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Amateur Radio Teletype Society

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Brooklyn 30, N.Y.

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San Lorenzo, Cal.

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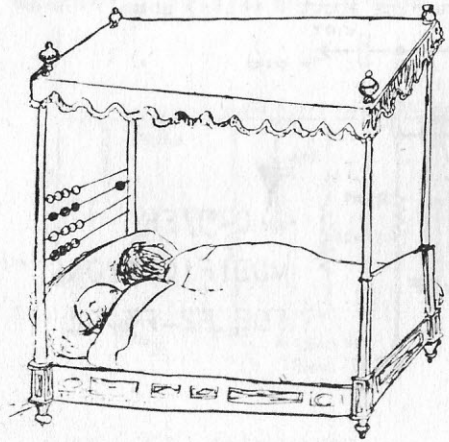
The Audio Fair will be held in the Hotel New Yorker Oct. 14-17th. If you are going to be in town be sure to see it. Karlson Associates (me) will be in room 502 demonstrating the Karlson Ultra-Fidelity Enclosure, say hello. If you are ever in Newark stop in the new Hudson store at 35 William St. and see the huge Karlson display with twelve enclosures. It covers one whole wall of their new studio showroom.

W2ALJ/1, Mark Moynahan, Boston, who is doing transistor research, writes: "Have built at work a compact audio oscillator for RTTY testing. It has three frequencies 850, 2125, and 2975. There is no warm-up time; the frequency drifting is only a function of room temperature. I think the stability is well within your tolerances. The unit, oscillating, can be mailed in an envelope for 9¢."



BOOK REVIEW, bub.

All you lovers of the finer things in life, such as Pogo, King Aroo, Charles Addams, Pogo, George Price, Benchley, Pogo, Thurber, etc., will want the new book, "The Tattooed Sailor" by Andre Francois, in their library. This collection of cartoons will leave you gasping for breath. Behold a sample. Non-Pogo fans will probably see little humor in the thing.

Amateur Radio

Frontiers

I've got a problem that you may be able to help with. The problem is what to do with the column in CQ. There are several obvious courses for it to take.....it could become like most of the other columns and give station news and gossip. Or I could start over and say what has already been said in different words. One thing that keeps in front of my mind is that the great majority of people that read the column are not RTTY operators. We number about 1000 right now, which, if we all read the column, still keeps us less than 2% of the total readership of the magazine. The column then must, if it is to be worth printing, be of interest to at least the majority of the readers. One thing that would be of interest to most everybody would be a series of stories of how others got interested in RTTY and what they did about it, complete with pictures of the shack, etc. But so far nothing of this sort has come in. If each club group could make it a project to get an article of this type prepared it could be done and would result in excellent publicity for both the group and for RTTY. Or what do you suggest? Any brainstorms?

When Bulletin 25 went out I got a lot of letters saying that the 152 converter was being built. Since then there has been a strange quiet on the subject. If you got it working tell us how. If not, let us know about it and what the problem seems to be. Navy operators write that the 152 is one of their best units and works excellently on ham TT. One difficulty is that most of us are not used to working with pulse techniques and may have been thrown a bit off balance by 'em. Also wonder what modifications you might have made of the 152 for ham work.

We still have some of the large boxes of fanfold paper on hand for $5 a carton. This should make at least a year's supply. Send a check now so I can get it out where it will do some good. The polar relays are about gone now, only two or three left, $5.50 postpaid. German made midget polar relays $4.

OCTOBER 1953

Bulletin No. 28

W5PRE, Doug Palmquist, Lubbock, Texas, "I dug up another teletype machine for you to sell for me. Its got a KS5663-12 rectifier, 15-D motor unit, Printing unit but no key board, a table and a 215-FB polar relay. I guess its a model 15, I couldn't find any model number on it. I will have it overhauled and cleaned here at the phone company and then ship it to whom ever buys it. The fellow that owns it would like to get about $350.00 for it. It sounds a little high but will be in first class condition. By the way its a page printer."

W4LSU, W. J. Crosby, Jr., Charlotte, N.C., " I have been on teletype for some time now and I have my first station to work. I copy some RTTY but I don't seem to work any. I run 1KW on 75 and am going to go to 20. Hope to work some of the boys soon on RTTY on any band. I have been trying to get up interest around here and I have a number of the boys interested. I have a type 12 complete with keyboard, cover, and motor generator ready to go - new paint job Al condition first $200.00 takes it or what have you to trade."

W4GXL, Bill Alexander, Jacksonville, Fla., "W4JGD and W4GXL have just completed what we think is the first RTTY contact in Jacksonville, for amateurs. We used model 26 page printers, using neutral (MKB) keying. Low Power (15) transmitters and command receivers were used. Results were not too good, but at least we're trying. W4GXL has access to a few model 26 printers, which will be traded for receivers, test equipment, converters, or what have you. These trades will be made free on board Jacksonville, with the other station paying freight on same. If a trade is agreed to, W4GXL will pay freight on the equipment being received from the other station."

W9EPO, William H. Wing, Milwaukee, Wis., "I don't know just when the bug bit me but all of a sudden it did! I get a big kick out of trying to make things work and guess that's part of the reason the bite stuck, but there must be more to it than that. I have been for many years a 20, 40, 80 CW and fone man (notice I wrote CW in caps!) I've never tried 10 or 15 or even 2 -- tried 5 once years ago, have never even tried Mobile. I don't know why, I think I'm the experimental type when past performance is so much against me but this teletype business has taken hold like the first time I ever tried to build an MOPA xmitter 20 or more years ago! Hams around town told me to get in touch with Norm Krohne, W9SKF, which I did. I visited at the shack and was very much impressed with his layout. He is only on the receiving end of things just now. To make a long story short, he gave me a lot of info. and ideas and told me that I should write for Bulletin 25 which has that super-duper converter in it; as soon as I get the dope I'm going to work on the first stage of my future teletype set-up (I hope) I am going to put in an order for a printer just as soon as finances permit which should be pretty soon because I'm a school teacher and nothing has been coming in for the last couple of months."

W4RTJ, Dr. Thos. H. Lipscomb, Jacksonville, Fla., "I have the model 26 teletype and am working on a convertor. I have had a little luck running the receiver output through a FL8 filter and then passing that signal through a crystal diode back to back and thence through an amplifier designed for making ink tapes for a photo electric CW keyers."

W6NSS, Al Browdy, Los Angeles, has a teletype tape printer- Western Union - built in mechanical receiving distributor- typewheel-single selector magnet- sixty dollars.

W1BGW, Jack Berman, Dorchester, Mass., "If you know of anyone that wants to buy or swap my 05/FR exciter let me know. Am now using vfo up here."

W6JIE wants a keyboard for his model 26.....

W7TBE, W. L. Brunner, Seattle, Wash., has for sale: Model 12 Printer, Model 12 Table, Model 12 padded cover, New Metered Converter with polar relay.

WØWBY, John R. Frost, Fargo, No. Dak., "Recently tried out the Costean- Eagnan Aqua Lung ----- works very nicely - only got down to approx. 30 ft. (though thru no fault of the lung). Just a wee bit apprehensive on first trial. Hi. - comments - terrific but a little expensive - since they are not widely used it is a little difficult to go back to town (when at the lakes) to get it recharged after 1 hr's. usage and a compressor cost $200 sans electric motor- with motor $300. Will bet, however, that they will gain in popularity and at resorts one may be able to get them charged - (Pressure rgd. is 2360 #/sq. in.) in the not too far distant future. Lake I was in too dirty to see anything - hope that Great Lakes will be more clear - will investigate before going"overboard" on acquiring one. If you haven't tried one yet it will be a brand new experience - something like a solo I'd guess."

CO2QY, Alberto Giro, Habana, Cuba., "Yo creo que podre lograr de la Direccion de Radio la autorizacion para que en Cuba, se pueda utilizar el sistema de teletype por radio, en igual forma como esta autorizado en los Estados Unidos. Es cuestion de tiempo; pero estoy ocupandome con mucho interes de este asunto."

TYPE 105 FREQUENCY SHIFT KEYER

PRACTICALLY EVERY COMPANY INTERESTED IN THE MANUFACTURE OF FREQUENCY SHIFT EQUIPMENT FOR COMMERCIAL OR MILITARY USE HAS PRODUCED ONE OR MORE MODELS OF FREQUENCY SHIFT EXCITER EMPLOYING THE HETERODYNE OR CONVERSION PRINCIPLE. THESE EXCITERS HAVE ENJOYED POPULARITY BECAUSE OF THEIR EXCELLENT CHARACTERISTICS. THEY PROVIDE STABILITY PRACTICALLY EQUAL TO A CRYSTAL OSCILLATOR (TEMPERATURE-CONTROLLED) YET HAVE THE "KEYABILITY" OF A SELF-EXCITED OSCILLATOR. FOR AMATEUR USE THEY POSSESS THE ADDED ADVANTAGE OF PERMITTING THE TRANSMITTING OSCILLATORS TO RUN DURING RECEPTION WITHOUT BLOCKING THE LOCAL RECEIVER. WHILE NOT AS SIMPLE TO CONSTRUCT AS A DIODE-KEYED CRYSTAL OSCILLATOR THEY ARE CONSIDERABLY MORE FLEXIBLE. THE WRITER, W2BFD, PLANS TO EMPLOY HIS HETERODYNE EXCITER FOR BOTH TRANSMISSION AND RECEPTION BY USING A RELAY TO CUT IN A DIFFERENT FREQUENCY-DETERMINING VARIABLE CONDENSER DURING RECEPTION. THIS METHOD OF GENERATING THE LOCAL-OSCILLATOR SIGNAL FOR RECEPTION MIGHT FIND A WELCOME FROM THE SINGLE-SIDEBAND GROUP, WHO HAVE SIMILAR STRINGENT OSCILLATOR-STABILITY PROBLEMS. IN DISCUSSING THE VARIOUS PIECES OF SIMILAR EQUIPMENT IT IS NOT THE WRITER'S INTENTION TO RECOMMEND THAT THE AMATEUR CONSTRUCT AN EXACT DUPLICATE. BY PRESENTING SEVERAL MEANS OF ACCOMPLISHING THE SAME RESULT A CONSIDERABLE AMOUNT OF LATITUDE IS GRANTED THE RADIOTELETYPE AMATEUR WHO MAY "BORROW" GENEROUSLY FROM THE VARIOUS SYSTEMS WITHOUT FEAR OF PATENT INFRINGEMENTS ETC. THERE SEEMS TO BE NO HINDERANCE TO THE CONSTRUCTION OF A FREQUENCY SHIFT EXCITER SUPERIOR TO THE COMMERCIAL PRODUCT BY MAKING USE OF THE BEST FEATURES OF THE SEVERAL UNITS THAT HAVE BEEN (AND ARE BEING) DESCRIBED. W2BFD WOULD APPRECIATE A DESCRIPTION OF ANY SUCH EQUIPMENT DESIGNED BY RADIOTELETYPE AMATEURS SO THAT IT MAY BE CIRCULATED TO OTHERS.

PURPOSE

THE FREQUENCY SHIFT KEYER IS A HIGH STABILITY RADIO FREQUENCY OSCILLATOR WHICH PROVIDES A MEANS FOR SHIFTING AN R.F. CARRIER IN ACCORDANCE WITH THE VARIATIONS OF A D.C. INPUT SIGNAL. THIS EXCITER REPLACES THE CRYSTAL OSCILLATOR IN A TRANSMITTER AND PRODUCES "MARK" AND "SPACE" CARRIER SHIFT FOR TRANSMISSION OF TELETYPE, FACSIMILE AND HAND-KEYED TELEGRAPH SIGNALS.

ELECTRICAL FEATURES

THE FREQUENCY SHIFT KEYER IS COMPOSED OF FIVE MAIN SECTIONS; A KEYING CIRCUIT, REACTANCE TUBE SHIFTED OSCILLATOR, CRYSTAL OSCILLATOR, MODULATOR AND POWER AMPLIFIER. A DC KEYING SIGNAL PASSING THROUGH THE KEYING STAGE IS LIMITED IN AMPLITUDE AND THEN FED TO THE REACTANCE TUBE OSCILLATOR WHERE IT IS USED TO VARY THE FREQUENCY IN ACCORDANCE WITH THE APPLIED INTELLIGENCE. THIS SHIFTED FREQUENCY IS MIXED WITH THE OUTPUT FROM THE CRYSTAL OSCILLATOR IN THE MODULATOR STAGE, AND THE SUM FREQUENCY IS USED TO DRIVE THE POWER AMPLIFIER.

CRYSTAL OSCILLATOR

THE BASIC FREQUENCY OF THE FREQUENCY SHIFT EXCITER IS DERIVED FROM A "PIERCE" CRYSTAL CONTROLLED OSCILLATOR IN ONE TRIODE SECTION OF TYPE 6SN7 TUBE, V-101. THE SECOND SECTION OF THE TUBE IS OPERATED AS A CATHODE FOLLOWER FOR ISOLATION PURPOSES. PROVISION IS MADE TO SELECT ANY ONE OF THREE OUTPUT FREQUENCIES BY CRYSTAL SELECTOR SWITCH S-101. THIS IS A FRONT PANEL CONTROL. THE PLATE VOLTAGE OF THE OSCILLATOR TUBE AND THE TEMPERATURE OF THE CRYSTALS ARE STABILIZED.

200 KC OSCILLATOR

THE 6SN7, V-102, IS CONNECTED AS A PUSHPULL BALANCED OSCILLATOR OPERATING AT 200 KC AT A RELATIVELY LOW LEVEL FOR STABILITY. COARSE FREQUENCY ADJUSTMENT IS PROVIDED BY ADJUSTING THE SLUG IN THE MAIN TUNING COIL, L-101, AND FINE VARIATIONS, AS A FRONT PANEL CONTROL, BY VARYING THE CAPACITY OF DUAL AIR TRIMMER C-115, WHICH IS DIRECTLY ACROSS THE MAIN TANK CONDENSERS, C-122 AND C-123. THE TEMPERATURE OF THE FREQUENCY DETERMINING ELEMENTS AND THE PLATE VOLTAGE OF THE OSCILLATOR TUBE ARE STABILIZED.

REACTANCE TUBE

THE FREQUENCY OF THE 200 KC OSCILLATOR IS CHANGED ACCORDING TO THE KEYED INTELLIGENCE BY THE ACTION OF THE BALANCED REACTANCE TUBE, V-103. THE OUTPUTS OF THE TWO SECTIONS OF THE REACTANCE TUBE ARE CONNECTED ACROSS THE OSCILLATOR TANK. THE R.F. GRID VOLTAGES OF THE REACTANCE TUBE ARE DERIVED FROM TWO PHASE SHIFTING NETWORKS, C-109, R-109, C-106 AND C-112, FOR ONE SECTION, AND C-113 AND R-108 FOR THE OTHER, SO CONNECTED TO THE OSCILLATOR TANK CIRCUIT THAT A PHASE SHIFT SLIGHTLY GREATER THAN 90 DEGREES IS OBTAINED RELATIVE TO THE VOLTAGE ACROSS EACH HALF OF THE OSCILLATOR TANK. ACCORDINGLY, EACH SECTION OF THE REACTANCE TUBE ACTS AS A RELATIVELY PURE REACTANCE, SINCE THE IN-PHASE COMPONENTS OF REACTANCE TUBE PLATE CURRENTS, CAUSED BY THE REACTANCE TUBE PLATE RESISTANCES, ARE EFFECTIVELY CANCELLED.

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THE FIRST SECTION OF THE REACTANCE TUBE, PINS 1, 2 AND 3, ACT AS A LARGE INDUCTANCE ACROSS ONE SIDE OF THE TANK. THE SECOND SECTION IS EQUIVALENT TO A SMALL CAPACITY ACROSS THE OTHER SIDE. WHEN A POSITIVE KEYING SIGNAL IS APPLIED TO THE GRID OF THE SECOND SECTION MORE CURRENT IS DRAWN THROUGH THIS TUBE SECTION AND THE EFFECTIVE CAPACITY OF THE SECTION INCREASES, LOWERING OSCILLATOR FREQUENCY. THIS INCREASED CURRENT INCREASES THE BIAS ON THE FIRST TUBE SECTION, DECREASING ITS CURRENT. THIS IN TURN RAISES ITS EFFECTIVE INDUCTANCE ACROSS THE TANK COIL, FURTHER DECREASING FREQUENCY. THE ADJUSTMENT IS SUCH AS TO MAKE THE FREQUENCY SHIFT LINEAR WITH VOLTAGE APPLIED TO THE REACTANCE TUBE MODULATED GRID.

KEYING TUBE

IN HAND-KEYED OR TELETYPE OPERATION, IT IS DESIRABLE TO "LIMIT" THE D.C. PULSES CONTAINING THE INTELLIGENCE. THE PURPOSE OF LIMITING IS TO MAKE THE KEYER ACCEPT A WIDE RANGE OF D.C. STEP LEVELS WITHOUT AFFECTING THE MAGNITUDE OF THE FREQUENCY SHIFT DESIRED. THE KEYER TUBE INCLUDED IN THIS EQUIPMENT SATISFIES THIS POINT SO THAT "SPACE" AND "MARK" FREQUENCIES ARE INDEPENDENT OF KEYING STEP AMPLITUDE.

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WITH TEST SWITCH S-102 IN SPACE POSITION, THE FIRST SECTION OF KEYER TUBE V-107 IS CUT OFF DUE TO THE HIGH BIAS DEVELOPED ACROSS CATHODE RESISTANCE R-132. UNDER THIS CONDITION, THE SECOND SECTION GRID IS AT A HIGH D.C. POTENTIAL, CAUSING THE TUBE TO DRAW FULL CURRENT. T, THEREFORE, REPRESENTS A LOW RESISTANCE SHUNTING R-135.

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R-135, R-136, R-126 AND R-137 IN SERIES ACT AS A BLEEDER CIRCUIT FROM PLUS 105 VOLTS TO MINUS 75 VOLTS. A SMALL POSITIVE VOLTAGE EXISTS AT THE JUNCTION OF R-126 AND R-127 UNDER THE SPACE CONDITON.

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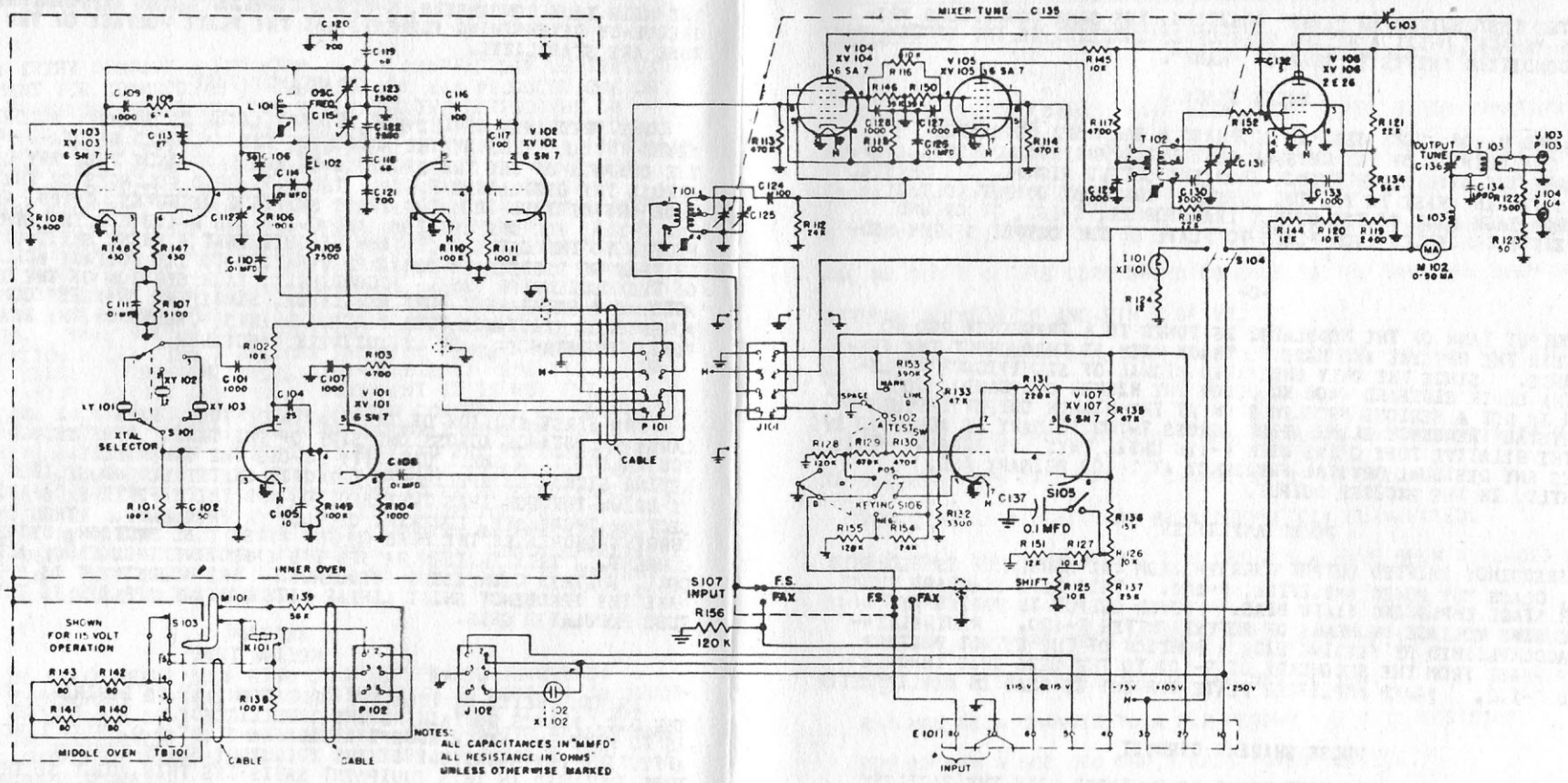
WHEN THE TEST SWITCH IS TURNED TO "MARK", THE POSITIVE VOLTAGE AT THE GRID OF THE FIRST SECTION OF V-107 IS ENOUGH TO CAUSE THIS TO OPERATE FULLY SATURATED. THE DROP ACROSS R-131 IS SUFFICIENT TO LOWER THE GRID VOLTAGE ON THE SECOND SECTION AND CUT OFF PLATE CURRENT. THE VOLTAGE AT THE JUNCTION OF R-126 AND R-127 CHANGES TO A SMALL NEGATIVE VOLTAGE VALUE. THE TAP SETTING OF POTENTIOMETER R-126 IS ADJUSTED TO EQUALIZE THE POSITIVE AND NEGATIVE VOLTAGES UNDER THE TWO CONDITIONS. KEYING VOLTAGE IS FED TO THE REACTANCE TUBE ACROSS THE TAP OF R-125, THE FRONT PANEL "SHIFT" CONTROL.



TYPE 105
FREQUENCY SHIFT EXCITER

SUMMARY OF CHARACTERISTICS

Output Range	2.5 to 6.7 mc.
Frequency shift	Adjustable from 0 to 1000 c.p.s.
Output Power	3 Watts into 50 to 75 ohms.
Keying signal	Zero volts for space (lower) frequency and plus 15 to plus 150 volts for mark frequency
Keying speed	150 dot cycles per second
Keying bias	Not over 15 percent at any keying speed up to 150 dot cycles per second

DESCRIPTION OF PARTS NOT IDENTIFIED ON DRAWING

C-103	1.5-7 mmf. ceramic trimmer
C-115	Dual air trimmer, 50 mmf. per section
C-125	3-12 mmf. ceramic trimmer
C-131	1.5-7 mmf. ceramic trimmer
C-135	2-gang var. condenser, 250 mmf. per sect.
C-136	250 mmf. variable condenser
L-101	500 micro-henry center-tapped slug-tuned inductor
L-102	2.5 milli-henry r.f. choke
L-103	2.5 milli-henry r.f. choke
T-101	Tuned transformer 2.3-6.5 MC. Secondary tuned by slug
T-102	Tuned transformer 2.5-6.7 MC. Secondary tuned by slug
T-103	Primary 28 turns,(closewound) secondary 3 turns wound on "cold" end of primary

WITH THE TEST SWITCH IN "LINE" POSITION, THE SAME CONDITIONS PREVAIL AS IN "SPACE" UNTIL A KEYING VOLTAGE IS SUPPLIED TO THE SYSTEM, WHEN THE CONDITION SHIFTS TO THAT OF "MARK".

MIXER STAGE

V-104 AND V-105, BOTH 6SA7'S, COMPRISE A BALANCED MODULATOR COMBINING THE OUTPUTS OF THE CRYSTAL OSCILLATOR AND 200 KC OSCILLATOR. TO ELIMINATE THE CRYSTAL FREQUENCY FROM THE OUTPUT SIGNAL, THE CRYSTAL VOLTAGE IS FED IN PHASE TO THE TWO TUBES. THE SAME OUTPUT VOLTAGE APPEARS FROM EACH SIDE OF THE OUTPUT TRANSFORMER, T-102, TO GROUND AND IS THEREBY CANCELLED FROM PLATE TO PLATE AT THE OUTPUT OF THE MODULATOR.

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THE OUTPUT TANK OF THE MODULATOR IS TUNED TO A FREQUENCY 200 KC HIKXHER THAN THE CRYSTAL AND MADE TO TRACK WITH IT THROUGHOUT THE FREQUENCY RANGE. SINCE THE ONLY UNDESIRED SIGNAL OF SIGNIFICANT AMPLITUDE IS THE LOWER SIDEBAND (400 KC BELOW THE HIGHER SIDEBAND), GOOD SELECTION IS NOT A SERIOUS PROBLEM EVEN AT THE HIGHER OUTPUT FREQUENIES. CRYSTAL FREQUENCY ELIMINATION ACROSS T-102 PRIMARY IS ACHIEVED BY VARYING THE RELATIVE TUBE GAINS WITH R-116 UNTIL THEY ARE EQUAL. THIS ELIMINATES ANY RESIDUAL CRYSTAL FREQUENCY AT T-102 PRIMARY AND, CONSEQUENTLY, IN THE EXCITER OUTPUT.

POWER AMPLIFIER

THE FREQUENCY SHIFTED OUTPUT CARRIER FROM THE MODULATOR IS FED INTO THE 2E26, CLASS "B" POWER AMPLIFIER, V-106. THIS IS A STANDARD TUNED AMPLIFIER STAGE EMPLOYING FIXED BIAS. POWER OUTPUT IS VARIED BY ADJUSTING BIAS VOLTAGE BY MEANS OF POTENTIOMETER R-120. NEUTRALIZATION IS ACCOMPLISHED BY FEEDING BACK A PORTION OF THE OUTPUT VOLTAGE IN PROPER PHASE FROM THE SECONDARY OF T-103 TO THE 2E26 GRID THROUGH C-103 AND C-132. POWER AMPLIFIER PLATE CURRENT IS READ ON MILLIAMMETER M-102.

PULSE SHAPING CIRCUIT

THE TYPE 105 FREQUENCY SHIFT KEYER IS EQUIPPED WITH THE FACILITY FOR SHAPING THE D.C. TELEPRINTER PULSES SO THAT THE FREQUENCY TRANSITION FROM "MARK" TO "SPACE" OR FROM "SPACE" TO "MARK" IS GRADUAL RATHER THAN SUDDEN. SHAPING THE TELEPRINTER IMPULSES IN THIS WAY RESULTS IN A REDUCTION OF THE BANDWIDTH NECESSARY TO TRANSMIT INTELLIGENCE.

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THE PULSE SHAPING NETWORK CONSISTS OF A CAPACITOR, C-137, IN ASSOCIATION WITH RESISTORS R-125, R-126, R-127, R-136, R-137 AND R-151. A SWITCH, S-105, PERMITS THE OPERATION OF THE KEYING CIRCUIT WITH OR WITHOUT PULSE SHAPING, AS DESIRED. SINCE THE VALUES OF THE PULSE SHAPING CIRCUIT WERE CHOSEN FOR USE WITH 65 W.P.M. TELEPRINTER PULSES, THE SHAPING CIRCUIT SWITCH S-105 (LOCATED AT REAR OF CHASSIS) SHOULD BE TURNED TO "ON" ONLY FOR TELEPRINTER KEYING.

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SWITCH S-106 (MOUNTED ON REAR OF CHASSIS) WAS ADDED TO LATER MODELS OF THE TYPE 105 TO MAKE IT POSSIBLE TO KEY FROM A TELEGRAPH LINE OR TELEPRINTER PROVIDING A SOURCE OF SIGNALS OF INVERTED POLARITY.

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ALTHOUGH THE MANUFACTURED PRODUCT CONTAINS A TEMPERATURE-CONTROLLED OVEN FOR THE CRYSTAL, 200 KC OSCILLATOR ETC. QUITE CREDITABLE PERFORMANCE MIGHT BE OBTAINED WITHOUT THEM. COMMERCIAL EQUIPMENT OPERATES AROUND THE CLOCK AND REQUIRES CONSIDERABLY MORE FREQUENCY STABILITY. AT ROOM TEMPERATURE, WITH CAREFUL CONSTRUCTION, A HETERODYNE EXCITER SHOULD NOT DRIFT MORE THAN A FEW CYCLES DURING THE COURSE OF A QSO. AN OVEN IS QUITE SIMPLE TO CONSTRUCT IF DESIRED. 73 DE W2BFD.

MODIFICATIONS APPLIED TO ORIGINAL MODEL OF CFA CONVERTERS AND INCORPORATED IN THE NEW MODEL BY TMC. See Bulletin #22 for Circuit & description

THE FOLLOWING CHANGES HAVE BEEN MADE IN THE DISCRIMINATORS: C11 AND C14 ARE NOW .011 MFD. ±5% INSTEAD OF .01. - C13 AND C16 ARE NOW .0024 MFD. ±5% INSTEAD OF.0022.THESE CONDENSERS ARE ALL SILVERED MICA. A 1,000 OHM,1/2 WATT RESISTOR HAS BEEN INSERTED BETWEEN L3 AND TERMINAL OR PIN 2 OF ITS CORRESPONDING 6AL5,V6.THE SAME HAS BEEN DONE BETWEEN BETWEEN L5 AND PIN 2 OF V7.

C21 AND C22 HAVE BEEN REPLACED BY A SINGLE UNIT OF EQUIVALENT CAPACITY.

C30 HAS BEEN CHANGED TO A 1,000 MMFD.500 WVDC.IT IS RATHER HARD TO SEE WHY THEY CALL THIS A CHANGE OVER THE ORIGINAL.

THE C31-R83 CIRCUIT HAS BEEN COMPLETELY ELIMINATED.

THE FOUR SELENIUM RECTIFIERS CR1,2,3,4 HAVE BEEN REPLACED BY A SINGLE 6AL5.

R15 AND R30 HAVE BEEN CHANGED TO 68,000 OHM,1/2 WATT RESISTORS.

R54 HAS BEEN ELIMINATED IN THE NEW DESIGN.

R58 HAS BEEN CHANGED TO A 2.2 MEGOHM 1/2 WATT RESISTOR.

R59 IS NOW A 500,000 OHM,2 WATT POTENTIOMETER.

R85 IS NOW A 100,000 OHM,1/2 WATT RESISTOR.

THIS EQUIPMENT IS COMMERCIALLY BUILT IN VERY COMPACT FORM SO THAT IT HAS A TENDENCY TO OVERHEAT. TO KEEP IT REASONABLY COOL TOP AND BOTTOM PLATES HAVE TO BE REMOVED. THIS CAUSES FURTHER TROUBLES IN THE FORM OF SPURIOUS TRANSMISSIONS FROM THE OSCILLATOR WHICH CAN BE PICKED UP ON A NUMBER OF FREQUENCIES SINCE T7 IS TUNED TO 500 KCS. ALSO IF THE TEST SWITCH IS LEFT FOR MORE THAN A FEW SECONDS ON THE SPACE POSITION,R63 WILL BURN OUT.

(Our thanks to VE8AV for supplying this information.)

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W5FEM, Charles White, Houston, "I have all the TTY equipment needed to get on the air. Have to fix the Converters, etc., expect to get on the air about the first of the year." The few times I have had a chance to listen the Ham TTY sigs here are too weak to copy. Maybe this winter there will be some sigs down here."

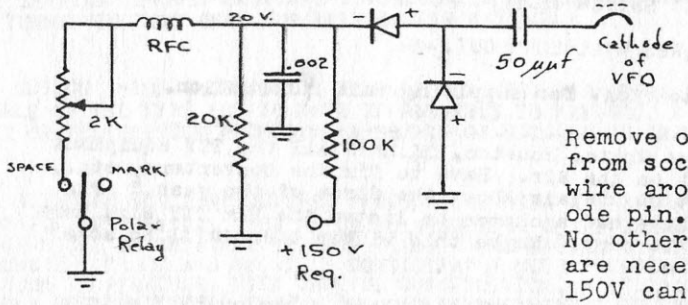
W1KJB, Bill Gamache, Springfield, Mass. "Am on RTTY with a Collins FSK unit - output 813's PP to 1KW. I have been copying the boys when I have time, but have not worked any.

W8AV, Bob Bohannan, Columbus, O., "When using a 75A3 Collins to copy fsk - I have to disable the magnetrostriction filter which cuts off at 3 kc. If I don't the mark signal is badly sliced off in strength. The change can be made very easily by putting a good high grade 450 kc i.f. transformer into the spare filter jacks on the receiver, enabling the filter to be cut in and out at will - by the switch on the front panel. Sold my mod. 12 to W8IJV - and he has just finished his converter (W2PAT) and is getting excellent copy. How in h - can he find a mod. 12 keyboard?"

W9EKU, Eugene A. Wille, Milwaukee, Wis.,"Teletype Corp. has a kit of parts to convert a 26-B to a 26-A. The B model is the one with all the fractions, while the A model is the model with the punctuation marks. The kit includes type pallets, a new function arm to block spacing on certain functions, and new name plates. The price is about $7.50. Keytops are not included and must be ordered separately. They are 35¢ each. Someone mentioned recently in the bulletin about removing the unshift on space feature. I have this feature too. I looked over the teletype manual, which I received from Teletype Corp. on request, and found out that this is controlled by the function arms. I ordered and have received a new function arm, type 4, part #91914. The price was $1.65. This arm has only one projection, whereas the original arm with the unshift on space has an additional p rojection for the unshift on space feature. It should be possible to remove the unwanted projection from the existing function arm, type 4-A. A drawing is enclosed herewith to show the position of the arms and the one to file off to remove the unshift on space feature. I haven't removed mine as yet, but intend to do so in the next week or so. Have my receiving converter just about working. It is patterned after the Technical Material model CFA. By the way, I got a CFA manual from the manufacturer. I will be back on the air just as soon as I get my receiver back from being aligned, and get an antenna up for 40 and 80 meters."

MAKING THE COLLINS SHIFT ON 80

2kc Shift!



Remove oscillator tube from socket and wrap a wire around the cathode pin. Replace tube. No other connections are necessary to rig! 150V can come from TT converter.

ARTT-4052 from W4MOP

Clay Cool, W2EBZ/A2EBZ is a technical writer with McGraw-Hill Book Co of New York. Spent World War II in the merchant marine as radio operator. Became interested in TT in 1948 at NDS, naval reserve station in Chicago. Occasionally writes for the ARTS bulletin. Spends some time on cryptography, philately, numismatics, none on dianetics.

New York City hams are invited to visit the Knickerbocker Amateur Radio Club (W2KYN). Meetings are held evenings of the first and third Thursdays of each month. --W2EBZ, sec'y

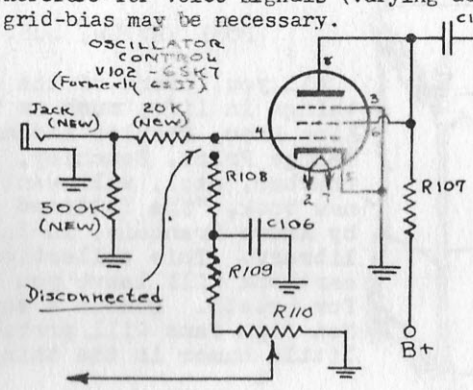
"Teletype" was registered as trademark number 211,486 on March 23, 1925 by Morkrum-Kleinschmidt Corp, Chicago and refers to printing telegraph apparatus made by them. The M-K Corp is now the Teletype Corp, a subsiderary of Western Electric. The term should not be used without giving the Teletype Corp credit. In refering to printing telegraph equipment use the term teletypewriter or radioteletype, abbreviated TT or RATT.

The Lenkurt DEMODULATOR is a twelve-page monthly publication of the Lenkurt Electric Co, San Carlos, Calif, manufacturer of carrier systems, powdered iron cores, toroidal coils, and electric wave filters. This interesting bulletin is mailed regularly to individuals interested in telephoneand telegraph carrier systems for multi-channel communications over wire or radio lines. Most articles are of interest to ARATT men. No charge.

EXCITER UNIT O-5/FR TM 11-2205 C Cool, McGraw-Hill Book Co

Exciter Unit O-5/FR uses the principle of frequency shift to obtain the mark and space characters for radio TT operation. This is covered in ARTT 4004, bulletin 4 and is the Press Wireless model FS12A.

USE OF O-5/FR for NBFM. This unit is used for NBFM facsimile (F4 emmission) by a slight modification as described in TM11-2258, FACSIMILE SETS AN/TXC-1, -1A, and -1B. The oscillator control tube V102, a 6SJ7 is replaced with a 6SK7 and the grid circuit is modified. This is shown in the figure. A total frequency swing of 1200 cycles at the oscillator frequency is accomplished. This is used for facsimile requiring 900 cycle bandwidth (1800c if in double-side-band transmission). This arrangement should be satisfactory for voice transmission (F3) with more oscillator swing or more frequency swing obtained by frequency multiplication. The circuit shown is used with negatively varying signals--- Therefore for voice signals (varying about 0 volts) some negative grid-bias may be necessary.



O-5/FR MODIFICATIONS FOR F2-F3-F4