., Rocky River, Ohio. Zip 44116

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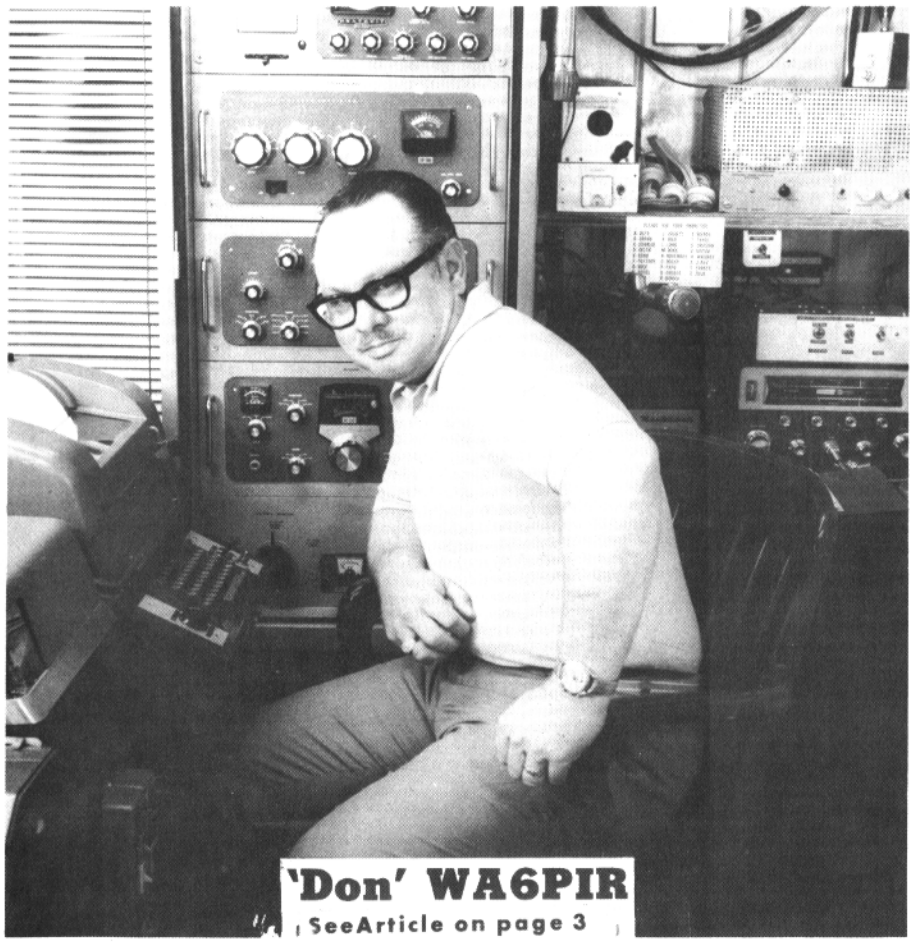
RTTY JOURNAL

MAY 1969

EXCLUSIVELY AMATEUR RADIO TELETYPE

Volume 17 No. 5 30 Cents



'Don' WA6PIR

See Article on page 3

Armed Forces Communications Tests -

The annual Armed Forces Day Communication tests will be held May 17, 1969. As usual the Armed forces station will be out of the amateur bands but will look for amateur stations at a frequency usually designated during their transmission. In the past all contacts have been verified with a QSL card.

RTTY RECEIVING CONTEST

A radioteletypewriter "RTTY" receiving contest will be conducted for any individual amateur or station possessing the required equipment. This is a test of the operator's technical skill in aligning and adjusting his equipment, and serves to demonstrate the growing number of amateurs becoming skilled in this method of rapid communications. The "RTTY" broadcast will consist of a special Armed Forces Day message from the Secretary of Defense to all radioteletypewriter enthusiasts. The message will be transmitted at 60 words per minute in accordance with the following schedule:

SUBMISSION OF COMPETITION ENTRIES

Transcriptions should be submitted "as received". No attempt should be made to correct possible transmission errors.

Time, frequency and call sign of the station copied as well as the name, call sign (if any) and address of the individual submitting the entry must be indicated on the page containing the text. Each year a large number of perfect copies are received with insufficient information, thereby precluding the issuance of a certificate.

Completed entries should be submitted to the Armed Forces Day Contest, Room 5A522, The Pentagon, Washington, D.C. 20315, and postmarked no later than 31 May 1969.

TIME	TRANSMITTING STATION	FREQUENCIES (KHZ)
17 May 1969		
18Ø335 GMT	WAR - Army	3347, 6992.5, 14405
172335 EDST	NSS - Navy	4012.5, 7380, 13940
172135 CST	NPG - Navy	4016.5, 7347.5, 13922.5
171935 PST	AIR - Air Force	3397.5, 7315, 13995
	A6USA - Army Radio San Francisco	6997.5
	A5USA - Army Radio Fort Houston,	4025

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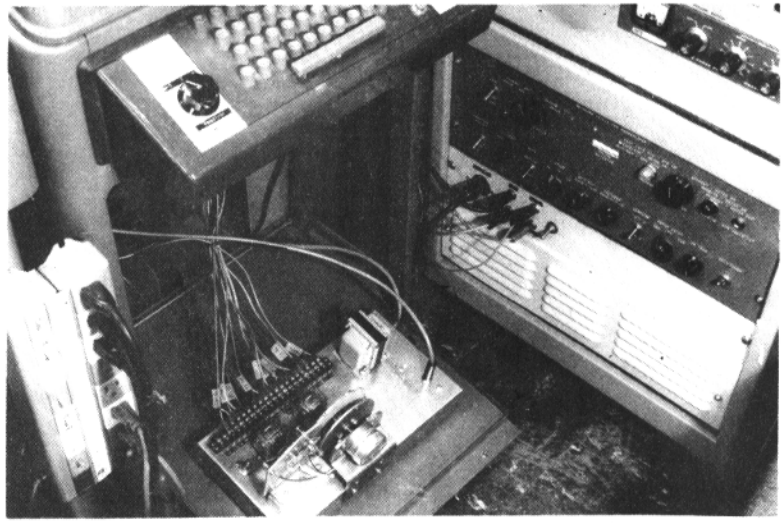


Auto CW machine and station control system shown resting on open door of 28KSR. Keyboard modifications and junction box on left with TT/L-2 demodulator in Background. See article on following pages.

SWITCHING and CONTROL Circuits for RTTY -

Don ROYER, WA6PIR
16387 Mandalay Dr.
Encino, Cal. 91316

In chatting on the air with many of the RTTY enthusiasts, it is evident that few of them have adequate switching circuits for controlling the station and the functions of their machines. This is true even though Irv Hoff, W6FFC, and a few others have often prepared articles on the subject. With the FCC still requiring Morse identification, it has also been noted that an easily constructed CW identification "machine" could save considerable time, and when used with narrow shift CW, could be of great value. In transmitting long taped material such as pictures, it is desirable to be able to interrupt the TD without breaking the continuity of the transmitted material. In another instance, those having reperforators without keyboards and who desire to punch tape while receiving other copy on the printer, seem to be at a loss to understand how this can be done.

Having read a number of articles on the subject, gleaning something from each and constructing several such devices, it is possible that others may wish to share in these experiences. Constructing these devices can be most enjoyable, to an end of improving operating ease, efficiency and reliability.

The circuit depicted in the drawing will provide several functions, and is straight forward. A few comments may be helpful in locating components and in making the code and one other wheel.

The two relays employed in the circuit are the enclosed plug-in types, such as the Potter and Brumfield KRP11AG and KRP14AG. After trying several different types of motors and different speeds, it settled on a small synchronous motor of the 30 in./oz. variety as made by the Hansen Mfg. Company under the name of Syncron. These are inexpensive, selling for about $5. While the 15 rpm was selected, it may be desired to use different speeds, like from 12 to 18 rpm, depending upon the number of letters employed in the code wheel. The motor drives two wheels which operate Micro switches, one of the wheels being cut to produce the CW, the other serving to control the motor and allow just one revolution. A quarter inch shaft (cut off an old pot) was end drilled and tapped for a set screw to provide attachment to the small motor shaft. The current across the push-button switch at the keyboard is only that of the relay coil. The motor is controlled through the relay contacts, a running light being provided to permit remote indication of the CW operation. With the Model 28 KSR, the light was located at one of the existing red lenses and is a Christmas tree bulb, the bulb and socket having been stolen (when the XYL wasn't looking) from an old string of lights.

In making the wheels, account for a certain period of dwell to permit the motor to coast a short distance to a stop. In the wheel constructed, the code is "DE WA6PIR". Remember that CW may be described as consisting of a number of bauds, each dot being one baud, a dash being three bauds, there being one baud between elements of a letter, three bauds between letters of a word, and five bauds between words. In the letters of the wheel constructed, there were 77 bauds, and using another 13 for dwell, this produced 90 segments, with each segment thus being four degrees. It is convenient to divide a layout into the four degree segments, and then to draw in the portions to be removed. One-eighth inch thick aluminum was used, scrounged from an old rack panel. As no lathe was available, the four inch diameter wheels were made round by first rough sawing and then turning about a center against a sanding disc. At each of the spots where metal was to be removed, a 1/8 inch hole was drilled about 1/8 inch in from the outside of the wheel, with the notch being cut into each hole with a metal saw (actually a saber saw clamped in a vise) and finished off with a little hand filing.

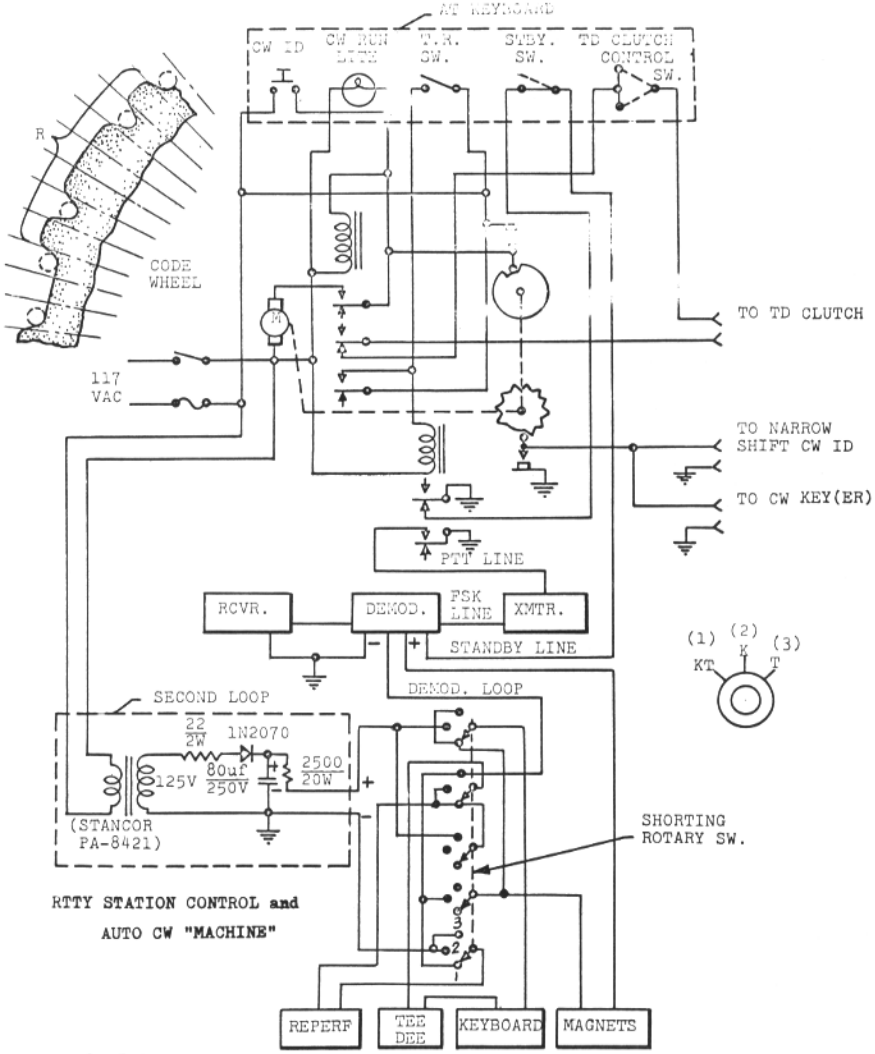
The Micro switches operated by the code and timing wheels can be almost any of those readily available. Due to the low torque of the small motor, it was found that Micro switches 1SM1 made by Honeywell and with a JS-246 roller lever, work quite well, as they have very low (1 oz.) operating force.

In completing the function portion of the control system, the keyboard, magnets,

reperf, and TD can easily be controlled with one shorting type rotary switch and a second loop. A Centralab PA-2020 switch is quite satisfactory for this purpose. Care should be taken to insure correct polarities. The shorting type switch will prevent jumping of the machines when switching from one function to another. The momentary voltage change presents no problems.

In controlling the TD, the circuit provides for interruption of the TD during CW identification, maintains the transmitter in an "on" condition, and controls the standby line. While this unit is being with the Mainline TT/L-2 demodulator, the ingenious RTTY enthusiast may adapt it to any similar TU.

Gentlemen - start your motors and have fun!



1. Printer, keyboard TD & reperf connected on demod. loop.
2. Magnets only connected to demod. loop. Keyboard TD & reperf connected to 2nd loop.
3. Printer magnets, keyboard & TD connected to demod. loop. Reperf connected to 2nd loop.

Two Ideas on Modifying the 32V2 for RTTY

Don Kadish, W10ER
135 Barbara Rd.
Waltham, Mass. 02145

The Collins 32V2 is an excellent transmitter for RTTY use. It can be purchased on the used market at very nominal cost to the Radio amateur. The particular transmitter that I purchased was not quite stable enough for RTTY operation. It had a short, and sometimes long term oscillator drift that was annoying to say the least. Checking the oscillator filament voltage, a change of .5 volt was measured when the high-voltage to the final was applied and or the plate current turned on to transmit. Changing the oscillator tube did not improve the atability. It was then decided to divorce the oscillator tube filament from the existing transformer and install a separate one. Any junk transformer in the shack will do. I used one with a one ampere rating.

Remove the cover from P1Ø 1, remove lead "X" and wire the new 6.3 volt transformer leads between ground and where "X" was formerly attached. The V.F.O., and P1Ø1 is shown in figure 1 and 5-2. Install the transformer in any convenient location. In my own particular case I removed the audio transformers. This left room on the chassis for any future modifications and reduced the weight of the monster considerably. Stability was improved to such an extent that it approached the stability of a crystal oscillator. That kind of stability can be changed of course only if the filament voltage of the oscillator stage is never turned off.

Keying the transmitter was stright-forward and practically any proven circuit can be used. I will describe the mainliner keying circuit, however, because that is the one I am most familiar with. The circuit can be installed on a piece of aluminum and mounted directly above the V.F.O. tube VØ01. Remove the oscillator tube from the shield can. Soder the wire "A" at the junction of capacitors C1 and C2 to tube pin 5 (the cathode) as close to the upper end of

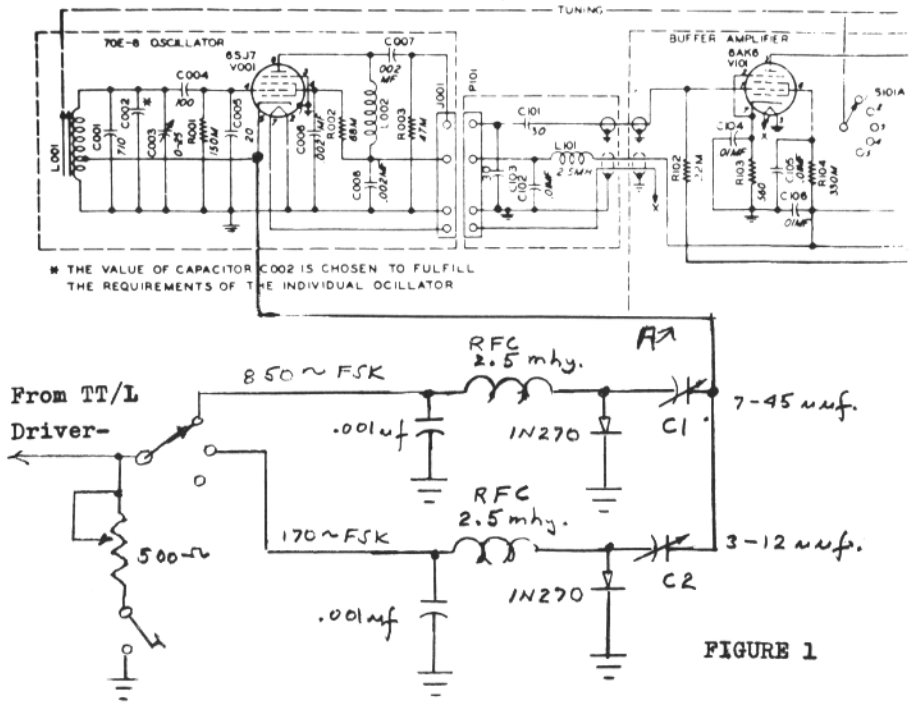


FIGURE 1

the pin as possible to enable the tube pins to make contact with the socket when the tube is reinserted. Insulate wire "A" with spaghetti to prevent it from shorting to ground when replacing the tube. Connect a flexible 1/8 inch of 1/4 inch ground strap between the transmitter chassis and the sheet of aluminum housing the keying circuitry. The strap insures a good ground return to the V.F.O. circuit wire "A" can be number 2Ø solid. Shift will naturally change when switching from band to band and will have to be adjusted.

Keying methods other than the TTL can be used of course, the technique being the same (I.E.) using the saturated diodes, etc.

The 32V can also be used for Mars RTTY nets because of its commercial frequency coverage.

*** ***

ANOTHER METHOD- --

Rudy Gottschalk W2NCA
204 Maple Dr.
Wycoff, N.J. 07481

Having endured the never ending drift of my 32V2 ever since I got it on FSK over a year ago - I finally decided (for the fifth time) to cure it or get rid of it. I was particularly annoyed since I had gone on Twenty NFSK where the beast really showed its drift.

I had gone the usual route of changing elements-capacitors diodes, ect. Including what I had discovered to be a photo sensitive IN34 in my FSK keyer. Discovered this while monkeying with a flashlight down in the innards one nite. This one was also found to be heat sensitive. This trip I got to change 6SJ7 osc tubes and observed their different behaviors varying from super drift to fair-but never good enough for NFSK operation on the higher frequencies. 2Ø meters in this case. I even tried heat sinking and blower cooling the tube and circuit but with only fair success and never predictable results at any time between experiments.

It suddenly dawned on me after a series of these tests that this observed erratic behavior of 6SJ7 tubes (including 6SJ7GT) could be the root of my problem. Of course everyone knows that circuits and tubes have to warm up - but I never suspected that there could be this large degree of difference between tubes of different manufacturers and in fact between tubes of the same type from the same MFG. The best tube in my junk box turned out to be an old RCA of 15 years vintage. Much better than a new one of several other MFG types and including a recent RCA MFGD. job. Evidently there was an excessive change in the interelectrode capacity of these tubes during heating and cooling (I used ten minutes as on and off duty times) plate on and off, that is.

What could be done about this? I remember that the miniature tube type 6AU6 was similar to the 6SJ7 in use and characteristics. I proceeded to wire up an adapter socket consisting of a 7 pin socket wired to an octal plug. I installed the contraption with a nice shiny new 6AU6 (RCA). Voilla!! instant success-well almost. The first reading of the drift after a 10 minute warm-up was approximately 5Ø cycles for a ten minute period. I began to worry as the thing began to drift - and drift as time went by. The drift began to slow down and get less and less at the end of eight hours it was fairly settled so that the drift for a ten minute period was only about 25 cycles or better. The answer of course was that the new 6AU6 had to age and will likely continue to drift for a time to come. The 32V2 had to be recalibrated slightly as the interelectrode capacitance of the tubes is slightly different but this is a relatively simple matter. The 6AU6 provided the same amount of drive as the old 6SJ7 so no problems there. There are probably other tubes such as the 6BA6 which would work as well in this application.

Admittedly this is not the ultimate fix or as good as some of the newer transmitters but it will keep you from cussing that old 32V as much or get you to use it again. On eighty meters it is a dream. Drift practically nil. Have been using it for some weeks now and on eight the comments I get from the other guys are only good. I used it on twenty NFSK with good results and for 85Ø cycle shift it is no problem at all.

***

D.A.R.A.
WAE RTTY Contest
SeeRules in APRIL Issue

RTTY JOURNAL

Using an ESSCO With the SELCAL - -

D.E. Chapman W9DPY
670 N. Elizabeth St.
Lombard, Ill. 60148

I have one of the Selcall devices that works quite well. In mine I use a 9.5 minute timer to shut the machine off so if someone forgets to send the shutoff nnnn at the end of 9.5 minutes the timer closes the force off switch. This leaves the unit in a ready condition to accept another message after about 10 seconds time.

At the present time, I am using the Selcall with an ST3, a Swan Hoover special, an AN/FGC-1 and an ESSCO. The ST3 had considerable spiking on the leading edge of the pulse that fouled up the Selcall. This was cured by moving the series limiting resistor in the ST3 to the LOW side of the machine and using two silicon diodes as standoff voltage.

The ESSCO is very easy to adapt for use with the Selcall. Inclosed is a marked up print of the SM-1. This thing has voltage on the flip flop. The output can be taken from either side of the zenar diode z2. The flipflop side gives higher voltage and works well. With a 22,000 ohm resistor added as shown, the DC voltage on the Selcall is 1.8 volts mark and about .05 space. Since my Selcall keys well at 1.0 volt peak to peak, this is plenty. Reducing the added resistor will raise the voltage. The actual DC voltage at the zenar is about 6.8 measured with a Simpson 260, and at the base of Q1 a little higher.

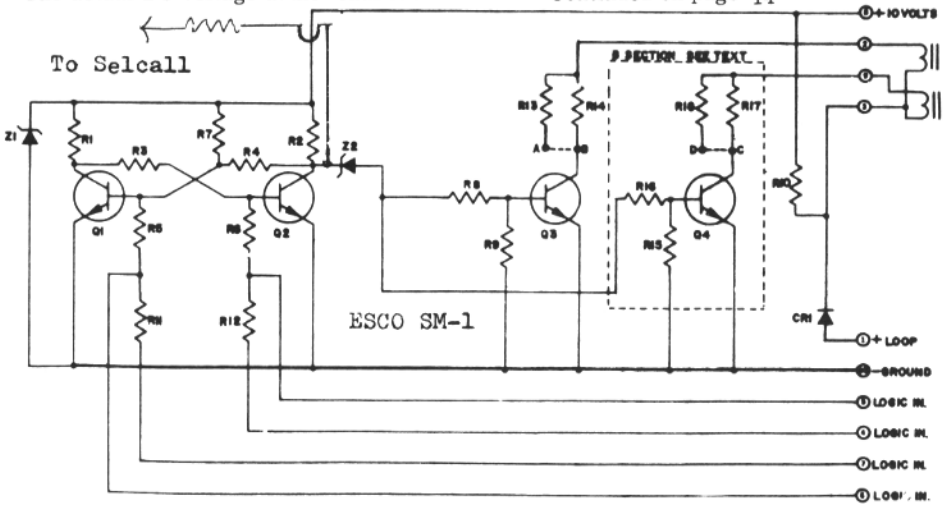
I have never seen anything cleaner than the pulses at this point. Running off air, there is less than 1% spiking when viewed with a Tekronix 531!

Let me hasten to add that the spiking mentioned with the ST3 does not in any way reduce the value of the unit. It is simply that in my application there is a very heavy RF noise filter in the machine and the spike was caused by the machine capacitors being charged up to the full loop voltage and discharging thru the loop circuit when keyed. And as mentioned, when the loop limiting resistor was moved to the low side of the machine, the problem disappeared.

In addition, I transfer between loops with a polar relay so several TU's will key the Selcall.

The high speed IC's in the Selcall will pick up "floating crud" from other electrical devices if not properly filtered. One odd one that caused some problem, and I have heard others with the same comment, is a surge getting back in the hold flip flop driving the output transistor when the Selcall turns on. The cure for this is a small ceramic capacitor across the base to ground of the output transistor. I believe I ended up with .001 or .005. This is not

Continued on page 14



RTTY theory & applications-

RON 'RG' GUENTZLER, W8BBB
Route 1 Box 30
ADA OHIO, 45810

LOOP TIME CONSTANTS, REVISITED

1968 JAN we discussed the effects of time constants upon the operation of a selector in a teleprinter. The conclusions that we reached were that the more inductance there is in a loop, the more the current rise (from Space to Mark) will be delayed. This delay can be detrimental to proper operation of a teleprinter. It was pointed out that the current rise is also delayed by too little resistance in the loop. The net result was to recommend that as few selectors as possible be put into a loop and the higher the loop supply voltage, the better. A minimum of 130 volts was recommended.

We are going to review, in depth, the principles behind the delay in current rise in a telegraph loop, and then we are going to show how one can "beat the rap", as it were.

SERIES RL TIME CONSTANTS

Consider the circuit shown in Figure 1. For the time being, ignore any similarity between this circuit and that of a telegraph loop. The circuit consists of a source of DC voltage, E, a switch S, an inductor, L, and a resistor, R.

Assume the switch is open and no current is flowing. When the switch is closed, the current, i, will start flowing and it will slowly increase as shown in Figure 2. The mathematical form of the current as a function of time is given by:

$$i = I(1 - \exp(-Rt/L)),$$

where: I is the ultimate value of current and equals E/R, R is the total circuit resistance in ohms, L is the inductance in H, and t is the time after switch closing in seconds.

The shape of the curve is such that it is essentially impossible to say when the current finally levels off to its ultimate value I. Therefore, it is convenient to determine a point on the curve that can be specified mathematically and measured easily on an oscilloscope. This point is the place where the current has reached 63.2% of its ultimate value I. The current reaches 0.6321 when Rt/L 1.0. Therefore, L/R is called the time constant; when the time after switch closure t in seconds equals the time constant L/R, the current has reached 63.2% of its ultimate value I.

As an example take the following situations: Assume that E = 260V, R = 4330 ohms, and L = 4H. E/R = 60 mA, therefore, the ultimate value of current, I, will be 60 mA. The time constant, L/R = 4/4330 = 0.932 ms. This means that 0.923 milliseconds after the switch is closed, the current will equal 0.632x60 mA = 38 mA.

As a second example, assume that E = 40V, R = 667 ohms, and L = 4H. The ultimate value of current, I = 40/667 = 60 mA, the same value as in the previous example. However, the time constant, L/R = 4/667 ms. Therefore, even though both circuits will have the same ultimate current value, the second circuit requires more than six times as long for the current to rise.

Both of the above examples could apply directly to a telegraph receiving loop. The switch, S, is the output or keyer tube or transistor in a TU (or metallic contacts on a keyboard or a relay). R is the total loop resistance, L is the inductance of the selector magnets, and E is the loop power supply.

The "moral" of the story to this point is that although both circuits will supply the 60 mA required during a marking condition, the circuit with the low supply voltage possesses a long time constant (delay in current build up); because the elements in a 60-speed telegraph signal are only 22 ms long, the 6 ms required for the current to build up to 63% of 60 mA is too long.

This is the point where we stopped previously. When a receiving loop is being designed, the constraints are normally: L (the inductance of the selector magnets) is fixed at about 4H in pulling-type selectors and about 2H in parallel-connected holding-type selectors, the ratio

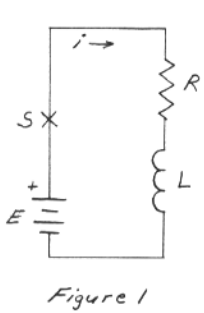


Figure 1

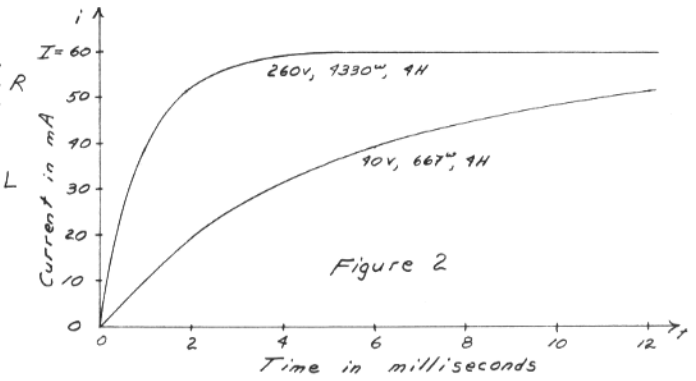


Figure 2

of E/R must equal 60 mA, and the loop is to have the simple form shown in Figure 1 where the switch, S, is a metallic contact or a "contact-like" device such as a vacuum triode or a saturated bipolar transistor. Therefore, within these constraints, the only way to keep the loop time constant short is by making E (and therefore R) as high as possible.

This solution is relatively simple until one wants to use a transistor as the switching element. The high voltage is a problem. How can the supply voltage be reduced while keeping the time constant relatively low? There are two basic solutions: 1) Use selector magnets with less inductance, and 2) Use a pentode-like device to key the loop.

LESS SELECTOR INDUCTANCE

If the selector inductance could be lowered, the loop time constant would be reduced, thus giving a faster current rise when going from Space to Mark. The inductance of pulling-type magnets is about 4H; the inductance of parallel-connected holding-type magnets is about 2 H. Therefore, partial relief can be obtained by using parallel-connected holding-type magnets. This will be advantageous later, but something more radical is indicated at present.

The inductance of an inductor (selector magnets) is approximately proportional to the number of turns squared. If the number of turns were reduced by a factor of 10, the inductance would drop by a factor of 100. The pull of the magnets is proportional to the product of the number of turns and the current flowing in those turns. In order to keep the pull of the magnets unchanged, the current required would be 10 times what it was originally. If the original inductor (magnets) had 4 H inductance and required 60 mA for a given magnetic pull, the new magnets would have 40 mH inductance and require 600 mA.

If a 40-Volt source were used, the loop resistance would have to be 40V/600mA - 67 ohms. The time constant would be 40mH/67ohms 0.6 ms. This should be compared with the original 4H-60mA time constant of 6 ms when a 40-Volt supply was used and 0.923 ms when a 260-Volt supply was used.

Therefore, by using selector magnets running at 600 mA, it is possible to reduce their inductance to such a low value that they can be operated in a relatively-low voltage loop and still have a low loop time constant.

If this is such a good thing (and it is), why haven't teleprinters always used 600 mA magnets? One reason is that teleprinters are/were to be operated over wire-line loops and the resistance of an ordinary pair of wires becomes high in a relatively short distance; this, in turn, either limits operation to short distances or requires using very heavy guage wire and/or high supply voltages. Therefore, from a wire-line standpoint 60 mA is a desirable current and 600 mA is too high.

If only physically short loops (within the same room) are to be used, why not rewind the selector magnets for 600 mA operation? If this is done it will permit using a low supply voltage and then transistors can easily be used to key the loop. This can be done, but the problem of compatibility then arises. If one machine has been converted to 600 mA operation, no other machine can be used in the same loop unless it has also been converted, etc.

This compatibility problem can be licked in the following manner: Operate any individual machine at 600 mA (after conversion). Inside each 600 mA machine place a complete loop for use only by that

machine. This loop must contain a power supply, a keyer or driver, and a resistor. Design the loop driver so that its input operates from 60 mA. In this way the machine "looks" from the outside like any other 60 mA machine, but inside it is a high current, low voltage machine. An additional benefit of having the machine's loop and driver self-contained within the machine is that from the outside the driver (and thus the machine) looks like a pure resistance. Any number of these machines can be placed into a 60 mA loop, and since they have no inductance reflected back into the loop, they will not degrade the loop time constant.

The approach just suggested is essentially that used in the Teletype Corp. M32 and M35 teleprinters. The selector magnets are high-current, low inductance devices. Within each machine there is a complete loop that contains a power supply and a loop or magnet driver. The line terminals on the machine do not go to the magnets as they do in the older machines, but instead go to the input of the magnet driver. When the line terminals are connected into a normal 60 mA telegraph loop, the machine operates just like any other machine with the exception that there is no inductance reflected back into the 60 mA loop. Inside the machine, the 60 mA signal being applied to the line terminals keys the machine's magnet driver which, in turn, keys the machine's own internal loop which then drives the selector magnets.

Incidently we are not necessarily suggesting that all machines be rewound for high current operation. We are just saying that this is an approach that can be used and is used in the newer commercial machines.

Some of the above ideas can be applied to the standard 60 mA machines. Several 130-Volt (or higher) 60 mA loops can be built and one machine inserted into each of these loops. Each loop can have its own loop keyer and the inputs of all the keyers can be connected together. In this way, the inductance of one loop does not affect the time constants of the other loops.

CONCLUSION

Because of the high inductance of selector magnets, they can introduce serious time constant problems. Under the usual constraints of normal 60 mA magnets and a switch (metallic contacts or a saturated-mode bipolar transistor), the only solution is the use of a high supply voltage. The first alternative is to remove the 60 mA magnet current constraint; then low-voltage operation is practical.

Next month we will look at the second alternative: pentode-mode driving of a standard 60 mA selector from a low voltage.

***

Time for ACTION !

As many of you, who listen to the ARRL bulletins know, the proposal to allow RTTY operation in the 28000 to 28500 section of the ten meter band is scheduled before the FCC in June. This proposal has been pending for several years and unless favorable action is obtained now, it will be very difficult to get on the FCC docket again.

We can think of no objections, but inaction or lack of interest could cause the proposal to be passed over. It is easier for the FCC to keep the status quo than make changes unless there is some demand shown.

Obviously with stateside stations working in a different portion of the band from foreign stations not nearly as much use has been made of this band as conditions warrant. There is plenty of room for CW and RTTY in the lower portion of the band. Another factor is that many exciters will not go above 29000 hz requiring extra crystals to work RTTY. This is a band that permits long haul DX with low power as well as an ideal band for local rag chews when the band is dead. Direct action to the FCC in favor of the proposal may be taken but this requires a statement, with 14 copies, prepared in a semi legal form be submitted. Many hams have neither the facilities (or ambition) to do this but we feel that with the vigorous support of the ARRL the proposal should be adopted. Let your director know your feelings, a simple letter, even a message via ham radio, preferably RTTY will help. If you know your director, talk to him, explain the situation and if there are any questions give an honest answer, and get a commitment on his feelings if possible.

Next month we hope to have more information on methods of making a formal reply to the FCC. The proposal should be adopted - it can be adopted if every person reading this, makes their opinions and reasons known. NOW.

•••

RTTY-DX

JOHN POSSEHL - W3KV
Box 73 Blue Bell, Pa., 19422

Hello there. . . . .

At this time we should be giving a resume of the B A R T G Spring Contest but as we missed it completely for the first time in several years we just don't have any first hand information to offer. Many thanks to Pierre, XE1YJ, for a copy of his submitted score. Pierre says that activity seemed to be down from previous years, possibly due to conditions, however, he managed to end up with over 16,000 points. It is interesting to note that he was on all five bands, 80 thru 10 but only made single contacts on 80 and 40 and these were with W2RUI; lucky fellow. HR2AFK, Fred, and fairly new to RTTY was in there and managed to make 60 contacts, in 11 countries, on 4 continents. A very good showing for a single band effort. A contestant of long standing, Arthur, ON4BX, got into the contest but after two contacts he started to see several keyboards and wound up with a severe case of the Hong Kong flu that put him out of action for a couple of weeks.

To go back a bit to February and the "Giant Flash" Contest we have a very nice report from Sandy Morton over there in Scotland. Sandy entered that contest in the S W L category. He reports that during the first week-end conditions were really terrible, the only non-european station printed was W2RUI. The second week-end brought much better conditions for the eight hour operation period. Sandy printed 34 band countries and 103 stations and says that some of the contenders for top honors should be W2RUI, DL1VR, SM0KV, and I1CQD, with several more close behind. We will await the official results to see how close Sandy's predictions were.

I guess that we may as well admit it now in case we were overheard and rumors start developing. Recently your scribe and Eric, VK3KF, had a QSO on CW (!) on 14095 kc. Heard Eric's S-9 signal and gave him a call. It seems he had been typing CQ's for about an hour with no takers and finally decided to try the old rusty key. Anyway, Eric had some really good news. Cas, ex-KA9AK, will be at Eric's QTH for several days commencing April 27th. He will be in Australia on a rest leave from Viet Nam and plans to operate Eric's station using his own call, WONMH/VK3, as authorized under the reciprocal licenseing program. Hopefully he will be there for the DARC-WAE Contest that weekend but due to time differences this may not be possible. At any rate, Cas will be there for a while so give him a call and say hello when the propagation to VK is right for your location. He'll be glad to hear from you again.

Eric also skeds Bud, W6CG every Saturday on 29030 kc. around 2330-1030z, so there is another old friend of RTTY-DX you can say hello to and at the same time stir up some much needed activity on Ten Meters.

Last month we made mention of the QCA Award issued by the B A R T G with instructions to send your cards to Bill Brennan, G3CQE. We regret to say now that we were in error as this office recently changed hands and the correct QTH is as follows--

Ted Double, G8CDW
BARTG Contest & Award Mgr.
33b Windmill Hill
Endfield, Middlesex
England

In order to clarify the QCA program we are listing below the present holders of the award along with the rules that apply for application

	Confirmed		Confirmed
ON4BX	76	DL1VR	25
I1KG	51	G3CQE	25
K8YEK	50	G3IYG	25
W3KDF	50	I1ORS	25
W8CQ	50	ON4CK	25
FG7XT	35	VE3AYL	25
G2HIO	32	VE4BJ	25
K4VDM	31	W1GKJ	25
W6AEE	31	W2UGM	25
W6CG	31	WA6WGL	25
I1CAQ	27	W8CAT	25
K8MYF	27	WA8BOT	25
W2RUI	27		

Arthur, ON4BX, is to be congratulated

upon being the first to receive the 75 countries confirmed sticker. This is not easy on RTTY.

QUARTER CENTURY AWARD

The Quarter Century Award is issued by the British Amateur Radio Teleprinter Group on the submission of satisfactory proof of Two-Way RTTY Communication with 25 different Countries.

Measuring 10" by 13" and printed in Red and Green the certificate makes an attractive addition to any Amateur Radio Station. Endorsment Stickers are available for each additional 25 countries.

Applications for the Award may be made by the following methods:

1. Submission of QSL Cards for the Countries being claimed. These Cards are returned to the owner after checking.
2. Submission of Photostat Copies or clear Photographs of Qsl Cards. Such Photographs should clearly show the call sign of the Amateur making the claim and also establish the fact that the contact was made using RTTY as a mode of Communication. This type of claim must be witnessed and signed as accurate by two other licensed Amateurs.
3. Claims may also be accepted on a Contest Log submitted for any Contest sponsored by the B A R T G. The claim for the QCA Certificate should be made at the same time as the Contest Log is submitted.

The cost of the Certificate is 1 Dollar US or 7/6d in International Reply Coupons.

Ted also notes that he is always happy to receive claims for any number of new countries from existing holders of the QCA. There is no need to wait until you have enough cards for the next sticker. You might also send Ted one of your own QSL cards as the B A R T G plans to display them at the Radio Communications Exhibition in London later in the year.

The Italian RTTY Society is planning on their annual meeting this year in June 14-15 and hope to make it into an international meeting. Information can be obtained from Lamberto Rossi, I1ROL via S. Ilario, 6, 56021 Cascina, Italy.

A new station recently showed up on 14 mc. from a rarely heard from country. KZ5GO, Gerhard, recently was heard putting out an excellent signal from Balboa, C.Z. Uli, DJ9XB, RTTY Manager of the DARC reports that IT1ZWS was due to be QRV from Sicily early in April. This is a rare prefix for the PX Award and you can QSL to --

Pietro Guercio, IT1ZWS
via Sammartino 122
Palermo, Sicily

You DX'ers looking for New Mexico to complete WAS will be happy to know that Bob, W5VJP is on 21 mc. at 2100z almost daily looking for DX contacts.

A few more of the rarer states recently printed on 14 mc. were KOPEF, S. DAK., WONMO, Iowa, WA5DVV, Miss., and K4KQR, Ala. WOSDN, N. DAK. has recently been on 15 meters for the first time.

The RTTY-DX listing comes up for publication next month and we urge all readers to send in their list of DX worked and confirmed. We will list all stations previously listed and hopefully some new ones. In the September issue we will delete from the list all stations that have not added to their score for the past year.

There is still time to get those machines in shape for the DARC-WAE contest the week-end of April 26-27. Remember the "QTC" message for extra points. Good luck in the Contest.

--73 de John

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BROAD MINDED

USE NARROW SHIFT

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BACK ISSUES —

ONLY back issues available are July through December 1966, February 1968 to date. The TT/L-2 Reprint is also available. Single copies are 30¢ each. RTTY JOURNAL Binders are available at $2.50 pp in US, Canada or Mexico. $3.50 elsewhere.

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"Dusty" Dunn — W8CQ
Editor & Publisher

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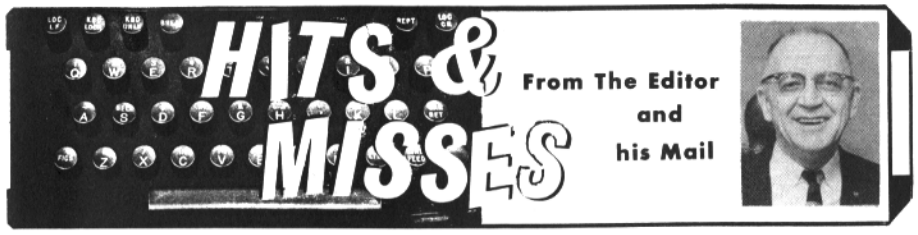

Our two weeks in Florida gave us a nice tan that we are fast losing as we try to catch up with the mail and get this issue out. About the time you get this we will be at the Dayton hamfest and once again we invite all RTTY fans to visit the RTTY JOURNAL suite at the Sheraton Hotel Friday and Saturday nites. The RTTY forum will be Saturday morning at 9:30 (heaven forbid such early hours) with W8BBB - K8ERV and W8SDZ the principle speakers.

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It has never been our intention to attempt to dictate how and what anyone should say or do on RTTY. However looking back to the days when we first nervously made our first RTTY contacts there seems to be a number of habits we found out the hard way that could be formed early and would make for more uniform operating as well as easier and faster for everyone.

At the end of each line hit-TWO CR characters, the additional one makes sure the other machine gets at least one. Then hit one "line feed" and one "letters", this sequence makes sure that the other machine at least starts the line correct. The additional characters gives the machine some additional time for the carriage return also. Even with machines equipped with various automatic CR and Line feeds this sequence should be followed.

When thinking of something to say don't hit the blank key - this only makes the other machine make a noise and can be annoying.

After CW ID and at the end of a transmission give the above sequence again. This assures that the parties machine at the other end starts with a fresh line at the left margin.

As for printing after each transmission - CW ID to follow*, you are just telling the other fellow that you know the rules and he doesn't. Lets cut out this nonsense fellows.

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From a recent issue of the BARTG Newsletter we note that after committee discussion, that organization has agreed to go along with the DARC (German) organization is submitting the following frequencies for RTTY use, to the IARU group for discussion and possible adoption. 3575-3600, 7035-7050, 14075-14100, 21075-21100, 28100-28150.

In comparing with the group of frequencies commonly used in this country we note that the 80 meter group is about 50 KHz lower than commonly used. The 40-20 and 15 meter bands are essentially the same and of course the 10 meter frequencies are not allowed at all.

Just what action the IARU can or would consider we do not know. If any of our readers are familiar with this organization, it's duties and powers we would appreciate being informed. This again reminds us of the stalemate on the petition to allow RTTY in the lower CW portion of 10 meters. We can think of no real reason not to permit operation on 28100 to 28200. Inaction must be due to lack of anyone pushing for this change. Again if any of our readers are "in the know" as what might bring action on the petition we would appreciate hearing of it.

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Michigan hams looking for RTTY printers or other equipment might contact Fay Wilson, WA8KJH, 405 Nottingham Rd., Brooklyn, Michigan 49230. Fay has taken over the distribution of some surplus telephone company equipment. Prices are reasonable but ALL equipment must be picked up as he cannot ship large pieces. Brooklyn is near Jackson, Michigan and about 60 miles west of Detroit.

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GOOD HABIT !

TWO - C Ret.
ONE -LineFeed .
ONE - Letters.
At end of EACH Line

•••

Using ESSCO with SELCAL

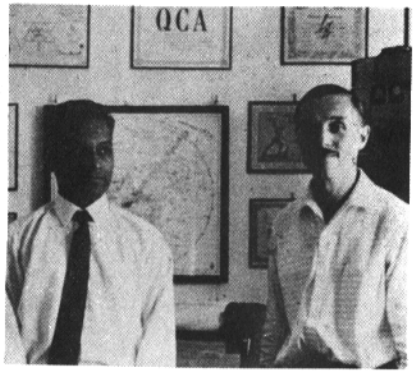
Continued from page 7

a kick out of the relay coil as I substituted a resistor for the relay and the effect was still there. However, the cure worked out, so no more work was done.

Instead of mounting the Selcall in a cabinet, mine with the power supply and an ELCO plug for coding the pulses, is mounted in a deep dish chassis in one of the racks. In fact, one complete receiving chain does not have a tube in it. The receiver is an HRO-500, an ST3 and the Selcall.

Thought you might like to pass along to the fellows how easy the ESSCO may be adapted for use with the Selcall.

•••



VU2KV visits ON4CK

"Chris" VE3ART and the OM VE3LJ are the second active couple on RTTY we know of in Canada. They each have separate stations and notice the brand new 32 printer in front of Chris. Lee teaches electronics at a technical school and believe it or not Chris is the manager of the "Ham Shack" the only ham supply house in the Toronto area.

CLASSIFIED ADS Rates $1. 30 words - Additional words 2¢ ea. Closing date 1st of month.

NO GLARE WINDOWS for Model 15 & 19 Printers. Cadinum plated & Gold iridite finish. $12.50 P.P. Check or M.O. Bud WA6UEF, 17114 Sunderland Dr., Granada Hills, Calif. 91344.

RTTY GEAR FOR SALE. List issued monthly. 88 or 44 mhy toroids-5 for $2.00 postpaid. Elliott Buchanan and Associates, Inc. 1067 Mandan Blvd. Oakland, Cal. 94610.

QSL CARDS FOR RTTYers - Special designs 100 3-color $3.50 ppd. Mail 25¢ for samples. will be deducted from first order. W8LMQ PRINT, 6344 Dubois Detroit. Michigan 48211

TYPEWRITER RIBBON REINKER, Hand operated model now only $3.00. K575 or K764 Ink available at all National Cash Register Co. stores at 75¢ per tube. Walter Nettles W7ARS-8355 Tanque Verde Rd. Tucson, Ariz. 85715.

FOR SALE: MODEL 28 KSR with non-overline. $275.00 Model 28 typing reperf with three speed gear box. $175.00. B. Schlott 4471 Mapleton Road, Lockport, New York 14094

TELETYPE SYNCHRONOUS Motor: complete with fan and base checked. $8.00 ea. Keyboard for model 15, with all keytops, springs and gear excellent $5.00 ea. Keyboard for model 15 with (here is) attachment on keyboard to set up identification, complete with all keytops, spring and gears excellent. $15.00. 4 X 150 A tube - unused $14.50 ea. Automatic - Teleprinter LO-15, later version of model 15 with (here is) attachment on keyboard, white keys, greenish color cover, very quiet and much smoother than 15 model. Excellent operating condition $80.00 ea. With steel table to match with electric box add $15. extra. Fax Trans - Receiver; combination, desk model, 5 inch drum, 115 vts 60 cycle single phase. 25 amps, excellent $12.00 ea. Atlantic Surplus, 300 7th St., Brooklyn, N.Y. 11215

MAINLINE TT/L special plug in filters built to order. Send SASE for prices and other information. Standard toroid for Mainline TT/O also available. All filters precision tuned, J.R. Crane, W8LEW, 26927 Westwood Lane, Olmstead Falls, Ohio 44138

REWIRING YOUR 19 for ham RTTY. Best thing you ever did for it and your convenience. Complete charts including printer, TD, Table and diode punch power supply. $1.00 pp. K8JTT, 790 S. Oxford, Grosse Point Woods, Mich. 48236

SELL: AN/SRR-13A Receiver. $175 or make offer. Model 14TD, $30.00 S. Trent, W7TLZ, 13935 4th Ave. S.W. Seattle, Wash. 98166

RTTY RIBBON INK: Intense, highly legible black. Cheaper than replacing ribbons. Is it good? Ask any user. Big 2 ounces only $1.00. Marvin Cook, WA2RDO. 1992 Windsor Street, Westbury, N.Y. 11590

GLASS HOUSE HAMS; Compiling a directory of hams employed in the glass container industry and allied fields. Send information to WB2AHF, 1197 West Woodcrest Dr., Vineland, N.J. 08360

SELL: 32V-3 with new tubes and manual, $125, excellent. Sell TT/L-2, built in scope, $175. Need base with keyboard for 28 KSR. W4AIS, 7 Artillery Rd., Taylors, S.C. 29687

SALE, KEYBOARD with "Here Is" answer back attachments for model 15. Used to set up identification.. The "answer back" mechanism is an electromechanical device which allows the identity of the called station to be transmitted automatically to the originating station upon receipt of "Figs, upper case D" from the signal line. The answer back device has a total of 21 characters. The first character is always a "letters" combination; The remaining 20 may be any characters desired. Complete with all communication key tops, springs and gear, like new, $15.00 each. Atlantic Surplus Sales, 300 7th St., Brooklyn, N.Y. 11215

TOROIDS 88 & 44 mhy., center-tapped, not potted, 5/$2.00 POSTPAID. Model 32KSR complete page printer, one of the latest made, excellent condition $250. Model 28KSR complete $400. Model 15 page printer $85. 11/16" oiled reperferator tape $3/box/10. Page printer page $6/box/12 (shipped REA code 33 - cheapest). RME 4350 communications receiver $85. Drake 2B & 2BQ $185. Johnson signal sentry $10. Eico 555F VOM, Brand new $25. WANTED: Top dollar for Ham-M rotator, RTTY and FM equipment. Stamp for list. Van W2DLT 302R Passaic Avenue, Stirling, N.J. 07980

CAR. RETURN AND LINE FEED for model 15 or 19. Switch in for non-overline and one line limit on first space, switch out for pictures, columnar copy, etc. No butchering. scale drawings, (kit available) $1.00 pp. K8JTT, 790 S. Oxford, Grosse Point, Woods, Mich. 48236

SALE or TRADE: Model 19 & TD: Kleinschmidt TT-4A/TG; CV-89 A/URA converter; TDA-2 Distortion analizer; TS-2 Test Set; TS-323/UR Freq. meter; K5RTI, 1301 Clearfield Dr., Austin, Texas 78758

WANTED MODEL 28KSR or 28ASR, model 14 reperf andmodel 14 TD. Will pay cash for reasonably priced machines. K. Schwieker, K4KQR, 1124 Opelika Rd., Auburn, Ala. 36830

Additional Classified on Next Page