RTTY

NEWS OF AMATEUR RTTY

JUNE 1965
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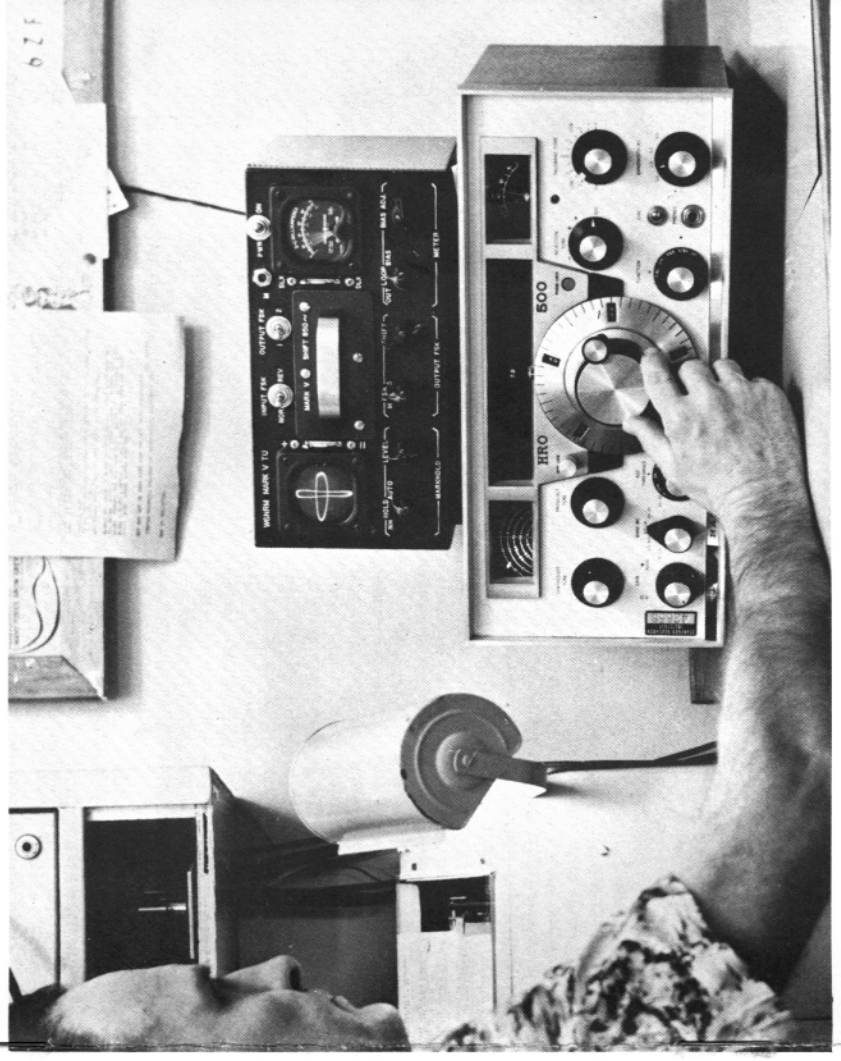


W6NRM RECEIVER TESTS

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.

FOR SALE: Transmitting tubes, new only, best prices, write for list. Teletype paper, 8½" Canary, single or carbon copy, $8.00 case—90c roll. Gonset commander xmtr. 10-160, 50 watts for mobile $35.00 W2DLT, 348 Essex Street, Stirling, N. J. 07980.

FOR SALE: Teletype converter (surplus), Model 14 typing reperf and TD; FM gear send for list. K5TRI, 1301 Clearfield Drive, Austin, Texas 78758.

FOR SALE: Model 19 sets, complete, good shape, $125.00. TT-16 reperf (M-14 ROTR) $20.00. Brand new 5" rolls page paper, 12 rolls $8.00. W2BVE, 834 Palmer Avenue, Maywood, N. J. 07607.

WANTED: Manual for TT-63-A. K8NVJ, 7877 Lakeshore Blvd., Menton, Ohio 44060.

WANTED: Western Electric Relay Type 275B for TT-63A regenerative repeater. Swap New British frequency shift converter, IF input, 450-500 kcs. Supply input 230V-115V or 28V DC, for CV-57, CV-89 (URA-8) or other interesting USA converter or other gear. Allan Fletcher, 62 Moorbridge Lane, Stapleford, Notts, England.

WANTED: Manual or schematics for Northern Radio Frequency Shift Keyer, type 105 Model 4A. W7JLF, 4613 Opal Street, Olympia, Washington.

FOR SALE: 88 and 44 mhy toroids, $1.75 for five postpaid. Write for list of other RTTY gear for sale. W6VPC, 1067 Mandana Blvd., Oakland, California 94610.

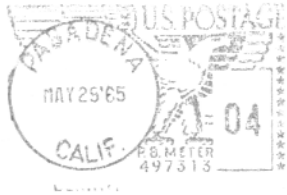
WANTED: Manual for R-533/FCC3 RTTY Receiver and filter Z01 and transformer T01 for this set. Also wanted back issues of RTTY. K6DZN, 1941 Oakdell Drive, Menlo Park, California 94026.

FOR SALE: Model 26 Teletype for $55.00 and W2JAV TU converter for $55.00 or the two together for $105.00 no waiver. Martin Bleuweiss, 381 North Forest Avenue, Rockville Centre, N. Y. 11570. Phone 516—766-7174.

FOR SALE: Transistorized AFSK and TU unit, built from RTTY Handbook. $10.00 for both. WA2VFM, 5070 230th Street, Brooklyn, N. Y.

FOR SALE: Sync motors for Teletypes Model 14 and 15, also for TDs, like new, $9.00 each. Send for free RTTY catalog. Atlantic Surplus Sales, 250 Columbia Street, Brooklyn, N.Y. 11231.

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



SOME NOTES ON RECEIVER REQUIREMENTS FOR HF RTTY

R. H. WEITBRECHT, W6NRM
1966 Woodside Road, Redwood City, California

It is of interest to consider in some detail receiver requirements for satisfactory RTTY reception on the high-frequency bands. Out of the many scores of receiver designs as have been placed on the market in past years, only a few have features considered essential for RTTY work under all possible varied conditions. Such receivers employ the crystal-controlled front-end circuit, with tuneable i-fs. In this way we achieve both stability and selectivity at one bold stroke. The use of crystals in the front end assures that the receiver will be stable enough for all practical purposes, whether for CW, SSB, or RTTY. The tuneable oscillator is operated in one relatively narrow band of frequencies—say at around 5 to 5.5 Mc or 2 to 3 Mc—hence at such a low frequency the VFO is easily optimized to be as stable as required. The i-f stages following can be set at a low frequency to achieve desired selectivity shapes using crystal lattice filters, mechanical filters, or multiple LC filters. In some cases, passband tuning can be provided—an important asset for general communications work.

The attributes of a good receiver are generally defined as follows: (1) Stability, (2) Sensitivity, (3) Selectivity, and (4) Calibration Accuracy. In the final run, the first three attributes do not add much to the overall cost of the receiver. The last—Calibration Accuracy—is what determines the final cost of the receiver which can range from $150 upwards. In addition some receivers may have expensive frills, construction practice, or "name," while others may be merely mass produced at a low price yet be of excellent quality.

Calibration Accuracy—otherwise referred to as "frequency meter readout"—can vary from 50 or 100 cps to several kilocycles and appeals variously as such to different operators. DX operators lay stress on calibration accuracy because oftentimes they may be informed as to whereabouts of DX stations in the band, and dial readings are consequently employed for information purposes. Other operators concerned more with "point-to-point" work may consider dial calibration not so important and hence are quite happy with simpler less-expensive gear. Other factors have not been mentioned; for instance we have compared the HRO-500 with the Drake 2-B, and both receivers are thoroughly satisfactory receivers for their respective applications.

The Collins line of radio equipment is quite good. In fact, Collins Radio Company began manufacturing the first crystal-controlled front-end receivers some 20 years ago; this was the 75A-1 set. Over the intervening years, improvements were introduced, and several series of receivers appeared. Passband tuning was introduced in the 75A-4, along with various types of mechanical filters. Further, general coverage receivers of the51J type have been made, and this has led to the various military equipment of the R-380-390 series. The S-line equipment was brought out several years ago apparently to follow the miniaturization trend. The old Hunter sealed permeability-tuned oscillator was replaced with a more modern, compact and stable unit that now is a practically standard item in the newest transmitters, receivers, and transceivers of the Collins line.

After some years of Collins supremacy in the crystal-controlled front-end receiver field, the R. L. Drake Company began producing such equipment. Around 1960 the Drake 1-A came out, followed by the 2-A, 2-B, and now the R-4. All these receivers have electronic passband tuning and compact construction. Hallicrafters came out with their SX-115 and SX-117, and Moseley with its CM-1—probably the lowest priced receiver of the type under consideration. In the past few months, Heath Company has brought out its SB-300 receiver, and Lafayette has introduced its Japanese-made receiver, called the HA-350. Not to be ignored is the Squires-Sanders SS1-R.

An appreciable portion of receiver cost goes into the crystal-controlled front end. General-coverage receivers with multiplicity of crystals or frequency synthesis as well as problem of ganged tuning over such wide frequency range are more expensive than the strictly amateur-band type of receivers.

A word about the older single-conversion or double-conversion type of receivers will not be amiss. On the higher frequencies, such equipment is apt to have more drift due to use of a high-frequency first oscillator being made variable. One can think of some receivers as have been satisfactorily used for RTTY work—such as the Hammarlund HQ-129X, Super Pro SP-600, the National NC-

Continued . . .

SOME NOTES ON REQUIREMENTS . . . Continued

183-D, and the Technical Material Corp. TMC-GPR-90. Some of the surplus military radio gear have been modified and found very useable—such as the BC-348-Q. Any one of these older receivers can serve as a second receiver for general HF coverage.

Here are my specifications for a good RTTY receiver:

Crystal-controlled front-end design for stability, along with an accurately-calibrated stabilized VFO into its tuneable i-f stages.

Square-topped steep-skirted selectivity having bandwidths of at least 1.2 Kc and 300 cps—to accommodate normal (850 cps) shift and narrow (170 cps) shift, and equipped for passband tuning over sufficient range to permit selection of either bandwidth for Mark-only or Space-only copying. Switchable BFO frequencies if necessary.

Product detection, along with an effective automatic gain control system that has fast attack, slow release.

A good mechanical design that lends to reasonable electrical stability as well as performance over long periods of time. The tuning control is to have no disturbing backlash.

Adequate sensitivity along with a minimum of birdies, assuming that antenna noise is the limiting factor.

These specifications also define a good receiver for other modes of communication, such as SSB and CW. Additional selectivities of 2.1 and even 3.6 kc would be indicated, as well as a very sharp mechanical filter of say 200 cps. The receiver should be chosen by each individual operator according to his own needs.

COLLINS: 75A-1, 75A-2, 75A-3, 75A-4, 75S-1, 75S-2, 75S-3, 75S-3B, 51-J series, R-380-390 series.
DRAKE: 1-A, 2-A, 2-B, R-4.
HALLICRAFTERS: SX-115, SX-117.
HEATH CO.: SB-300.
NATIONAL: HRO-500.
MOSELEY: CM-1.
RACAL: RA-17.
LAFAYETTE: HB-350.
SQUIRES-SANDERS: SS-1-R.

The above is a list of recent radio gear using the crystal-controlled front-end design. There are probably some omissions; however this list gives an idea of what have been placed on the market during the past 20 years.

—————O—————

THE CLOSET SIZED STATION

HANK RIEKELS WA8GVK
1781 Peck St., Muskegon, Michigan

The rack on the left should be ignored as it is all audio development equipment. However the tape deck is used for recorded AFSK signals fed to the TU for calling cq.

Line up from top to bottom:
- SWR & Field Strength meter
- TT 63 A Repeater (HB)
- Phone Patch & Telephone (home brew)
- Scope Tuning Indicator (HB)
- 32S1
- HQ 180
- All switching just under receiver Patch Panel (Bottom).

Rear of rack:
- AN/FGC 1 TU
- Power supply
- Polar relay panel
- Twin AFSK Oscillators 2125/2975 cycles & 1000/1850 spare for SSB shift.

Antennas:
- Inverted V on 80
- Dipole on 20
- Ground based vertical on 40/15.

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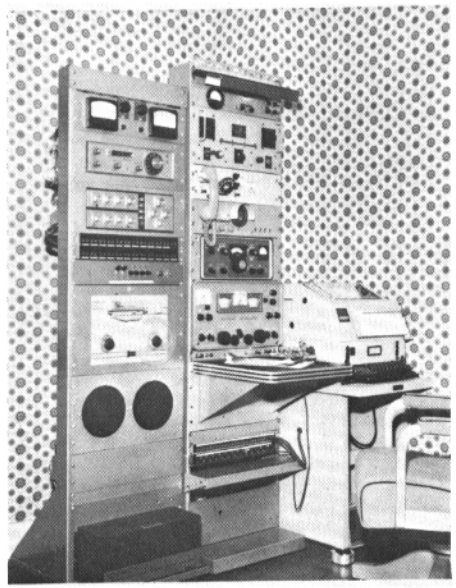


FSK FOR ART-13

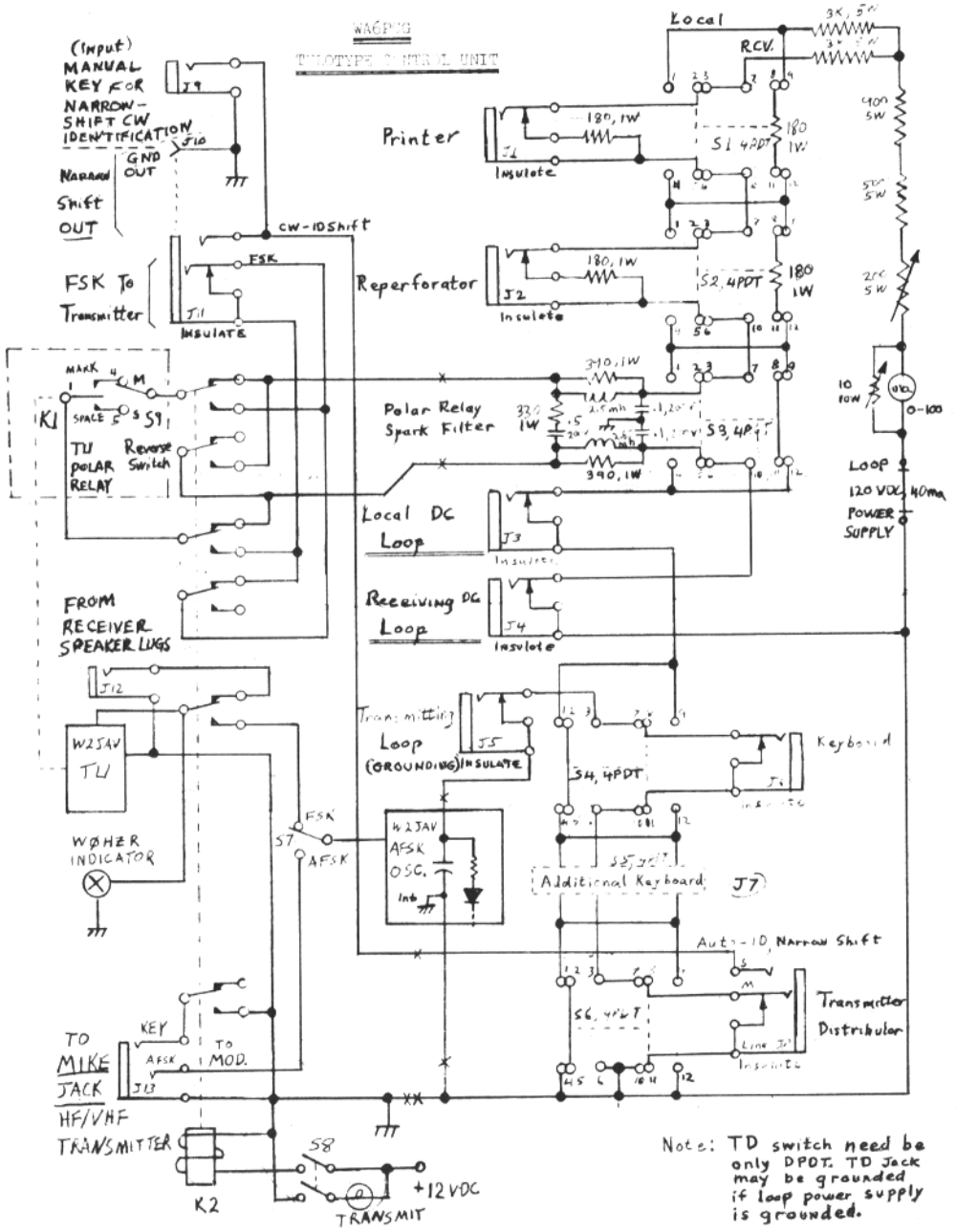
LLOYD CRAWFORD, WA6PCG
4773 Mt. Cervin Dr., San Diego 17, California

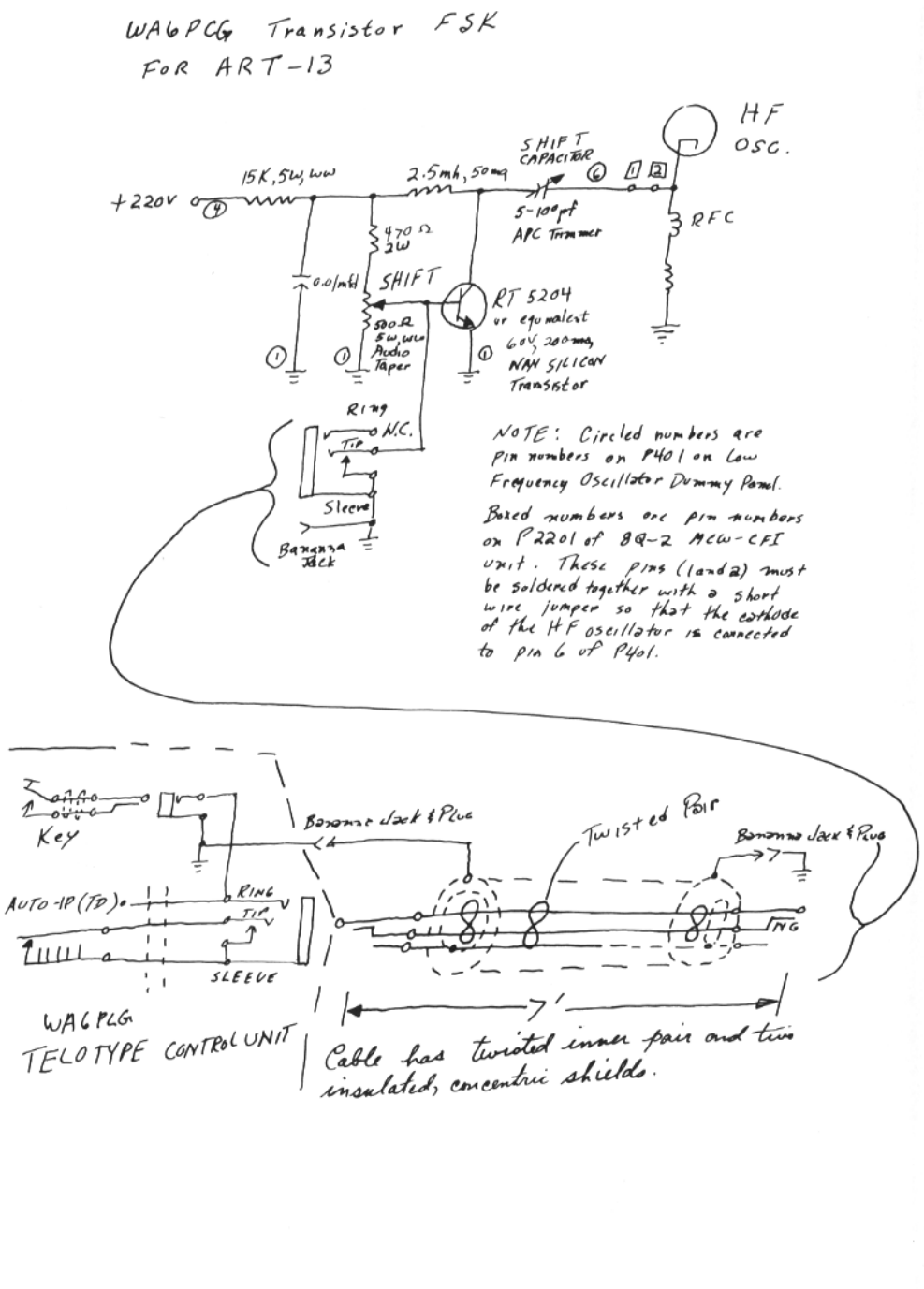
I think it is about time that I dropped you a note concerning my RTTY station. I now have the entire station in operation and have made contacts with W6CAL, W6MTJ, and WA6ZZK. K6BPI has printed one of my initial on-the-air tests. The W2JAV TU and AFSK oscillator are working very satisfactorily. I can print signals that are virtually all noise as shown on the WØHZR phase shift indicator and do print signals which cannot be distinguished from the "grass" by peaking the spacing signal with the Q multiplier. To get on the air, I designed a novel FSK circuit for my ART-13, and I have designed and built a telotype control unit which eliminates the usual patch panel and rat's nest of patch cords. I have enclosed schematics of both units. The telotype control unit was inspired by AA6GJY's circuit which was published in the SIXTH US ARMY MARS BULLETIN, Number 2, 28 March 1962, but goes considerably beyond it in that it is more versatile and complex. The schematic shows only the switching and patching circuits. The unit is actually built into a case smaller than a Drake 2B receiver together with a WØHZR tuning indicator, W2JAV's TU and AFSK oscillator and switches controlling the power supply, TD, and TTY AC source. Since I still do not have every bug out of the unit, consider this schematic as information rather than publication material. However, the switching system does work theoretically, but practically I must have crossed a couple of wires since, in some switch positions, either the TD or the polar relay seems to be in parallel with certain combinations of other units. For instance, I cannot transmit from the keyboard if the TD is also in the transmitting loop – but I can transmit from the TD in that same position! Circled areas are those in which minor changes have been made, for instance, all series resistances that are shown as common in the DC loops have been split and the values adjusted to give 23 ma of loop current for each loop.

The WA6PCG TRANSISTOR FSK for the ART-13 is a simple and foolproof answer to right-side-up keying of this transmitter. The transistor is biased to operate in the amplification range with the keyboard contacts open and is biased to cutoff when the contacts are closed. Since the shift capacitor is out of the circuit when the RTTY signal is marking and is in the circuit when the contacts are open or spacing, the transmitter oscillator shifts down as required. While no provision has been made to invert the signal at the transmitter, it is possible to do so at the polar relay reversal switch on the TU. The shift capacitor is adjusted to give the maximum desired shift with the transistor biased on. This prevents over shifting by accident on all ranges where no frequency multiplication is involved. Shift is adjusted on the operating frequency by tuning to frequency in the marking condition, then adjusting the shift pot for the desired shift while in the spacing condition. There is some interaction in these adjustments at one end of the pot range so both adjustments should be repeated at least once to insure that the marking frequency has not been shifted by the shift adjustment.

Adjustment of shift is very easy when done by observing the mark and space frequencies on a WØHZR phase shift indicator. It is as easy to adjust for any value of narrow shift as it is for the standard 850 cycle shift if either the indicator is calibrated for the narrow shift or the shift of a transmitting station is being matched by zero beating the phase shift patterns. All construction work is done on the dummy panel for the low frequency oscillator (as indicated on the schematic) except that pins 1 and 2 on the MCW-CFI unit must be jumpered together to tie the high frequency oscillator cathode to pin 6 of the dummy panel plug. The FSK input looks odd because it is designed to work into a special control unit (described in this letter). It is necessary only to provide a two-conductor cable between the keyboard and the transistor base and ground connection to operate. However, the odd connections and the cable shown result in narrow shift suitable for CW identification with no physical connection being made to the transistor base! The narrow shift probably results from a change in the effective capacity of the base to ground when the key alternately connects and disconnects the other wire of the twisted pair to ground. This narrow shift should be obtained with a shielded, twisted pair rather than a doubly shielded, twisted pair since both shields are grounded in this case. Credit for the simple access to the high frequency oscillator cathode belongs to AA7NFK. This FSK unit should be applicable to many other transmitters in place of the usual diode keyer.

I guess I've caught the bug. I am already trying to figure out how I can work, go to college, and build a better TU and control unit.





SIMPLIFIED RTTY

M. A. WELLS, W5JNK

3234 Cridelle Ave., Dallas 20, Texas

What I have to describe is a step backwards into never-never-land, simple and dirty. However, the send/receive arrangement attached has provided many enjoyable QSOs including one with NSS on Armed Forces Day. A certificate attesting perfect copy of the message sent from NSS hangs on the hamshack wall.

Either mark or space can be copied. When copying mark frequency the space tone is tuned to zero beat. When copying space the mark tone is zero beat. This gives an operating tone of 850 cycles. Audio volume is adjusted for 20 ma. in the polar relay coil. R.F. gain control is advanced only as far as needed to compensate for fading.

Home copy is provided by the polar relay when sending. The polar relay inverts the keying from the keyboard, which was required by the 32S1 exciter used.

The circuit utilized existing wiring in the 15 base and the box (electrical service unit) which came with the table. The base had a polar relay mounted on it. No new wires, plugs, or cables were needed. The send/receive switch is the one on the 15 base, terminals 26 and 43 on the terminal strip. The send/receive relay was mounted on the A.C. power switch cover. The power supply was wired in the box under the table. Cables which came with the base carry the DC and AC upstairs to the machine. The power switch turns on both the power supply and the teletype motor.

In operation, the 10 ma. polar relay coil provides space hold when copying mark tone. This becomes mark hold when copying space tone.

Another machine was wired likewise and flawless A-1 10 meter teletype communication was the result. In this case the FSK line was plugged into the key jack, resulting in A-1 emission sending space pulses only, receiving space only at each end. Two Collins S-lines were used with only one switch the send-rec. switch on the 15 machine, having to be operated at each position.

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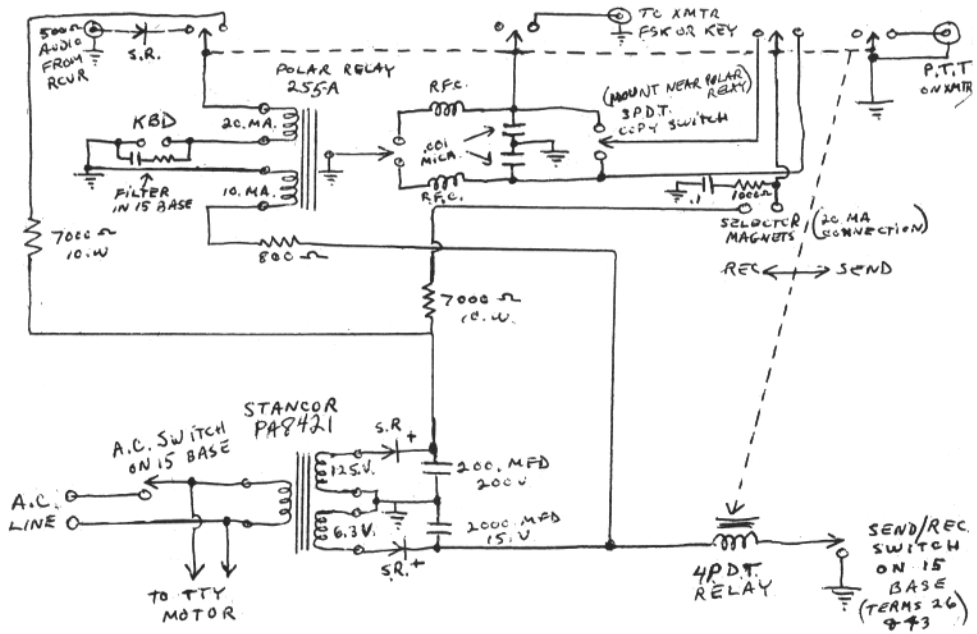


FSK MODIFICATIONS FOR S-LINE/KWM-2

J. R. POPKIN-CLURMAN, W2LNP
134 Wheatley Road, Brookville, Glen Head, L.I., N.Y.

Here is an exceedingly simple modification of the S Line/KWM-2 Collins equipment for the RTTY. No wiring changes, no parts added, or holes drilled. Advantage is taken of the electronic passband shifting of the VFO which shifts the frequency of the VFO to maintain constant dial calibration when going from upper to lower sideband, etc. This is accomplished by biasing a diode (1N34) which acts as a switch connecting a small capacitor to the cathode of the VFO oscillator tube.

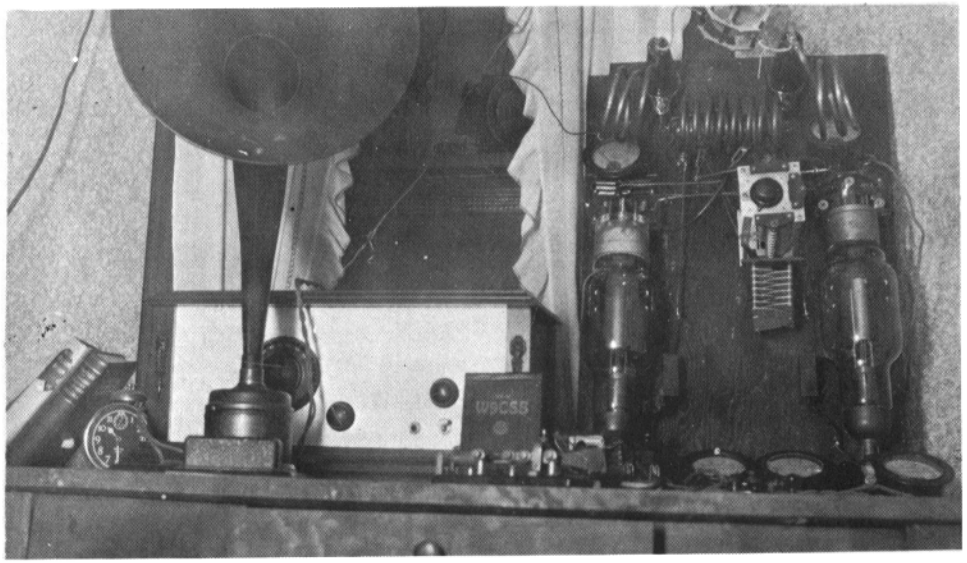
The following method is used (nomenclature refers to KWM-2): A wire (thin enough) inserted in pin 5, socket of J17. The wire is then connected to a small resistor (total resistance of around 200 ohms, not critical) which is inserted in series with the ground side of the local loop. A ground is connected between the local loop and the chassis of the KWM-2. If desired, narrow shift ID can be obtained by splitting this resistor according to the diagram below. An optional disabling switch opening up the lead to the VFO can be installed, if desired. The transmitter is used in the LOCK or TUNE position. Shift is set by adjusting C308, the passband zero-set variable capacitor, which is located on top of the VFO can next to the VFO tube. 850 cycles or any smaller shift is easily set. Drive is adjusted by setting MIC. GAIN. (I find that the KWM-2 easily drives a Johnson Viking desk kilowatt to full input in the TUNE position.) If the KWM-2 is used barefoot, the usual precautions about reducing the input for continuous key-down conditions should be observed.

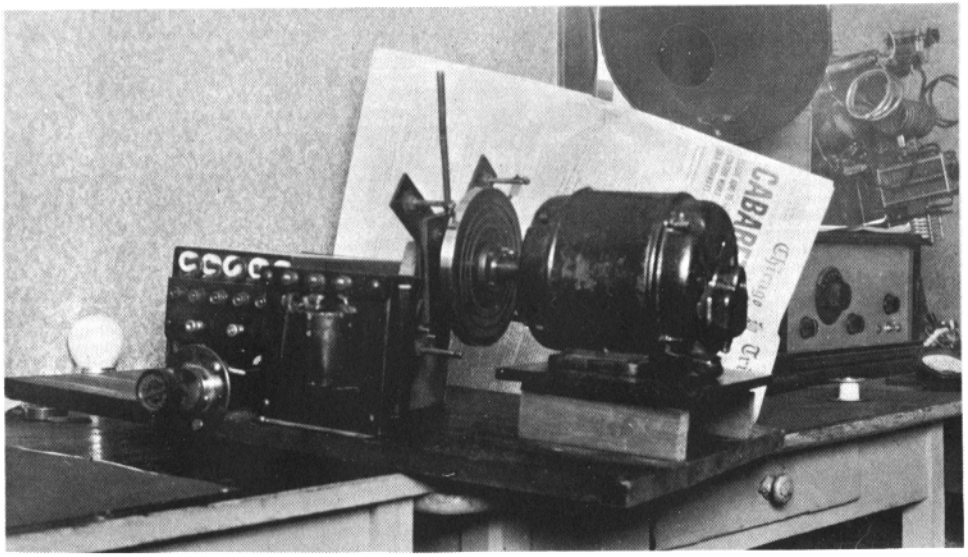
It is preferable to leave the VFO capacitor for the passband tuning alone, and simply adjust pot in loop for correct shift. The switch is necessary for normal operation.

Cordially yours,
and 73
Ray

R. K. Long
W8GUS
Columbus, Ohio

BUD SCHULTZ, W9CF, 1928, Now W6CG.





DX-RTTY

EDWARD S. CLAMMER, K3GIF
5940 Avon Drive, Bethesda, Maryland 20014

WORTH WAITING FOR . . . Jean, FG7XT/FS7 landed on St. Martin (French West Indies) and began RTTY operations on April 29 with a first QSO with DL3IR at 1735 GMT. The antenna was a dipole swung between two coconut trees using his KWM2 and the T-68 machine.

Power was obtained from the plant owned by the hotel which was his QTH and in order to assure maximum voltage the owner agreed to shut off all refrigeration—so no ice cream nor cold beer was available—a real hardship case. Jean QRTed on Friday, May 7 at 2000 GMT after working about 200 QSO's, many with European stations but most with the Stateside boys.

Jean moved the gear to the home of Jose, PJ2MI in Dutch Sint Maartin and was on the air at 2110 GMT the same day, Friday. His first QSO was with K3GIF then I1AHN, G3MWI and so on. Signals from both DX-peditionary QTHs were excellent.

Jean and his friend Jose are to be congratulated for a fine job all around.

BREAKTHRU . . . Rene, DL3IR, reports a first QSO with Valentin, UB5AC on 14,096 kcs on Sunday, May 2nd at 0735 GMT. Valentin's shift was about 1500 cycles and he spoke little or no English but he and Rene made out with German and gestures. Rene reports Valentin's signal as S 9 and good enough copy to make a QSO. UB5AC QTH is listed as all U stations are: Box 88-N, Moscow.

QRP . . . Olle, SM5KV, as reported last month only needed Oceania for his WAC RTTY on 25 watts input. He reports working Freeman, KH6AX, recently for his missing continent and has demonstrated what 25 watts in good hands can do.

ALGERIA . . . Rene, DL31R, reports scheduling 7X3HT in Algeria for weekend RTTY tests. If they make it we can thank Rene for encouraging a very handy source of African QSO's.

WORKED ALL STATES (RTTY) . . . Beep, WØBP, was the first ham to work all states with RTTY. There must be several other American hams who have accomplished this by means of great perseverance and late hours. Several months ago Rene, DL31R, decided he was going to make W.A.S. RTTY. This is obviously no easy trick from Munich. So far he needs only: Alabama, Arkansas, Mississippi, New Mexico, Vermont and West Virginia. Rene is on 14,093 Kcs. every Saturday and Sunday from 1400 GMT looking for these States. If you live in any of these states please look for DL3IR and give him the remaining States he needs so we can get him back to rag chewing again. HI

VISITOR . . . Herb, DL1VR, will fly to Washington on June 15 then to Cedar Rapids, New York and back to DL land via the FG 7 XT QTH. He will be in the States about two weeks.

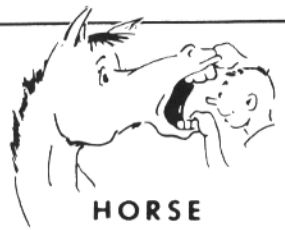
WAC-RTTY AWARDS . . . The following have qualified for the coveted WAC-RTTY awards according to Bud, W6CG, who was not able to furnish the certificate numbers: SM5HV, DL1IN, ZL1WB, KP4AXM, VE3BIJ, W2MXN, SM6CSC, W3KDF, KR6BQ, W7JWI, W1GKJ. Six of the above owe their Asian QSL to TA1AH to whom we are very grateful for his fine operation under considerable difficulty from Ankara.

LAST CHANCE FOR TURKEY . . . TA1AH has again volunteered to operate from Ankara on June 12 and 13 next. It is assumed he will work both fifteen and twenty meters as he did during the BARTG. He reports the good possibility of an increase in power to about 500 watts. Since his operating time will be limited and so many need the Asian continent for their WAC let us hope no station will call him during his QSO with another station. Obviously, this only serves to delay him and reduce the number of QSO's he can make in the limited time.

A HAPPY NOTE . . . Carl Schultz, W6CG and Alma Burkel were married in Temple City, California on April 22. Bud reports that while Alma is not a ham she is very enthusiastic about ham radio and is encouraging him to be more active. All RTTY hams will join with me in wishing Bud and Alma great happiness.

I appreciate this once-in-a-while chance to write the column when Bud is unable to do so. Bud will take over the keyboard next month. 73, de K3GIF

LATE NEWS . . . John, W3KDF, in a letter reports working Valentin, UB5AC, for the first USA/USSR RTTY QSO. John also mentions that OA4BR, XE1YJ, KG4AN and VK2EG were worked this past week. Chuck, K8MZS, reports that 7Z3AA in Saudi Arabia has been heard recently . . . Also G3HID reports that John, FG7XT won the BARTG SS contest. Details will appear in July RTTY. Also was advised that I1ORS worked UB5AC on Sunday. UB5AC location was given as VLOV in Western Ukraine.



HORSE TRADES

FOR SALE Model 31 portable Teletype KSR set, used good, $115.00. Send for list of other RTTY gear. Telemethods, Intl. 3075 East 123rd Street, Cleveland, Ohio 44120.

FOR SALE: Teletype modification kits 136212 for 15 and 19 to provide automatic stop and start in response to a signal from a "Data-Phone" set. John B. Riley, 914 North Cordova Street, Burbank, California 91505.

FOR SALE: Model 14 typing reperfs, $95.00. Parts for 14 Typing reperf, TDs also 15 parts. Send SASE for list. Sell back issues of RTTY. W4NYF, 405 N. W. 30th Terrace, Ft. Lauderdale, Florida 33311.

FOR SALE: Limited number of surplus Collins filters, numbers 673-XXXX-00 similar to those shown in the September 1964 RTTY. Band pass portion is 100 cps wide at 3 DB points. Some also have a discriminator in them for the center of the band pass frequency. Others have a coil for a AFSK osc. Frequencies are: 595-765-1105-1380-1445-1615 - 1740 - 1785 - 1955 - 2295 - 2465 - 2635 - 2805 - 3145 - 3315. Additionally several (limited number) 1105 - 1380 - 1620 - 1740 - 1860 - 1980 - 2460 - 2580 - 2820 cps, these are 70 cps at 3 DB points. Another limited number of the square can type of same number, 1105 - 1380 - 1620 - 1740 - 1860 - 1980 - 2460 - 2580 - 2820, band width not known. Price is $2.50 each plus postage. Excellent for Hetrodyne type TUs. RTTY, INC., 372 Warren Way, Arcadia, California 91007. NOTE: Quantities are small, so supplied on first come, first served, sorry.

TO ALL NCARTS MEMBERS:

Again it appears that this society will be able to effect another release of teletypewriter equipment from the telephone company. At the same time it looks like we will be able to negotiate for additional releases during the remainder of the year. The telephone company informs us that they have fifteen Model 19 and three Model 15 units for us now and that they would like us to maintain a list of machine commitments with them on a continuing basis.

NCARTS members wishing to obtain one of these machines are requested to contact the Secretary-Treasurer at the address below for an application and waiver forms. Priorities for delivery are established by NCARTS based on date of receipt of application, member or non-member status, and whether or not a deposit or payment in full accompanies the application.

Members are requested to advertise the fact that NCARTS is now accepting applications for the machines in this particular lot as well as for future releases. All applications in excess of this lot are to be placed on a waiting list for machine commitments as requested by the phone company.

On receipt of your application we will inform you of your status in the priority category for which you qualify. If you decide to send a deposit or payment in full for the base price of the machine please make your check out to NCARTS, and mark the proper spaces on the form. We re-sell these units for the price charged us by the telephone company plus tax, cartage, handling and shipping costs. Prices are: Model 19 ASR, $75.00 and Model 15 KSR, $50.00.

The telephone company requires that each purchaser sign a use waiver and neither the telephone company or NCARTS will be responsible for the condition of the units at the time of, or subsequent to the sale, except that it be a complete machine that was in operating condition when removed from service.

If you want your application held for a definite period only, please hand print the time period just below the heading of the application. Be sure to talk this up among your friends and if possible stress that we would appreciate applications WITH money because the treasury cannot handle this deal without help.

Northern California
Amateur Radioteletypewriter
Society, Inc.
Box 295, San Carlos, Calif.

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W6DEO W6CG W6TPJ W6AEE