

1972

FT NEWSLETTERS

(VOLUME 1)

of the

Since

1971



BY

For

Owners of YAESU Amateur Radio Equipment

[HTTP://WWW.FOXTANGO.ORG](http://www.foxtango.org)

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FT NEWSLETTER

1972

VOLUME I

Published ten times each year for the INTERNATIONAL FOX-TANGO CLUB by Milton Lowens, WA2AOQ

By and For Owners of YAESU Equipment

Note: This is the second reprinting of Volume I of the Fox-Tango Club NEWSLETTER; demand has consistently exceeded expectations. Since the format of this edition is different from those which precede it, an explanation may be helpful. The original format was mimeographed on 8½ x 14 inch sheets. However, since many members wrote to say that they preferred an 8½ x 11 page size for ease of filing, this size was adopted beginning with Volume II (1973). In order to provide approximately the same content on the smaller page size, smaller type was used. With this edition, the original page size is reduced photographically to result in the standard format of later editions; the reduced type size should be no smaller than that used in Volumes II and III. Also, to save space and for convenience, successive monthly issues have been arranged sequentially without the usual heading. This means that the page numbering will be different from that of earlier editions. At present there is no index of Volume I; should one be issued in the future, a system will be devised so that it will apply to both the current and earlier editions.

Volume 1, Number 1 ---- 1972

JANUARY

I am writing to suggest that you join with me and other owners of the Yaesu FT-101 in an informal association which we might call the FOX-TANGO GROUP. It would serve as a sort of benevolent, protective, mutual aid and perhaps social club, essentially for the purpose of interchanging information, ideas, experiences and problems.

I am sure that, like me, you are an essentially satisfied owner of a superbly built and very versatile transceiver. However, like me, you may have also discovered that in this world of men nothing is perfect, not even the FT-101; that there are certain weaknesses that you would dearly love to see strengthened if only you could figure out the way. Among other flaws you may have noted the tendency of the front end to overload; the curious characteristic of the Noise Blanker in suppressing pulse-type noise quite effectively but at the price of causing strong signals suddenly to appear all over the dial, regardless of its setting; and the birdies spaced every 5 kHz or so on the 40-meter band when strong foreign broadcast stations are active.

On the other hand, perhaps you have not yet discovered that a relatively strong spurious signal is emitted in the upper portion of the band (or above it) whenever CW is transmitted at the lower end. For example, CW signals sent at 21.050 MHz can be clearly heard at or near 21.440. Try it and be convinced---it happens on all bands but is most easily noted during quiet periods. You will find that as you raise the transmitter frequency, that of the spurious signal also increases, increasing 2kHz for each 1 kHz the dial setting is increased.

I discovered the above purely by chance when a friend reported hearing my CW signals in the phone band (where I was not operating). I duplicated the test with many FT-101 owners before I became convinced that this trouble did not affect my set alone but seemed to be a design flaw. Queries to Spectronics brought the assertion that no spurious emission of any significance existed, to their knowledge. More correspondence brought an offer of "repairs" under the warrantee. However since what was involved seemed obviously to be an image effect caused by the combination of relatively low front-end selectivity and an unfortunate choice of IF frequencies, I declined the offer as impractical (and fraught with shipping hazards) and wrote directly to the factory in Tokyo.

numbers in left margin indicate page numbers in original edition for indexing

You will be pleased, as I was, to learn that the factory knew about the problem and in their first letter advised me what caused the trouble (the second harmonic of the first IF falls into the image response point of the second IF), and recommended the re-adjustment of T-114 as an interim measure to reduce the spurious emission while the factory engineers were developing a modification to cope more effectively with the problem. I tried their suggestion and it did help matters. Recently I received a second letter dated Dec. 28 in which the factory said they were sending me via air parcel post a modification kit apparently containing a new T-114 and new IF system. This is fine, for me, but I wonder whether only the wheel that squeaks loudest is going to get the "grease". I should think that all FT-101 owners would want, and expect to receive, such materials. Perhaps they will: automatically. But just to make sure I feel that an organization such as I propose may give us more bargaining strength in a crunch and enable us better to cope with other or future problems.

SUGGESTED INITIAL SET-UP of the Fox-Tango Group

I would undertake to send out newsletters from time to time. These would include comments and suggestions I received from members of the group either in writing or over the air. I suggest that local members monitor 21.440 MHz about 0300 GMT daily to contact one another to rag-chew or seek solutions of any special problems. (I selected 21.440 because that's where the spurious signal can be heard, if CW is sent on 21.050 by any strong station due to image.) The newsletter would include items of general interest such as the availability of the modification kit and how well it works, questions posed of a technical or service nature for which answers may be sought and maybe some chit-chat.

There would be no dues, subscription fee, or obligation involved. To reduce the clerical work and postage cost I would expect a self-addressed stamped envelope for each copy you would want to receive (use larger size: about 4" x 9½"). In other words, each time you get an issue, send me an envelope if you want to get the next one. I will volunteer my time and effort for what I believe is a good cause, as long as a need seems to exist, and as long as the job doesn't get too big.

HOW YOU CAN HELP

The more members any group has, the stronger its voice and the more effective it can be to assist in solutions to problems. Accordingly, I ask each one of you receiving this first communication to make a special effort to contact at least two other FT-101 owners and suggest they send an envelope to me in order to receive this issue, and in effect to join the Fox-Tango Group.

with 73's and best wishes for the New Year

Volume 1

FEBRUARY

Number 2

This is the second issue of the NEWSLETTER.

Since the number of FT-101 owners who have learned about our Club is increasing each day, perhaps it would be well to say something about the Club and its purposes.

After talking to a number of hams on the air, it was always a particular thrill to me to contact another owner of the FT-101. It was always interesting to compare notes and experiences; and more than once, I was able to solve some operating quirk from another who had had more experience with the rig. On other occasions I was able to answer the questions of another. Since there was a common interest, I found QSO's with other FT-101 owners more interesting than routine contacts and so I sought them deliberately. Perhaps it was something like the spirit, in the early days of the Volkswagen, when the Beetle-owners would blow their horns at one another in a sort of comradeship. Well, we can't blow horns at each other but we have a pretty good alternative communications medium. The Club idda and the Newsletter are proposed as the medium which will help bring us together.

Perhaps a few words about me, WA2AQQ, might be in order. I got my E. E. from Cornell University in 1930 and after 11 years of professional engineering decided I would prefer Technical Education. I advanced in this field to the position of Assistant Principal of a large technical high school specializing in Electronics. I got my first ham ticket in 1933 but let it lapse after World War II. My original call was W2EZR. I got my present ticket (Advanced Class) in May 1971. I am a member of the ARRL, the ACWA, and CCNR (Communications Club of New Rochelle). I elected early retirement and that is how I happen to have time to organize the Club and prepare the Newsletter. I have always been very active and have no intention of spending much time in a hammock or watching TV. When and if the idea takes hold firmly, I feel that it should be more democratically organized. Until then, if there is no objection, I will carry on.

COMMUNICATIONS

1. Each time you receive a copy of the NEWSLETTER, you are requested to return a self-addressed stamped envelope for the next one. The purpose, ostensibly, is to spare me the bother of addressing letters and to pay for the postage. Actually, I have a more ulterior motive: if the idea is not a good one, if the Newsletter is not interesting or worthwhile, those receiving it will not feel it worth the bother of returning the s.a.s.o. So I will be able to keep my finger on the "pulse". Also, once a ham takes the trouble to send me the envelope, it makes it relatively easy to enclose a note or comment which is grist for the mill (which prepares the Newsletter). Indeed several suggested that they would prefer to send several envelopes at one time; or several stamps; one even suggested I collect a few dollars. While the last suggestion is tempting, as a supplementary source of income for my declining years, I would rather avoid the temptation and the bookkeeping involved. Please send the s.a.s.o until we can figure out a better way.
2. As a communications frequency I suggested 21.440 MHz, between 0300 and 0400 GMT. Some have written to suggest that the choice was not a good one: the band is dead at that time. Well, I had no idea that the Club idea would catch on to the extent that it has: I have envelopes from South Africa, Israel, Alaska, as well as many districts in the USA and Canada. Until we get some suggestions from the members, let's continue to use 21.440 as the rendezvous frequency but at any time. The call CQ Fox-Tango can be used for IP.
3. From the Factory (in Tokyo). The manufacturer has been exceptionally cooperative with me in its effort to reduce the spurious emission I detected in my rig. A modification has been produced by the engineering staff which involves a rather simple substitution of some parts. I had hoped to install these and report to you on the effectiveness of the change before leaving for Miami for a few weeks. Unfortunately, delays in international mails have held up the parts, so I will report in the next Newsletter. I suggest that members avoid needless correspondence at this time. Please wait until I can advise you as to the best procedure.
4. Two members reported the same problem with their VOX. Seems that the Delay time increases according to the amount of time the Vox is used. If the delay is set for proper release time for ordinary use with voice and CW, the release time becomes much too long when the QSO turns into a rag-chew. Maybe the moral is to keep things short, but for the hardened rag-chewer's benefit, has anyone found a solution to this? Is this a common problem?
5. By all means, save the shipping carton in which the rig comes, writes one member. The XYL got rid of it and now I am having to tough time finding another in which to send the rig back for service. By the way, if you do have to ship the set, be sure to remove the little crank extension on the main tuning knob.
6. Advice to Field Day and DXpeditioners. Be careful about gasoline driven alternators of doubtful voltage regulation capabilities. Voltage surges can (and have) blown power transistors in the power supply of the rig. Also when operating Mobile, be sure that the voltage regulator does not permit any voltages in excess of that indicated in the Instruction Manual.
6. Do you like to operate using earphones? Watch out. One member wrote that he used a pair for a few hours only to have the audio output transistors fail. He forgot that 8 ohm units are required for matching --- he was using high impedance crystal phones.

7. Advice. Get the cooling fan for your rig. While not cheap, (about \$20) it's good insurance. While ordinary surplus fans will work as well, it's nice to have a custom built unit which fits the recess in the back apron and plugs into the receptacle provided. The fan, rated at 100 volts AC, is very quiet and effective in keeping the rig cool. It works when the rig is operating mobile also. Unfortunately, the perennial West Coast dock strike seems again to be causing delays.....which are causing considerable griping by some members.
8. Do you hear it? One member writes about a peculiar image he receives at or near 21.310 MHz. It seems to be a broadcast station although the sound is so distorted as to be unintelligible. Seems like speech sometimes, music at others. Is most audible in the AM mode. While it is strong enough to be annoying in the SSB Mode, it becomes much stronger when the preselector is deliberately detuned (towards the 80 meter segment). Even more surprising: disconnecting the antenna weakens but does not eliminate the image; neither does shorting the antenna jack to ground with a short wire. The rig itself is grounded to a copper water pipe with a heavy wire three feet long. Reconnecting the antenna with the central pin of the plug has little effect on the strength of the image signal, but once the braid of the coax is connected by screwing on the plug, the strength of the image increases many times.

What's your explanation?



Volume 1

MARCH

Number 3

Greetings from Miami Beach! I just got back the other day to find the temperature in New York almost as high as it had been down south. It has cooled off here since. I had a fine time and recommend that each ham spend the month of February down there each year. If it does nothing else, it may reduce QRM around the big city! Hi.

It was a real pleasure to look at the pile of mail awaiting me from the group. It continues to grow in size and diversity. Since new members are joining the group each time, let me repeat that there is no charge of any kind for membership. All I ask is a stamped self-addressed envelope for each issue you receive. I'll do the writing, printing, and envelope stuffing while my strength holds out and as long as I continue to receive your s.a.s.e's. If they stop coming I'll know at once that you are not interested and act accordingly. But spare me the chores of addressing envelopes and buying stamps!

The most encouraging part of the current batch of envelopes is their enclosures; I don't mean only the s.a.s.e's but the notes of encouragement and the many fine suggestions. It is my hope that future issues will be made up almost entirely of your comments and suggestions. I have more than I can include in this issue so some may not appear now but keep them coming, men! Also, if you asked a question which appeared in an earlier issue and it is not answered yet, don't be discouraged; I'll keep trying to get an answer and print it when I do.

In the last issue I mentioned that I was expecting some parts which would reduce certain spurious emissions that had been noted by nearby hams when I operated in the CW mode. The parts have come but I have not yet had time to install them. Rather than hold up the Newsletter, I will report on results next time. Do not be too concerned about this if you have noted it in your set. The spurious signal is quite weak and unlikely to be noted except by those near your antenna. Spurious signals are far from uncommon in transceivers. Deliberate efforts are made to reduce them to "state of the art" levels. In the case of the FT 101, they seem to be attenuated to the point where it is hardly worth the time and trouble to seek to reduce them further unless you are in a very densely populated QTH or have received specific reports from others of a spurious radiation.

Answers to Previous Questions.

1. The mysterious signal at or near 21.310 mhz. This vague annoying sound was finally identified as being TVI (of all things). Not the garden variety of ham signals bothering TV reception but the "man bites dog" variety in which TV signals from WCBS-TV (New York) appeared at the above frequency, apparently as an image. The sounds were caused by both video and audio (fm) signals hence the lack of intelligibility,

broadness, etc. The FT 101 involved was only about seven miles from the broadcast antenna and the down-lead from the TV receiving antenna ran adjacent to the coax from the amateur antenna. The solutions seem obvious but it is unlikely that many others will have this problem. For those who do have image problems, it might be well to consider the advantages of a selective preselector described in Sept. 1971 QST. The author, Doug Blakeslee, W1KLK wrote me to say he had designed it specifically for application to sets like ours. It will reduce overload problems as well.

2. In the last issue, the hazards of improper earphone impedance was mentioned. However, the correct value: 8 ohms, was not clearly printed. I hope it is clearer this time.

Comments from Members of the Fox-Tango Group

From 4Z4JT "..... Be very careful not to plug the power plug in upside down. I did it without looking at the back, but only pushing my hand to the back side of the rig; even with the plug reversed, I was able to engage half of the female portion with the male (a bad situation in any case, Ed.) and got 220 VAC on the 13.5VDC leg, which caused very severe damage to all the modules. Please let the members know about this and have them watch very carefully when connecting the power plug. Marking its upper side (with paint) can be very useful.

More from 4Z4JT "..... The pair of power transistors in the DC power supply: DTG 110B, shorted while I was operating mobile. While I left them in the circuit, the power transformer was shorted and fuses blew each time I tried to operate of AC. Disconnecting the defective transistors enabled me to operate on AC until I got a pair of new ones from the States. By the way, I spoke to two other FT 101 owners who had had the same problem. (I've spoken to some, too. Ed. See other comments below.)

The birdies you mentioned on 40 meters in your area are 5 by 9^{on 15} here in Israel. To solve my problem I tried all kinds of filters, including coils wound on toroids for high Q but the best was found to be a little 5 kilohm potentiometer (usually used in little transistor receivers as volume controls) in series with R-16 (470 ohms) which serves as the RF ATT. Connect it on the antenna side before the RF ATT switch. Use the thin, disc-like control for the potentiometer which should be mounted on a small bracket using one of the screws holding the VFO cover in such a way that the control disc sticks out from one of the slots in the cover of the FT 101. This gives you very convenient and easy control of the required additional (here) RF Attenuation.

Also included is a suggested Vox circuit modification for which we lack room this time. More later. Many thanks to Israel Haramaty.

From ZS1JD ".....I use my FT101 exclusively in my car as I travel extensively---about 3000 miles per month! When first I put the rig in my car I blew the DC switching transistors (Them again? Ed). I replaced the originals which had been running at their maximum ratings with Motorola units of higher ratings. The other problem I have is with the VOX; as no adjustment seems to be able to keep the delay correct, I skip it and use the PTT."

From W2MAT ".....I have been reading the little problems some people have had or are having. Each time I do, I check my rig out and find it free of the troubles reported. The only thing I see lacking is an adjustable AGC; even with the NB in and the RF Gain cut down there is still some overload, but in general it seems to be a nice little rig....." (I think so too, Ed) (Matt's QTH is Riverhead, N.Y., a relatively rural area on Long Island)

From W1WHS ".....Would someone send me a copy of the 1st issue of the Newsletter; I'll copy and return it". (I ran out of copies, Ed.)

From W8LTF ".....No difficulties with my rig/with the blower (fan?) except It was repaired when I returned it and works fine. In my opinion it is a necessity, A little tip---- I removed all the knobs and put a piece of plastic between the knobs and the panel to keep my fingernails from scratching the panel. Keeps the rig looking new" (Good idea, Bob. Probably will boost re-sale value. What have you done about the paint that has chipped near the PTT slide switch?)

MARCH

From K4RF ".....Have had my FT 101 since March 71; to date the only problem was the apparent failure of the CW sidetone oscillator transistor. Got a replacement plug-in board from Spectronics in a couple of days.... no problem. I have installed the CW filter and Fan both of which are very much worth while (I agree, Ed) I checked out the spurious 21 mhz emission and find it to be present in my rig. Rough measurements using a Drake 2-B indicate it to be better than 70 db below the fundamental which would seem to be somewhat in excess of FCC's rule of 40db plus 10 log (P) input, but I'd like to reduce it further if possible..... I have noticed that when operating on 80 CW there is an appreciable "back wave" with the key up prior to the vox dropping out. I have had stations mention this when I use my L4B linear after the FT 101. Wonder if anything can be done about it? It is not a function of the SSB carrier suppression controls. (Anyone got any ideas? Ed.).....Am in a rural area with no nearby ham or other stations so have not had trouble with birdies, etc except when the 25/100 kHz oscillator is left on. It should always be kept in the OFF position except when checking calibration. Noticed a similar effect when using the Noise Blanker during mobile operations in congested areas; but generally this is not bothersome and the advantage of good blanking outweighs the birdie problem..... Regarding the reported trouble with the 101 on cold mornings after being out all night, I would suggest that the rig never be left in the car except in a locked garage. It is too tempting a morsel for some guy with a jack handle! (See the various reports of stolen gear in QST each month!) Mine is so arranged that I can disconnect it in seconds and take it into the house or motel at night or be looked in the trunk during the daytime for short periods.

From VP9BK ".....I have had my FT 101 for a year and had not come across the spurious problem.....The 101 is a great rig with one major problem: front end overload and the resulting intermodulation products on receive...". Colin also includes some old factory bulletins including one for solving the cold weather problem. I cannot conveniently reproduce the diagram but the following quote should be clear without it: For "FT 101 local oscillator problem in very cold temperature, please add 0.047 uF 50WV capacitor in parallel with C69 which is located on PB-1083A where oscillator coil is located under the chassis." I feel that Colin's contributions clearly demonstrate the value of this newsletter in eliciting answers to common problems. With respect to the front-end overload, the pre-selector suggested on page 1 may be worth trying. If someone does before I do, would he please advise? Ed.

From W1QJB ".....My rig, received in January, is working well.. it is being adapted for use in a mini-mobile home which I plan to drive to California. I installed the CW filter ... an instant success.... I have received reports of a buzz on my sig during mobile operations on SSB (Any suggestions? ed.)....The new instruction book is a big improvement over the old one, but not perfect.....Have found birdie problem on 40 meters at night to be present on other receivers. The band is not like it was in the old days. It seems to me that with the proper use of the RF control and/or RF ATT switch, the FT 101 does a better job fighting adjacent channel interference than most receivers I have used. I have no overload problem (VP9BK please note, Ed.) Both on transmit and receive, I find the AM mode inadequate.....I have save the shipping carton but hope I won't need it".

From K4UGC ".....I have removed the crank from my 2-month young FT 101 and am installing a concave plastic button to prevent the possibility of bumping the long crank...."(Seems like a good tip for mobileers, Ed.)

From W1KKP/4 Suggests the factory provide more information in the instruction book or sell a separate book with more real suggestions and data to help in diagnosis of troubles at least to extent of localizing trouble in a particular module. (It would seem that this would be most desirable if the servicing advantages of the modular construction is to be fully exploited. It might save a lot of correspondence, time, and possibly needless shipment of the entire rig if service is needed from the distributor. Ed.)

That's all I have time, and space, for this time. My apologies to all whose comments I could not print; I will give them priority next time. By the way, the "Ed" who keeps making parenthetical comments should really be me (Milt, Ed). The Ed means Editor, in this case.

Our group continues to grow, making necessary a brief explanation of its purpose for new members. It is intended to serve as a medium of exchange of experiences with our rigs; thereby providing solutions to operating problems or other difficulties. It may also bring out modifications and techniques which may increase the versatility of our equipment and increase our enjoyment of our hobby. Once the group has stabilized, an effort will be made to enlist the cooperation of the manufacturer in obtaining "official" answers to questions members may raise. Until this is done, however, it should be noted that any suggestion or modification reproduced in the Newsletter, while deemed safe and reasonable, has not been tested except as noted and accordingly your Editor cannot assume responsibility for the results.

As previously stated, there is no charge for the Newsletter or dues of any kind. Members are requested to send stamped self-addressed envelopes to cover the cost of postage and reduce the clerical work of distributing the Newsletter. Where stamps pose a problem (for those outside the USA) International Reply Coupons will serve. The envelopes should be "no. 10" size, such as the one you receive the newsletter in.

And now to excerpts from members of the Fox-Tango Group.

From W2DQE: ".....Good idea to take the crank off the tuning knob (during mobile operations); I've hit mine a couple of times. Are you still on 21.440? At 0300 GMT? Are mobiles such as 4Z4JT, ZS1JD, or W2MAT on 21.440?....." (I personally try to call a QPZ or CQ fox-Tango at 21.440 at 0300 during week-days. I know this is probably not suitable for everyone, but then what would be? With the changing season, 15 meters should remain open at 0300. In any case, I suggest that members wishing to work others, operate at the frequency suggested, plus or minus 5 KHz, regardless of the time. Will DX members please advise specific frequencies and times when others (including me) can work them? Ed.)

From W2MAT: ".....As you might remember, I blew my Audio-Board (STK 401 on PP-1081G)....they sent me a new IC....I mentioned a slight pumping audio effect....they sent me a 1000 pf 50 wv capacitor to be placed between Pin 3 and Pin 5 of STK 401. Wow! what an improvement it made in the audio output of my rig. I can run the audio gain up and down now and, at any setting, it is as clear as a bell." (Late model FT-101's appear to use the STK 401; earlier ones like mine, do not. Ed.)

From W2DV: ".....I am using my FT 101 here (in Florida) during the winter. In New Jersey, the equipment is Collins KWM-2 with 30L-1 amplifiers. I am amazed at how well I can get out with the 101 barefoot. Must be the watery terrain in South Florida. (Off the record, Ken says he likes the 101 as well as the M-2. He's not the first who has said so. And so far as getting out is concerned I'm pretty proud of my barefoot rig with a very modest hustler whip antenna clamped on to the railing of my terrace. Of course, the fact that it is 19 floors above the street with nothing much between me and the horizon does not hurt. Wonder what I could do if I could put up a beam or a quad? I can't, but it is nice to dream about. Ed)

From YV5ATX: ".....I think my FT-101 has a cross-modulation problem.. I operate primarily during week-ends between 28500 and 28600. Would appreciate information on above matter....will try to reach you on 21.440 at 0300." (Vittorino did indeed reach me. I was thrilled at the strength of his signal and the fine report he gave me. About the cross-modulation problem, it seems common. See below. Ed)

From WA6EHC: ".....Have had my FT-101 for about nine months now and have had no trouble other than one dial light burn-out. (Many report similar experiences, yet some troubles are bound to occur in any large group of electronic gear. It would be interesting to see if there is any pattern in troubles that do occur. Would any of you that have had any troubles, please drop me a note (or enclose it with your next c.a.s.e) so that I can compile a "frequency of repair" record for the information of the group. Ed)

From W2OJ: ".....I came across the enclosed article in a little Yaesu bulletin: it should be of interest to those who might like to put the 101 on RTTY. Had one of the boys at Bell Labs translate it...." (Bill's fine contribution consists of two pages of typewritten text entitled "FSK carrier Oscillator for the FT-101

by JALACB" plus the original story (in Japanese) including schematics with suitable interpolations in English. Unfortunately it is too big for our present reproduction facilities. However, anyone wanting a copy can obtain it for 25¢ to cover the cost of making Xerox copies, plus an s.a.s.e. Ed.)

From WLCRB: I deeply regret that I had to trade my FT-101 for a Drake TR4 because of TVI problems the former caused. Being blind I could not correct it here although I could have done so by sending it back to Spectronics East. Now that I have used both, I consider the FT-101 far superior to the Drake TR4...." (Sorry to lose you, James but thanks for your evaluation. I am puzzled, though. What could Spectronics have done to diminish TVI and why should the effect be any less with the TR-4? Anyone have any explanation? Ed.)

From ZLBBU: John Medley is President of the ZL FT-200 Club which, by coincidence, was organized shortly before ours last year for much the same purposes. When I heard about it from Yaesu, I dropped him a line and a copy of our Newsletter and back came his. The down-under boys are doing a really splendid job, especially in comparison with our modest efforts. Their bulletins are much better in terms of both printing and content. Perhaps this is the result of better organization; they have a President, Secretary/Treasurer, and a Committee of Three. Annual dues are charged (modest) and a set of Rules have been drawn up. In addition to other materials John very kindly sent a Bulletin entitled "FT-101 Vox circuit modification" which I will try to reproduce on another page. More on Vox circuit modification follows below. Ed.

From WB2HBD: ".....I do have an item for your next edition (unless someone has scooped me on it). (The ZL FT-200 Club almost did, Bill, but your solution seems much simpler. Ed) My one complaint about my 101 has been the Vox which "hangs up" after a transmission of a minute or more. I have heard similar complaints from others.....Spectronics sent me a sheet of revised directions on setting the Vox....a very delicate procedure in setting the Relay Control (VR3)....turn it a hair too much, one way or the other, and you get either hang-ups or zero delay.....The solution: look at page 17 of the Manual: note two pairs of diodes leading to the fet Q5. Capacitors c20 and c23 have no discharge path. I connected a 6 meg resistor across both p1 and p3, shunting them to ground. This has no discernable effect on the circuit, except to reduce the elongation of the delay time after lengthy transmissions. It is easy to add these resistors right on the foil side of the board (PB-1081C). I suspect even lower resistor values can be used without degrading the functions. (I had the same trouble but my circuit board is the PB-1081B) whose circuitry is somewhat different. However, I shunted the common junction point of each diode (1S1941) to ground with 6 megs and I find a considerable improvement. Discussing the matter recently with Bill, he tells me that he finds 2 megs even better --- $\frac{1}{4}$ watt is plenty. WA2MPS, hearing the discussion, says he is going to add the resistors to his PB-1081C. It is easy once you spot the four diodes ---they look like stubby black resistors. Find the common junctions (by holding the board up to a light) and you have it made. Ed.)

From K8LIB: "....Could you explain to the others that by backing up the RF Gain and increasing the AF Gain that 95% of overload on the FT-101 can be overcome. Also the signal to noise ratio is greatly improved. At least that's how it works for me." (I've tried your suggestion Bill but it does not seem to be as effective for me. In my rig, I find that reducing the RF Gain much below 8 cuts the sensitivity too much so that even turning the audio all the way to 10 does not compensate, Ed.) (I have written to Bill to see if his RF Gain control has a wider range; if I get his reply in time I will include it; otherwise next month. What is your experience, gentlemen? Ed.)

From WB4RSK: "....I have an old FT-101 (with PB boards without any terminal letters --- just the four digits) which suffers from cross-modulation problems. When a local ham gets on, I can't hear a thing except his audio across the band. My RF board contains two mos-fets....I have replaced the DTG-110B's with 2N4398's. They are silicon and can handle more power than the DTG; the only change required would be to reduce the 47 ohm 10 watt resistor on PB-1076 (R3) to 5 ohms 10 watts. One 4398 transistor handles 30 amps 200 watts 50 amps peak. Base current is 7.5 amps maximum. Mine don't even get warm." (Good suggestion for the mobileers, Rob. Maybe someone has a suggestion to help with your X-mod prob. Ed)

APRIL

2

3

From WB2IPN: "....The only spurious I have noted is at 28.600 on receive (I've noticed it on 28.606. Ed) and I don't want to risk damage in shipment although Spectronics has volunteered to fix it under the warantee. (Anyone know an easier way? Ed.).*.. I only modulated about 15% on AM and was not able to drive below 5 into the Green in the ALC position on SSB until I adjusted the ALC control under the top cover for full scale; it had been reading a little over 5 (See page 10 of the new Manual). Now AM modulates 100% and I can talk meter below 5 in ALC."(But keep it above 5 in ordinary operations, Ed.) * Adjust L-22 - BOTTOM, LEFT OF SPEAKER PLATE. (TRAP)

From W2ICA: ".....I do believe my FT-101 is one of the best engineered and designed pieces of Ham equipment in a long time (after using the KWM-2 from 62 to 68 and an SBE-34 until the FT-101). However, there is a design oversight that all FT-101 owners should be made aware of to avoid trouble with diode D-13. (The following are excerpts from a letter dated 1/7/72 to Spectronics with a copy to Tokyo)....Set was returned to Spectronics for Receiver failure. Was informed that D13 diode in receiver input line had opened up. Two weeks ago similar failure occurred...requested replacement diode. Use FT-101 in daily mobile operation: In retrospect, suspected that failure occurred due to strong signal input when nearby or passing mobile unit. Tests (data appended) indicate passing mobile can subject D13 to destructive inverse....Drake TR4 uses a filament bulb as a receiver protective device....Strongly recommend modification of input circuit to prevent recurrence of diode problem; perhaps locating D13 directly behind a small removable cover on rear panel for easy fuse-like replacement....After ten months usage, I find the FT-101 mobile operation most enjoyable. After many trials and returns, I can now report that Crystek of Fort Meyers, Fla. , after a visit from W2DV mobile with his rig, can now supply crystals for the FT-101 that will tune on frequency with the 10 pf padder. I am now using one on 3999 LSB. Haven't received the bill yet but I'm sure its less than \$10. P.S. No reply yet to my D13 letter. Sent a second letter last week written in Japanese by a friend requesting a reply. (I wonder whether the above excerpts from Gus' letter may not be more effective than the Japanese letter. Ed)

APRIL

From W2TUK: "....My FT-101 arrived and I have only had a few contacts with it; really no time fully to evaluate the rig. However my son, WB2UZU, used it for a few days during his recess and knocked off 25 countries in a little less than 24 hours elapsed time spread over two days....Keep the Fox Tango Newsletter coming...." (Harry Pannals has been unusually busy since his election in January as President of the ARRL. On behalf of all our members, may I wish Harry the best of luck in his new responsibility. Ed.)

From W2ICA (more) After on-air discussion...."I think the main problem (with the VOX) is to provide a discharge path for the capacitor between the vox-amp and the relay fet. In addition to the 2 meg resistor (see above) a very careful hairline adjust of VR-3 (relay control) is necessary. I still believe this is not too satisfactory because it gives a very limited range for the vox delay control. (after this note, I re-studied the material on Vox Modification from ZL1RBU ---see page 2. Although not identified as such, the three pages including professionally drawn diagrams have all the earmarks of a factory product. The purpose of the modification, as stated is: "....to improve the VOX stability due to temperature variation in wide range". It would seem to me that the problem some of us note is not due to temperature changes; perhaps this modification is intended where the rig is used in the tropics. Accordingly, I will hold off on this item until I check with Tokyo, Ed.)

From W4OZF: "I'm in the process of adding 160 meters on Aux band of 101. Receiver modifications are complete and working. Plug in 7520 kc crystal in aux socket (JAY Crystals: \$3) This gives band coverage of 1500 to 2000 kc (1000 plus red dial). Add 560 pf cap to S1 B (parallels TC209, add 1300 pf cap to S1 C (unused pin on wafer) Tune in the calibrator on 1800 kc. Peak T726 (local osc adj) for max S-meter reading. Preselector should fall on about no. 1 (below 80). preselector will have to be retuned even when tuning across first 25 kc of band. Transmitter modifications more involved. Send SASE for details if interested". (Thanks, Bob, for the info and offer. Ed)

ODDS AND ENDS, as time and space permit

Looking over the material I could not include last month, I came across the letter from srulik (4Z4JT) which contained material for the vox modification circuit. It turns out to be identical with the material I got from New Zealand, but this time it came from Djibouti (in Africa) via Israel. It's a small world! (Djibouti's hot as blazes)



Should we admit owners of the FTdx560 and 570 to our group? Several have contacted me and said, after all, they were Fox-Tango too. Curiously, the same question was raised and discussed in the ZL FT-200 Club Newsletter. The consensus seemed to be that with the editorial facilities available, it would be just too much to include data for other rigs in the Yaesu line. The proposition was to make the club a YAESU club and to include all owners of this equipment, regardless of type and model. The down-under boys turned thumbs down on the idea. As far as I am concerned, so do I unless we can enlarge the staff to more than one.

Which brings up the question of money. The ZL Club charges annual dues of 75¢ (!) which covers the cost of producing, printing, and mailing their excellent monthly Newsletter. I wish they'd do it for the 101 too; I'd transfer our mailing list to them at once. Frankly, I don't know how they do it. Postage alone here would come to 96¢ per year, and theirs is photo-offset printed (not cheaply mimeographed like ours). Either someone is subsidizing their operations, or maybe 75¢ of their money buys a lot more than ours. Several members have written to suggest that they feel that they ought to share part of the cost of reproducing this Newsletter, at least. Others, have sent me more stamps than they owed. This is embarrassing, in a way, since I would rather not take more from one than I do from another. For the present, I have access to a mimeograph machine and a reasonable amount of paper without cost. Should this facility disappear, as seems likely, I could not cover the cost of commercial printing on my own. I would much prefer to carry on the way we have been going (free except for SASE) because it more or less encourages members to submit items, and helps me keep my finger on the pulse (of membership interest). However, since it is something of a nuisance, some members have been sending in as many as six sase's. So it seems to be taking on the nature of a subscription. As a guess, at least \$2 per year would be required to cover production and postal costs. Please let me have your reactions to the idea but please send no money until I can analyze the response. Overseas would have to be higher of course because of postage.

Watch out. I have built myself a plywood case with foam shock absorption for my FT 101. The purpose is to protect it when travelling in aircraft, etc. It does not fit in my briefcase despite the attractive ads. To simplify the design, I removed the front two feet and removed one section to make them equal in height to the back feet. It was tempting to use the same screws to hold the shorter feet. Don't do it. The longer screw is ok on the left side (plenty of clearance below) but on the right, the original screw will bayonet the cluster of trimmer padders and ruin the alignment if nothing worse. Use a screw no longer than necessary.

Volume 1

MAY

Number 5

Editor's Comment

During my recent visit to Florida, it was my pleasure and privilege to visit the lovely homes of two amateurs. Rob Pohorence, WB4RSM of Miami, a member of our Club, has an FT-101 which is several years old. I had had no idea that they had been on the market that long, but I was even more surprised to see how similar his set was to present models. Of course there were some differences in circuitry and physical details on the rear apron, but in most respects his set seemed to be as good as present ones. Incidentally, Rob's charming XYL: Peggy Inez, edits and produces the Twirler's Friend, a little magazine devoted to "Baton Twirling and Related Arts". From this, the Contests she organizes, and the Championships she judges, Peggy must be kept very busy with what seems to be an important and popular activity among the younger set in Florida.

Dave Levine, WB2LAX, of Hollywood, who just got the Yaesu FTdx400, FRdx400 and PL2000B Linear combination (even prettier and more versatile than the FT-101) is an old friend who I re-discovered by a chance QSO. Dave is a ship's operator and I worked him one day when he was maritime mobile someplace near Gibraltar. While discussing my QTH, one question led to another with the final discovery that we had been neighbors and friends more than twelve years ago before he bought his present home, moved south, and got his present call. What a thrill! and by the way, Dave's lovely wife Minnie (WA4RLS) received the "Outstanding XYL" award at the Hollywood Amateur Radio Club banquet recent-

ly (for a picture see page 98 April 1972 QST). Dave told me that in a way I'm "famous" in Broward County---seems like the Fox-Tango Newsletter is getting a lot of hand-to-hand circulation and favorable comment....Ah, the pleasures of the Editor!

On another matter, many members in responding to the question I raised in the last issue concerning annual dues to cover expenses including printing and postage when my present free facilities are no longer available strongly favored an annual subscription. Because certain extra expenses would be involved in setting up, it would seem that \$2.50 for the first year and \$2.00 thereafter would be the best way. If this is the route we are to follow, however, and money is involved, I would want to set up the organization in a more formal way. More on this next time. For now, please continue to send SASE's unless you have some on file with me. Also, the greater the number we serve via the subscription route, the less marginal the operation becomes (since it costs little more to print 500 than 250) so please: If you work a FT-101 owner who does not belong to our Club, pleasetell him about it. For the present, all it takes to join is a SASE.

Excerpts from Member's (and others) Correspondence.

From Yaesu Musen Co. (Tokyo) ".....The content of the FT Club Newsletter is very interest, so that we translated it into Japanese and passed it to our engineering department..... Let us express our much appreciation for your such understanding and cooperation. We are expecting the comment on it from our engineering department soon and will translate it into English to forward you..... (I sent Yaesu a copy in the hope of getting answers to technical and other questions raised by members, including low-cost QSL's which many expressed interest in. As soon as I get the comments from Yaesu I will publish them. Ed.)

From "?????" "..... I changed the crystal for WWV calibration band to one 500 KHz lower. I now tune 9500 to 10,000 KHz. The Reason? There is a beautiful foreign Broadcast Band there! "(This suggestion was written on the outside of an envelope without identification. The nice part of the idea is that if adopted, you can still get WWV. Ed.)

From W2BNJ (W6IL) "The FT-101 has such a beautifully accurate and stable tuner that it seems a shame that the dial index triangle is so far from the dial as to make it impossible to read the dial accurately because of parallax. I pasted a fine line below the triangle connecting the lower apex with the edge of the dial. I now can read the frequency to an estimated 100 Hz...." (I tried this idea using a little piece of my QSL card which contained a fine printed line. It works very well and is a great help. I like the idea so much that I'm thinking of making up a little vernier so that the dial can be read accurately to 100 Hz. Details next month. Ed.)

From WB4RSK: ".....My FT-101 is a real oldie and I need a schematic; I will gladly pay all postage and return materials special delivery. My set has a three-circuit type phone jack and no provisions for a fan. The schematic should show only one pole of the antenna relay wired with diodes back to front connected on the antenna to ground. The original R3 resistor was 300 ohms (or thereabouts?). Can anyone help?..." (Rob suggested replacing the DTG-110B transistors with much higher-rated 2N4398's. They are readily available at most electronic wholesalers for \$11.25. For details, refer back to last month's Newsletter. Ed.)

From W2DQE: ".....WA2YSN had his FT-101 stolen (see QST, 4/72/ p.39). Serial #SN107036. Let members know; perhaps one of them will come across it. Am writing to find how he had his mounted in car; mine has a lock-chain from bike strapped around leather handle..... Was he a Fox-Tango member?....." (No, but I'll send him a copy of this and invite him to join. Hope he gets his set back. Not so sure bike chain would stop a determined thief. Best protection; don't leave it where it can be taken but if you must, for a brief time, at least conceal it under a dark cloth. Reduce temptation. And lock the car! Ed.)

From VE6AFD: ".....My set has a problem that is hard to fathom: below 30° F the receiver section refuses to work. The S-meter reads full scale and there is no signal or noise. Also when motor (in car) is idling, the receiver sensitivity seems to drop off as if less than 11 volts is getting to it although voltage measures 12.5 volts with motor shut off...." (As a guess, it would seem that the first trouble might be in PB-1080A since faulty AGC might have the effect of cutting off the IF amplifier, or a faulty IF might give an erroneous S-meter reading. But why should it be temperature sensitive? Faulty transistor or FET? Anyone have any other suggestions? About low-voltage effect; are leads connected directly to battery as suggested? Ed.)

From WA2AOQ: My RF GAIN control seems very non-linear; I tested it as follows:
I tuned to 14.2MHz with 100 KHz calibrator on and obtained S9 meter indication (as I should) with RF GAIN full on (at 10). At setting 9, meter read S8, at 8 meter showed S7, at any control setting less than 8, meter dropped to S0. I checked control itself with ohmmeter; resistance change seems linear. Is this normal? How does yours compare with mine? (The action of the RF GAIN control, not its resistance. By the way, it is a good idea to check S-meter reading as above from time to time so you can tell if receiver sensitivity is changing. Also, on another topic, since quite a number asked for details of carrying case it was better to publish it instead of making individual Xerox copies. See last page. Ed.)

From YV5ATX: "...Here's a problem that really bugged me for a couple of months: The dial light would dim and receiver sensitivity would drop whenever I switched off the tube filaments with the front panel heater switch. Measurements indicated that the 13.5 volts dropped to 10 volts. All this disappeared when Heater rocker switch was ON. The Cause: a loose ground connection. Below the power transformer on the left skirt of the chassis (as viewed from the front) there is a ground lug secured to the chassis with a phillips-head screw. The lug grounds windings of transformer secondary. A twist of the wrist on the screwdriver fixed it...." (you make it sound easy, Vic. This will probably save another from a lot of grief. Thought you were going to say the Rocker Switch was defective. Some have complained that theirs had become intermittent. Hint: they can be fixed easily. Drill out the two rivets; bend the beryllium copper strip to restore contact pressure. Heat sometimes causes strip to lose its temper. Ed)

From VS6EG: "..... Am enjoying Newsletters....would be very good idea to cooperate with Yaesu Musen in Tokyo, do you send them Newsletter? Manufacturer is probably improving set constantly, if you could publish data from factory it would be most helpful....." (I am sending them Newsletters ---see page 1. It always has been my hope that we could get direct cooperation and it looks as if we may---soon. Ed)

From 4Z4JT: "...Last week I added a red pilot lamp to the main dial just opposite the existing one. It is switched on by the rotary switch for the Ext. VFO so as to light up whenever I am using the Ext. VFO. I made a little printed circuit with two transistor and three resistors to do the switching job since I did not want to draw current from the regulated 6-volt source. Instead the 6v actuates the circuit so lamp current is drawn from the 12v supply. The little PC board plugs into spare crystal holder on top of main VFO in rig. Details to anyone who writes.... Am still having very bad cross-mod problems here...." (Suggest those writing to Srulik enclose IRC. Cross mod problem sounds tough. Working on it. May have some information presently. Ed.)

From ZS1JD: "...Vox mod in April issue very interesting---hve not tried it yet---too busy mobiling with FT-101 around Africa. About W2DQE query for sched, how about 1700 GMT for General Net of Fox-Tango Club. Would be only too willing to organize net if there is enough interest. 20 meters has too much QRM and is not reliable. How about 21.440?...." (1700Z is 2pm NYC time, a little early for non-retirees and not so good on week-ends, George. However, let's see what others want) (P.S. My Vox is fine ever since I made mod suggested by WB2HBD. Ed.)

From W2AHI: "...I just wonder why they designed the circuitry so that the fan runs even when filaments are turned off and only receiver is being used...." (Simplicity, I guess, Justin. W6JI sent me the circuit to control blower with filament switch. Details next month. Ed.)

STOP PRESS --- Comments from Manufacturer --- Just Received

As indicated above, I have been expecting some reaction to the Newsletters I sent to Tokyo. To save space, instead of re-stating the original problem it will be referred to by the call letters of the amateur who submitted it. Refer to past issues, where needed. "WE" means factory, below.

W2DQE: We will develop new knob for easy and safe tuning of VFO.

W2MAT: We have had considerable trouble with STK-401 IC but IC manufacturer could not find cause until recently; self-oscillation. They suggested connection of 1000 pf capacitor between pins 3 and 5 of IC. It was been surprisingly effective in clearing the trouble.

YV5ATX: Cross-mod problems are common in solid-state front-end rigs. Sets with serial numbers beginning with 1 or 2 have been modified for FET front end. Those with serial numbers starting with 5 need modification; and modification kits were mailed to all who have this serial

number free of charge. All rigs imported by our US agent (Spectronics) have been modified in our factory. Our engineers are still working hard to improve front-end overloading and you will be informed of possible further modification as soon as it is available. (news of this will be published in the Newsletter. of course. Ed.)

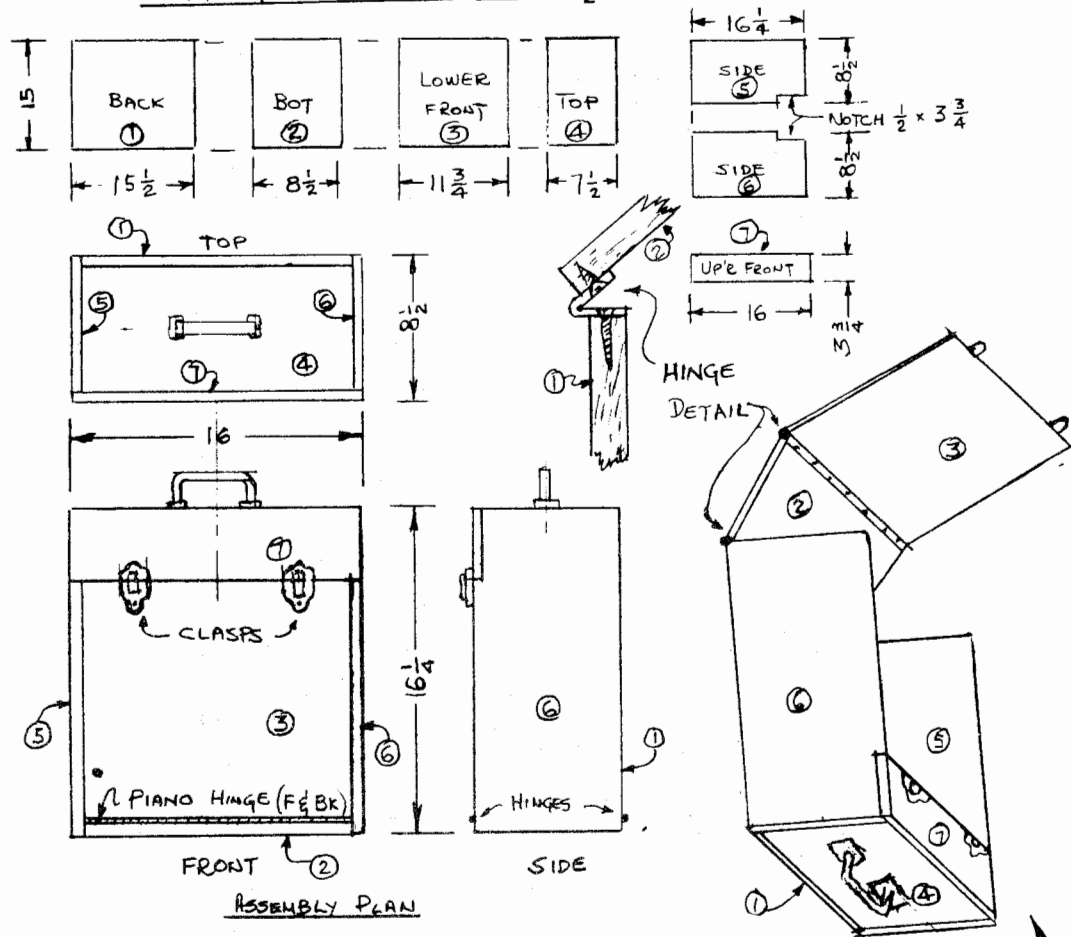
W2HBD: The charge stored in C20 and C23 will be discharged through internal resistance of the diodes; however, adding the resistors will stabilize the VOX performance. However, if you use our Vox modification as per enclosed diagrams, the trouble will be completely eliminated without adding the resistors for discharge. (See also comments from ZL1BBU, W2ICA, and 4Z4JT. The changes, all on PB-1081C, are rather simple: they involve changing two resistor, one pot, and adding a thermistor. A modification kit apparently is available to those actually having the trouble. Let me know if you need it and I'll see if I can expedite. Ed.)

WB4RSK: Let us have the serial number of his rig; he may need cross-mod
K8LIB: modification. Also the serial number of Ed's rig. The earlier model with cascoded front end has very narrow range. Please check and advise. (Let me know, gentlemen. Ed.)

WB2IBN: 28 MHz internal interference is caused by 9th harmonics of carrier oscillator which falls into 10 meter bands. This spurious response will be reduced by adjusting trap coil L22 located near pin 5 of MJ(3) Jack under the internal speaker. (To reduce spurious emission on CW be sure to keep IC under 320ma for 10 meters and 330 for all other bands. Ed.)

W2ICA: Thanks for suggestions. In our next production lot we will use a filament bulb replaceable from outside back panel. Haven't received Japanese letter yet but have answered English one. Re VOX problem, try the modification: we have received many good reports on it. (sorry but no more room--- continued next month---also many more ideas from members. 73)

CUTTING PLAN - ALL 7 PIECES $\frac{1}{2}$ " PLYWOOD



CARRYING CASE for YAESU FT-101 TRANSCEIVER

Designed by: Milton Lowens WA2AOQ

April 15, 1972

LOADING POSITION
(PARTIALLY OPEN)

This inexpensive case is intended to provide security and shock resistance during transportation in aircraft, automobile trunks, etc. The seven pieces of $\frac{1}{2}$ plywood required can easily be cut to size with a table saw or radial arm saw. All non-movable sides should be securely glued and held together with finishing nails. Hide glue is recommended. As further re-inforcement, $\frac{1}{2}$ x $\frac{1}{2}$ strips should be nailed and glued at all inside corners. These should also be used to provide support for the swing-away bottom and front sections. Hardware: piano hinges, loop-type clasps, and carrying handle; are all readily available in any large hardware store.

The width of the case provides ample clearance for the fan when mounted on the rear apron and the crank arm on the tuning knob. Shock absorption is provided by cementing firm polyurethane foam cushioning to the inside of the case. Use sheeting one inch thick (it is available in 18" widths from Sears or upholstery shops). Apply the cushioning to the inside of sides 1, 2, 3, and 4 only. The FT-101 is inserted in the case by lowering it, handle up, into the inverted case with the hinged parts swung out of the way. The two longer front legs of the FT-101 should be removed or the shorter sections (with shorter screws) substituted. The top of the FT-101 should be nearest the carrying case clasps. When the wrap-around sides are swung back to their closed positions, it will be found that pressure will be needed to compress the cushioning. When the clasps are set the FT-101 will be securely set, friction will prevent it from moving sideways in the closed case.

Volume 1

JUNE

Number 6

Hello, again! Another month --- how time flies. I continue to get a great deal of pleasure from the letters I am receiving from all over the world. And to think that I was worried about what I would use to fill the Newsletter after a few months! The stream of good suggestions and comments seem endless; I can never use them all in any one issue. Accordingly, please be patient if I have not printed yours yet.

I have received quite a bit of comment regarding the possibility of a modest subscription to cover production and mailing costs once my "free" printing facilities become unavailable. Most seem willing to go along with \$2 per year or so; but not all. Quite a number find the present system of sending SASEs to be a nuisance and a needless expense. After all, to send one SASE per month costs almost \$2 for postage alone. Accordingly I'd like to try a new system. You will find six gummed labels enclosed. I plan to use them as mailing stickers so please address each label to yourself (a rubber stamp or a smaller sticker pasted on each label will be fine). Return the self-addressed labels to me with a stamp for each label. Foreign amateurs should send one IRC per label for surface mail; $1\frac{1}{2}$ for airmail. The envelopes of those who have sent in a number in advance will be used before their labels; I would prefer not to commit myself more than six months in the future so if you have sent many envelopes, do not return the labels. A number on each label will indicate the labels remaining and new labels will be sent you each six months for addressing. I will continue to absorb all costs for now. I hope you will find this arrangement satisfactory.

Now, how about doubling our membership? The price is right. If you work a potential member tell him about the club and ask him to send me a SASE. I will send him the latest issue and a set of labels to use if he joins up.

Spurious Radiation

A few members have reported that CW operation (on the lower part of the band) sometimes is heard in the upper part of the band. The factory advises that this is caused when the mixer stages are over-driven; as when the rig is operated in excess of its ratings. The rating of the FT-101 on CW is 180 watts so the IC (cathode current of final) should be about 300 mA maximum. Actually about 10% more is permissible except on 10 meters where the maximum should be kept under 320 mA. I suggest that you add the following to the first paragraph under CW OPERATION (page 11 of Instruction Manual). However, in setting the "CARRIER" control, set the meter switch to IC and be sure that the current with key down does not exceed 320 mA on 10 meters, or 330 mA on all other bands. Since the "CARRIER" control is inoperative in the SSB mode of operation, overdriving is avoided by being sure that ALC indications on the meter remain within the green sector (the pointer swings down on peaks).

CORRESPONDENCE

From W3KT: "...The VOX adjustment seems very touchy, but since I seldom use VOX, it does not bother me much. One thing that is annoying is that it is almost impossible to operate CW with the mike connected

as any noise triggers the vox. Is this normal? Also understand that there is a 160-meter modification kit....has anyone tried it?Also heard a digital readout unit is available which works with FT-101. Don't want to put you to too much bother. Trouble is, information is hard to come by..." (no bother, Jesse, that's what the Newsletter is for. If I don't know the answers --- and I'm not too well informed --- someone else usually does and sends them along. Even the factory has been cooperating but international correspondence is slow and there is a language barrier to overcome. Re VOX, see below. Also, on CW, be sure your mike PTT switch is off or turn down the MIC GAIN control. If this doesn't work you must have trouble. Re 160 meter modification, see below also. Anyone know about digital readout? By the way, W3KT (Jesse Bieberman) who has just joined up is Vice Director of the ARRL's Atlantic Division. Also members are Harry Dannals (w2TUK), President of the ARRL; and Noel Eaton (VE3CJ), Director of ARRL's Canadian Division. How about a plug for the FOX-TANGO CLUB in QST, gentlemen? Ed.)

From G3NCK: "...was interested to hear about (possible) modifications to FT-101 to improve its cross-modulation performance....Doc in Long Island (WA2MDR?) told me about Newsletter....Would be most pleased to hear about any modifications that have been done to the beast to improve its performance. I would be happy to collect similar information from users in the U.K. and exchange it with you for the benefit of everyone...." (Thanks a lot for the offer, Dave. That's the whole idea behind our Club. And by the way, looking over our roster we now have members in the following countries: South Africa, Israel, Rhodesia, Venezuela, West Indies, Hong Kong, Japan, Mexico, Germany, Japan, Sweden, New Zealand, England, and of course, Canada and the U.S. Maybe I'll make "FT-DXCC" some day, Hi! Ed.)

From WA8ZQI: "...Suggestions: (1) Place a 10 ohm 1 watt resistor across the phone jack so that it is shorted normally and in the circuit when the phone plug is inserted. This should improve the design by making it nearly ham-proof (see WA4SCA below, Ed.). (2) Careful adjustment of VR-3, vox relay control, will (or should) improve vox operation. Mine used to hang up...but has operated for a year now excellently since I adjusted VR-3 (See page 26 of Instruction Manual. Ed.) (3) For the mobilers (or Mobileers as they call them in New Zealand, Ed.) I use RG-8/U for the Power cable. It works great and cuts on engine noise. By the way, the solder lugs are fastened directly to the battery posts by drilling a hole and using sheet-metal screws and lock washers. A fuse is in the line, of course. My Problems: (1) Some slight drift of the VFO. When first turned on it drifts for about 45 minutes, a change of about 700 Hertz. After 30 minutes, though, the drift is just within specifications. Any suggestions for correcting the drift and making it solid? (2) Front end overload. I experience some when the sigs are very strong. The RF ATT and RF Gain help but it is tough going. I also get some spurious signals when I use the noise blanker. (My experience: no perceptible drift ---VFO rock solid; one of nicest feature of the rig. Anyone have answer about Vernon's drift? I have same overload problem. Still building selective pre-amp (Sept '71 QST) as experiment; will report. Factory working on problem. Also note noise blanker spurious--- only use it when absolutely necessary --- not often in fixed station operation ---Ed). Comments: Have operated FT-101 for a year now and I really like it. For comparison I had a Drake TR4/L-4B for one year before the FT; and for three weeks I had a Collins KWM-2 on the desk with the FT. After much comparison I think the Yaesu is superior in most respects. The only exceptions are my problems (above). I have had comments from friends that all FT's have a distinctive quality that makes them easily recognizable; is this true? Is it bad? Most reports, about 99%, say it is great; but one; repeat--- one ham said it was rough. Oh well!! '73's". (Don't believe him, Vernon---I say it's great. And many thanks for your fine letter. Ed.)

From WA4sCA: "...My calibrator was off-frequency. Found trouble by tried and true method: substitution. My xtal was defective. Spectronics is making good on it....I bought an inexpensive set of headphones to use in my rather noisy compact car. The phones are 6 ohms and work well enough with HV supply off, but pick up loud hum, unaffected by volume control, from power supply oscillator circuit....I have found that installing 10 ohm resistor across jack and 100 ohms in series with phones reduces hum greatly while still providing correct impedance. These two resistors and wiring diagram are provided in late model FT-101's. (The above modification will also protect audio output transistors from accidental open-circuit operation (if phones fail) or wrong impedance (such as use of xtal phones) which could destroy them. Ed.)

From ZL2AMA: "Drifting. Remove large tuning knob. Underneath same there should be a large felt washer. In two instances on FT-101's this has been missing. Cure: Move dining room table to one side, and cut out discs of felt to make up a thickness of 3/8 x 1 1/8" diameter with hole for shaft in center. Replace and tighten two grub screws, after pressing knob home, fairly firm. P.S. Replace table legs over holes in carpet. C.P. Millman." (Perhaps I don't quite get this because of language barrier. Can "drifting" mean "slipping"; "grub screws" mean "set-screws"? Not a bad name

for them at that. I removed my knob and found felt washers all right but they were sandwiched between two metal washers secured by two screws (grubs?). Purpose is to permit dial skirt to slip when calibrating. This item was taken from the April Newsletter of the ZL FT-200 Club which was sent us through the courtesy of ZL1BBU, John Medley. By the way, anyone owning a FT-200 (Tempo I) would do well to join the ZL Club. Membership is open to all. And if you notice this item, John, the same is true of FT-101 owners down under, so far as our club is concerned. Feel free to use any of our material, if you wish. Ed

From VP2SAM/mm2: "...Was delighted to hear of the FT-101 owners' Club...

have one aboard my 48' yacht ENCANTADA...have Drake line for back-up. I have an Article in YACHTING magazine on Ham Radio for yachts, citing the FT-101. With demise of the SBE-34, there is hardly a good rig with built-in power supply except the FT-101....it's great. Some comments:

(1) The Accessory plug on mine and two others were found to lack solder on the juniper wire in heater current path of PA tubes. This caused erratic loading and QSB. Better check to be sure. (2) Yaesu sent me a bulletin about putting a 1000 pf between pins 3 and 5 of Audio IC...have no idea of its purpose as guts of IC are not shown schematically...(See Yaesu's comment re W2MAT; p 3, May issue. Ed.) (3) About four 101's in the Caribbean have had trouble with the IC which Yaesu replaced with another. The IC is marked STK-401. The replacement (number unknown) seems to improve gain...(See W2MAT's comment; p 1, April issue. Ed.) (4) In mobile operation, the unit is very critical if applied (battery) voltage is low. Sensitivity falls off, loading falls off, and below 11 v, relays may not pick up. (5) Find noise cancelling mike (provided) not to be best. Improvement with good xtal mike in audio and drive. (I use and like the Turner "Plus 3" with built-in amp and compressor; see p 195 Lafayette catalogue #720 for info. For mike plug, see p. 258--- some members report difficulty in purchasing. Ed.) (6) Many reported cases of erratic ALC meter display, especially on 15m.---We have many maritime mobiles down here with 101s; such as VP2SAS (Doc Porter on Christiana) (For a fine story on Doc's fine work in providing needed medical services in the islands and a front cover picture of his rugged 45-foot double-ended diesel-powered Colin-Archer ketch in which he and his family live and cruise the Grenadines, beg or borrow a copy of Feb. 1972 Yachting. Ed.)...VP2SBJ (Henry Finke on STARDUST); VP2SAM (that's me---Doug Terman); W6OHN/mm2 (Red on BARCO MANNUANA...also holds VP2VC/mm2); VQ9XX/mm2, that's Jack on INTREPID DRAGON....More coming in all the time...at least ten 101's on order in Grenada for both fixed and mobile station use...hope to set up depot for circuit boards, etc. in Caribbean. Would appreciate answers to my special problems: (a) My basic power supply is 24vdc. I "split" the batteries to obtain 12vdc but this causes problems. Any ideas for converting the 12vdc input to 24vdc???? (b) I would like to use xtal which falls outside the 8.7 to 9.2 MHz tolerance. (see p 24 of Instruction Book. Ed.) Actual frequency would be about 9.7. Have installed it and can receive adequately but loads up with very little output. Ideas, anyone?....For anyone interested, most of us operate on 7.205 MHz for- 3kHz every morning at 1115GMT for about an hour, and I can be contacted generally through the Chamarru net which meets daily on 21.335 at 1700GMT (The CHAMARRU is a yacht sailing around the world. As this is written it recently entered Mexican waters at Puerto Angel on the Pacific coast. Ed.) (Since I love boating; own an old ACF cabin cruiser 35 feet long, and my daughter and son-in-law just bought a lovely Pearson Triton; the TERRAPIN, a 29-foot fiberglass sloop; Doug's letter was most interesting and welcome. Ed.)

More from W6IL (W2BNJ): Carrying handle did not allow enough room for hand; only tips of fingers and a little more. Solution:

Remove handle, elongate slit in metal reinforcement band (inside plastic strap) about 1/8" towards ends allowing handle to slide inwards more. To get at handle requires removing outside case. Have taken my FT-101 apart and have had it in about 75 separate pieces. It works FB after putting it all back together again. (Lucky! Ed.) It comes apart very easily. (Removing the case is simple but 75 pieces!!! Not counting screws, I assume. For this I suggest you wait at least until you have Ralph's experience and like him, join the QCWA. Ed.)----- CLARIFIER was too coarse...not possible to reset it precisely to zero offset; was too critical to use for precise tuning or to follow a phone-patch signal when YL was on, after listening to OM. Solution: Leave present clarifier pot where it is but substitute electrically a 10-turn Bourns Knobpot mounted in hole left vacant after removing and stowing in plastic bag the existing front-panel phone jack which remains inside rig. Only the switch of present Clarifier is used to actuate the Bourns pot. Shielded wires are used to run from where the wires were at original pot to 10-turn pot; a new series resistor selected to center the new pot at 8.00 is added and after adjusting series pot 1K with the (10K) 10-turn pot at 8.00 it is possible to get for- 5kHz or more with beautiful vernier action and precise re-settability. Knob locking device on Bourns pot was discarded; Knobpots are expensive but sure worth it in this case; since one can also set CW offset precisely....When using phone patch into J4, found the RF was messing things up. To cure, connect 1 mA choke in series right at J4. Front

Mike plug already has RF choke installed, but J4 only has bypass Capacitor....
(Ralph has moved to Torremolinos on the lovely Costa del Sol in Spain. Spent Xmas there with XMI. few years ago. Had a great time. Tnx for card. Ed.)

160 meters with the FT-101. A Status Report. Quite a number of our members have written to inquire about the possibility of using the AUX position for 160 meter use. The Yaesu factory picked up this query in a copy of the Newsletter I sent them and returned a sheet entitled: "160M Modification for FT-101". It consists of 11 steps involving mostly addition of capacitors, replacement of a tank coil, and minor circuit changes. This is followed by 4 steps of Alignment instructions. Altogether, it does not seem like much of a job for anyone who has the skill needed to assemble a kit. However, The sheet refers to two Figures which were not sent. Also there is a written notation at the bottom: "This is a translation of summary of our factory's instruction." It would seem to me that a fuller set of instructions might be available. Accordingly, I wrote to Tokyo and asked for the figures (at least) and also if the parts needed might be available as a kit (and how it might be purchased). So far, no answer. WA2MDR (Doc) very kindly sent me a reprint from Feb. 1972 RADIO COMMUNICATION (published in England) of an article written by B.S. Sutherland, G3IES, with a less-than-enthusiastic comment by Lowe Electronics (a major Yaesu Musen UK distributor). However, most significant is the Editor's note at the end of the article: "...Lowe Electronics...have been to Japan and have discussed the 160m modifications with Yaesu Musen, resulting in a factory modification kit which will shortly be available. The main improvement is that the existing power amplifier coil is replaced." We're waiting.....

During the six months since our Club was organized, I have received literally hundreds of letters. From these, I would say that two of the most common complaints referred to VOX vagaries, and Cross-, inter-modulation, and image problems related to the front end. There seems to be motion on both these complaints; I summarize.....

VOX Stabilization. A Status Report. My own Vox works perfectly ever since I followed WB2HBD's (Bill) suggestion and shunted diodes D1 and D3 on PB-1081 with 2-meg resistors (see p.2 April issue) and added the following underlined procedure to the sentence on page 26 of The Instruction Manual: "...Slowly rotate the RELAY control (VR3) counterclockwise until the relay activates, then return the control carefully clockwise until the relay releases" and continue a couple of degrees beyond the release point. However, Yaesu, while agreeing that adding the shunting resistors would help to stabilize the VOX, felt that a simple modification kit they had developed might be more effective by providing greater adjustment range. I asked for the kit so I could try it. No reply to date. In an effort to obtain information for our readers, I wrote SPECTRONICS about the kit. They replied that even after the kit was used, they still received occasional complaints. Accordingly, after investigation, they concluded that the vox adjustment procedure in the instruction manual was incomplete. Accordingly a supplement was written (see below)---they state that when procedure is followed, no modification is needed. (However WB2HBD states it that it was; hence shunted diodes). INFORMATION BULLETIN from SPECTRONICS (almost verbatim):

Vox Adjustment procedure: (see p. 26 of instruction manual). (1) Set operate switch to VOX. (2) Turn AF, RF, and MIC gain controls fully CCW. (3) Turn antitrip control fully CCW. (4) Set VOX delay to mid-position. (5) Turn VOX control (VR1) fully CCW. (6) Slowly turn relay control (VR3) CCW until VOX Relay activates. (7) Return control slowly CW until relay just releases. (8) Speak into mike normally; adjust VOX control (VR1) until VOX relay just closes. (Use no more VOX than needed.) If VOX relay drops out between words, increase the delay (CCW). If VOX relay momentarily drops out during speech, increase the setting of the VOX control slightly (CW). If relay does not drop out as fast as desired, turn the delay control slightly CW. (9) Turn RF Gain to position 10. (10) Tune in signal and adjust AF gain control to comfortable listening level. (11) Set antitrip control (VR5) to the minimum point that will prevent speaker output from tripping VOX relay. It may be necessary to increase VOX gain slightly after antitrip gain is set, depending on distance between mike and speaker. (12) Adjust delay control (VR2) for suitable release time. (13) If after going through this procedure, the VOX relay tends to hang in after a long transmission, rotate relay control about 1 degree clockwise. (14) Repeat step 12 until relay releases when transmission is completed. (In above CW means clockwise; CCW, counter-clockwise.)

Cross-Modulation Problem. A Status report. Something definitely seems to be cooking. VK5XV writes: "...amazing progress has been made by VK5Px...(through)...use of an IC acting as double balanced mixer instead of 2nd receive mixer (FET 3SK39)..." VS6EG suggests Replacement of MOSFET 3SK39Q's in 1st RF and Rec 2nd Mixer with Motorola MFE 3007 or RCA 3N140..Lead locations identical with 3SK39Q's. K2CPE also suggests replacement of 3SK39's. Wish I had more room. Full details next issue. Best 73 & 88. Milt.

JUNE

4
3
4
Milt
CG - FOX TANGO DAILY!
FOR CG - FOX TANGO DAILY!
TO 0015
FROM 0000
21,440
LET'S MONITOR

"Summer time, when the livin's easy..." as the song says; and I cannot get over the habit of more than 40 years---of taking a vacation during the hot months. Even though I have not "punched the clock" since February 1, as an old schoolman I still feel I should have July and August "off". So, this will be the last issue until September. I'll spend my time hamming, cruising Long Island Sound in my old LEO II, travelling, and just enjoying the good life. Although the Fox-Tango Net never really worked out, I'll keep trying. Monitor 21.440 / or - .005 once in a while and try a CQ Fox-Tango. And have a wonderful summer.

The reaction to the label system (as compared with the former SASEs) has been most favorable, and in some ways surprising. A considerable number of members returned not only labels and stamps but also enclosed dollar bills to cover such things, they said, as the cost of labels, ink, and that rare commodity "elbow grease". Also letters such as this one from John Lucas (K2CPE):

It's always a pleasure to receive the Newsletter. I think the simplest solution to your costs was your original suggestion of \$2 annual dues, which I'm sure should find no serious objection by any interested FT-101er. It would be even simpler if payments were made every six months, simply by slipping a dollar bill in an envelope every Jan 1st and July 1st---with a simple reminder of payment via the bottom line of the Newsletter. The costs are simply too great, not to charge. 73. John.

OK. So I'll defer to the wishes of the majority. Let's forget the cost of the first 6 issues. But for the future we'll make it a voluntary contribution. Send me a dollar for the next set of issues (until January) if you wish. If you object, don't send it but I will send the Newsletter anyway as long as you demonstrate interest in it by supplying me with self-addressed labels and postage. New members who want back issues should send 10¢ for each plus postage to cover costs of reprinting or xeroxing when necessary. And, of course, do not send any more money if you already have done so.

Correspondence

Milt

From Yaesu Musen Co (Tokyo) replying to points raised in May 1972 issue:

W2BNJ suggested improving main dial readout by adding fine line below index triangle to reduce reading errors due to parallax. Yaesu: Our specification shows 1KHz readout, so that the present style may be enough to read 1 KHz, we thought. (Present index does meet specs but idea was to improve index to read to 0.1 KHz. Seems as if it could be done easily and at little extra cost, if any, in future production. Ed.)

WB4RSK had suggested changing the DTG-110B transistors with much higher rated Motorola 2N4398's. Yaesu: At the time we designed the FT-101, DTG-110B was only one available at reasonable cost and as a matter of fact, there had not been much trouble with the early DTG-110B. However, we have heard of some trouble with recent production, so we will select a new one in future. (John Medley, ZL1BBU, wrote me recently and asked me to get him two 2N4398's which are scarce in New Zealand. John points out that DTG-110B's are also used in DC power supply of FT-200 (Tempo I) and are vulnerable. Not too easy to find 2N4398's in NYC either. Cost: about \$7.50 each, almost same as Spectronics charges for DTG-110B's. On same subject, from John Lucas' letter: "...Yaesu in Yokohama has definitely advised me (when in Japan) that it would be wise to replace the DC power transistors, DTG-110B's, with higher current and power capabilities. DELCO transistors (no number specified) made in USA are exact replacement for DTG's but higher ratings. DTG failure most common source of FT-101 trouble when operated 12V mobile..." Those thinking of making change should check Rob Pohorence's (WB4RSK) original suggestion in the April Newsletter. Ed.) *Later word: Delco DTG-110A's, widely available at about \$2.50 each, are exact (+ better) replacements for DTG-110B's than original.*

VE6AFD asked for help for his ailing receiver which "froze up" below 30° F; with S meter at full scale and no signal or noise. Yaesu: Please send us IF modules, as we will replace it and will check defective one in Temperature Chamber. New modules will be available free of charge through our agent from whom the rig was purchased. (Re Yaesu service, another quotation from John Lucas' long and very interesting letter seems appropriate at this point: "...The one Yaesu dealer (in Japan) is the manufacturer, and the service that Yaesu provides is superb. There is no cost too great for them to bear to satisfy a customer....I received an unexpected visitor from Yaesu, last time I was in Yokohama, who explained he had found out that I owned an FTdx560 and wanted my comments on it; also he wanted to check it over and tune it up for peak performance --- no charge. I've got to admit, this kind

of service is unprecedented in the USA. Also, preferred treatment for Americans in Yokohama includes, if you have any troubles with your rig while in Japan, Yaesu will despatch a man with a car to pick it up and repair it ...and I've yet to pay any charges. I don't know how long they can keep up this kind of service, but they are certainly in the process of building immense good-will...." Now, if only all the agents were like that!!! Ed.)

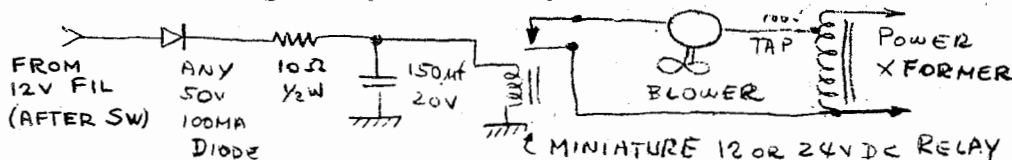
WA2AOQ wondered about the non-linear action of his RF Gain control. Was this nonlinearity normal? Yaesu: The trouble may be a defective Q2 or Q3 transistor on PB-1080B. Please ask Spectronics for replacement. (will do! Ed.)

YV5ATX described the troubles resulting from a loose ground lug on the chassis. The idea was to help others diagnose similar troubles since V. Sandri had already found the cause. In sending the Newsletter to Yaesu I asked if using a punch-out ground lug might not eliminate problem in future production. Yaesu: We are sorry about this trouble. We have tried to change earth terminal with punch-out lug; however chassis (transformer cover) is very thick to avoid hum modulation and this thick chassis sometimes can result in poor soldering.

VS6EG had suggested that if we could publish change notices from the factory members could keep their rigs up to date. Yaesu: Customers' cooperation is always appreciated as it has been our policy to build the rig customers really want to have. Nevertheless, we are afraid that some customers may damage the rig if they undertake even the slightest modification. (Yaesu's reluctance to encourage indiscriminate modifications to rather sophisticated printed circuit boards, especially by hams who may not be solid state experts, is understandable. The best policy: if you're not sure, leave it alone. However, as warranties run out, there is a strong temptation to at least try to do simpler repairs oneself. Ed.)

424JT described how he had added a red pilot light to main dial to indicate that an external VFO was in operation (by means of an extra PC board). Yaesu: Good idea, but from a production point of view, additional complexities add to costs and possibilities of trouble. (Besides, is this additional convenience worth the effort? Ed.)

W2AHI asked why circuitry was so designed that blower fan runs even when filaments are turned off. Yaesu: Same as above but main reason is that FT-101 was first released without the idea of installing the fan. Hi. (Refreshing candour. However, Ralph Cabanillas, W6IL/W2BNJ submitted a circuit to achieve this some time ago. I promised to print it when I had the means. Now! Ed.)



Relay contact is closed as long as filament is energized; either 12 or 24v works.

To Spectronics: A number of members of the FOX-TANGO Club have written me to say that they are concerned because they have been unable to purchase repair parts from you since their sets were purchased in Japan or elsewhere but not from you. What is your policy in the this matter? ...I will publish your reply verbatim...ANSWER: "Spectronics first and foremost duty is responsibility to its customer. We maintain a complete parts stock to service the equipment both during and after our one year warranty period. The quantity of spare parts in inventory is determined by the number of units sold by Spectronics. In some cases this factor has limited our ability to supply spare parts immediately to owners of equipment purchased through an unauthorized dealer in the U.S. or a foreign dealer. However, in each case the customer is informed that Spectronics will order the part, or if the customer wishes, he may order the part directly from the factory."

WA0WWI asks: Why is my IC idling current only 20 mA when mobile? (Probably wrong bias adjustment, Fred. See page 27 of the Instruction Manual. Ed.)

ZZLHE (Art Law) writes: "I am interested to hear about placing the FT-101 on 160 meters by means of the Aux Band if possible...I have heard a lot about the FOX-TANGO Club and its Newsletter from the VK's recently. (There was quite a story on this last month. Since then another member has written me to say that the U.K. agent of Yaesu is advertising their 101's with 160m band installed. I wrote to Tokyo about it. Their answer follows. Ed.) Yaesu writes: "Regarding 160 meter modification, our U.K. agents made the modification by themselves, and at the present time the kit is not yet available until we finish all tests on it including spurious radiation and distortion products. On the other hand we have charts to modify the FT-101 to the frequencies other than amateur bands; we will forward these to you under separate cover. All kits will be available through our U.S. agents (and others, I assume. Ed) because of otherwise relatively high postal costs."

* per W3KT-Abs in RSGB's "Radio Communications" MAGAZINE.

AUGUST

JULY

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K4ETW (Mel Brill) "...Regarding front-end overload and cross-modulation, an inspection of the schematic shows that the receiver RF amplifier is an FET, as is the receiver second mixer, but the first mixer is a bipolar transistor. It is well known that in a solid state receiver, all the devices up to the high selectivity portion of the circuit (the xtal filter in the 101) should be FET's. I cannot understand why the designer used a bipolar transistor in the first mixer....I like WLYKP/4's suggestion of a more complete manual or book for the FT-101 but I don't suppose anything will come of it..." (Don't be a pessimist, Mel. I'll ask Yaesu. Ed.)

BREAK-THROUGH!?!?.....

It has always been my opinion that when a large number of amateurs are challenged to find the solution to a common problem, someone usually succeeds. At the end of last month, just as I was finishing the Newsletter and had no more room, I received three very interesting and important letters relating to solution of the problem raised by K4ETW (and many others before him). If no other benefit were derived from the Newsletter and my efforts; the solution of this problem alone would make them worthwhile. Here are the pertinent parts of the letters. Ed.

K2CPE (John Lucas) "...It seems that one of the major defects in the front end of the FT-101 is the poor selectivity, not by reason of circuitry design, but mainly by Yaesu's choice of transistors. The problem of cross-modulation (front end overload, where strong nearby signals are heard all over the dial), and image response (strong broadcast stations such as VOA appear at various receiver dial settings, etc) can be improved and corrected as follows:

In RF Amplifier Stage: Remove 3SK39; replace with improved FET SFC-4892*
 In Receiver 2nd Mixer Stage: Same--replace 3SK39 with SFC-4892
 In IF Stage: Remove CA-3053 and replace with RCA-3028-B (#2.47)*

No other adjustments necessary. These transistors have considerably improved frequency response over existing Yaesu transistors and enhance front end selectivity. However, if another guy is running a KW about 50 feet away from you, nothing short of a sledge-hammer judiciously applied will cure that kind of interference...."

VS6EG (Moshe Mor) "As you well know, many users of FT-101 are faced with the problem of cross modulation. The following is proposed for overcoming cross-modulation especially where strong signals are involved:

1. Add a 60 pf trimmer in series with receiver antenna line between top contact of relay RL2 and shielded wire going to diode DL3 and CL22. (Before making actual circuit change try effectiveness of trimmer by connecting it externally in series with antenna input to co-ax input center pin. Turning trimmer should improve cross-mod problem. Setting of trimmer depends upon how strong interfering signal is.)
2. Replace two MOSFETs 3sk39Q (1st RF in PB-1077B; Rec. 2nd Mix in PB-1084C) with either Motorola (MFE 3007) or RCA (3N140). Leads are identical with 3SK39.

After installing MFE 3007 in my set, I found that noise factor was slightly improved, as well as cross-mod...." * (ask find source for SFC-4892. Others can be obtained from Terminal Hudson Electronics, NYC. or Allied Electronics, Chicago. Melt)

VK5XV (Arn van der Harst) "...It may be interesting to mention that amazing progress has been made by VK5PX regarding IF feed-through and of signals appearing on the bands which should not be there. Some seem to mistake them for cross-modulation. Use has been made (here) of an integrated circuit acting as a double balanced mixer in place of the 2nd receiver mixer (FET 3SK39). The results are truly amazing and, as far as I am concerned, was the only real disadvantage of the FT-101. The trouble was especially apparent when good conditions exist and when a good beam is connected to the unit. It is not my place to go into details as Don (VK5PX) deserves the entire credit. However, I had the pleasure of testing the modification against the latest FT-101 models as well as earlier HF i.f. units....he will write in detail about this most successful modification..."

Comment: I received Moshe's letter first. By coincidence, a nearby lightning storm induced enough voltage in my dipole to blow the first RF (3SK39) so that I had the choice of waiting for a replacement from Spectronics or trying an MFE3007 or RCA 3N140. However, I could obtain neither from local sources. Motorola's HEP F2004 (\$2.50) is listed as a substitute for RCA 3N140 so I tried it. While I cannot be sure since I had no other unit with which to compare it, I had a strong feeling that (a) there was a lot less noise in the receiver; (b) cross-mod seemed reduced, and (c) the RF GAIN control operated smoothly and with good linearity, unlike its former tendency to drop the level abruptly below 8. I was going to replace the receiver 2nd mixer too but before I could do so I got John's and Arn's letters and decided to wait for details from Don.

AUGUST

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A few days ago I got a tape recording from Arn. In it he had recorded the spurious signals heard at many points in the 20-meter band; they sounded like high-speed commercial teletype and were very strong. Arn then tuned to one such signal (at 14,250) and let me hear the results on an earlier set with its original circuit board containing the 2nd receiver mixer; then substituting a board improved by Yaesu; and finally the very latest board containing a crystal across the tuned circuit of the receiver 2nd mixer and an integrated circuit designed by Don (VK5PX) replacing the 3SK39Q. The difference between the first two was not very great; a slight (10db) improvement favored the 2nd. The third was very striking: not only had the teletype signal quite vanished but weak signals could now be heard where before they had been completely obscured. The tape closed with the statement that Don would write me in a few days giving full details and I would receive a sample IC unit for my personal evaluation. Frankly, I can hardly wait --- I am so anxious to try it. I only hope it comes before I must send this to the printer (somewhat earlier than usual this month). P.S. I am writing to Yaesu about the above matters. I suggest you await their reaction before plunging into the circuitry with a hot iron. Milt.

SN5NU (Per Willstrom) "...We are of the opinion that the FT-101 (or FT-277 as it is called in Europe) should mainly be used with a small antenna (such as a mobile whip) because of the high sensitivity of the receiver and omnibanders which seem favorable in respect to cross-mod. Trapped verticals seem to give the worst results. (I have used a Hustler whip exclusively for many months with good results---200 feet above ground. Ed.)

QSL Cards for Club Members. Have just heard from Yaesu on this. Cards are large (4 1/4 x 6); attractive (color photo shows FT-101 and related equipment - no advertising); imprinted with "Member of FOX-Tango Club", Call, Name and Address; report information and address space on back; cheap (US \$7 per 500 minimum) probably plus shipping --- not sure. Details for ordering next time. /Ed.

Press Time and no word from VK5PX...Sorry to leave you in suspense but, as they used to say when I was young(er): See the next episode as the train thundered down on helpless Pearl White tied to the railroad tracks. By the way, better hold off on HEP F2004S. They work well in 1st RF but, like heart transplants, not for very long...so far two have unaccountably failed...wonder why??? Rejection reaction? Maybe I should have injected heparin first. Best 73. ml

Volume 1
Editor's Comments

SEPTEMBER

Number 8

It has been a long summer, but one that has not been devoid of activity far as the Club is concerned. The snow-balling trend has continued to the extent that I find myself out of everything---the current issue, back issues, questionnaires---even notepaper. New members particularly are asked to be patient; back issues will be reprinted and sent out as soon as possible. Also produced during the summer is our "prospectus" which tells what the Club is all about. If a copy is enclosed with this issue, please use it to inform prospective new members about our Club.

Also received during the summer were many interesting letters containing worthwhile comments and suggestions. As many as space permits will be reproduced below. However, one deserves special attention: it is from Sako Hasegawa, JALMP, President of the Yaesu Musen Co. of Tokyo. He says: "...I personally appreciate very much the activities of the FOX TANGO NEWSLETTER. However, we must face the fact that when informed of a possible modification, some hams who may have been perfectly satisfied with their rigs for years may be tempted to make changes. While we are very happy to help such hams, we are necessarily concerned over the possibility that those without the needed technical knowledge, special tools, and measuring equipment may inadvertently cause actual impairment of performance..." Sako's point is very well taken. It is a fact that the Newsletter has indeed suggested modifications. Some are quite simple and can be undertaken by anyone without serious risk. Others do involve special skills and procedures. It is probably quite easy for any member to decide whether or not to undertake any changes if he will ask himself two simple questions: Is this change really necessary? Am I sure I am competent to make the change? If the answer to either question is NO, leave the set alone. After all the need for many modifications cannot be very great since, according to the Questionnaire, well over 90% of those responding gave the FT-101 an overall rating of EXCELLENT although mentioning specific faults they would like to see corrected and improvements they would like to see made. After all, nothing is perfect but the FT-101 comes reasonably close. I should know since I read all your letters and while it is not "news" worth printing, many have nothing but praise for the FT-101.

And now to get down to business....

CORRESPONDENCE

W3KT (Jesse Bieberman) had written to say (see June issue) that he found it almost impossible to operate CW with mike connected as almost any noise tends to trigger the vox. Several members wrote to correct the editor's suggestion about making sure the PTT switch was off and Mike Gain was down. These things will not help. Only disconnecting the mike plug serves effectively. Your editor was booby-trapped because he uses a Turner Plus 3 mike which has a mike disconnect switch built into its base.

WASZQI (Vernon Fix) Had written (see June issue) about a slight drift in his VFO. From Factory: Adjust the temperature compensation capacitor in direction which makes drift smaller. See illustration... (Illustration indicates location of above capacitor as accessible through hole on right side of top of VFO box as viewed from front of set; looking down. Looking in my own rig, hole appears to be below PB with clips for crystals mounted above VFO box. It would seem necessary to remove this assembly which is secured by screws in keyhole-type holes. Ed.)

WA4SCA (Allan Biddle) had written (see June issue) about loud hum picked up in 6-ohm phones when HV supply was on when operating mobile. Introducing a resistance network solved problem. From Factory: Such attenuation is necessary when high sensitivity stereo-type headphones are used. We will include this in manual. (I note the network has been included in latest production of FT 101. Also several other changes first suggested in Newsletter. Apparently feed-back from members helps the factory produce even better sets. Ed.)

VP2SAM/mm2 (Doug Terman) had written (see June issue) about several interesting matters and had asked some specific questions about marine operation. Summary of questions and factory answers follow:

Q. Service in Caribbean. A. Comercial HR, Apartado 480, Barquisimeto, Lara, Venezuela. Q. Basic Boat voltage is 24v. I split batteries to get 12v for 101 but this causes problems. Anyway to convert 101 to 24vdc operation efficiently. A. No. Q. Would like to use xtal which falls outside the 8.7 to 9.2 tolerance (actually 9.7 MHz). A. Will forward him our aux. band installation sheet; send us his QTH: (Box 603, St. Vincent, West Indies).

W6IL/W2BNJ (Ralph Cabanillas) had written (see June issue) that when using phone patch into J4, RF tended to mess things up. Suggested 1 mh RF choke be installed in series. From Factory: Thanks for info; have instructed our design section to put 1 MH RF choke at J4.

160 Meters with the FT-101 (Continued)

Since I have received several inquiries about this, and information that modifications were being made to provide this coverage by some Yaesu agents in England, I wrote the factory and Spectronics (US agent) asking for more information about the availability and cost of the modification kit. On June 22, Spectronics sent me a copy of a Telex from Tokyo: "Re 160 meter bands--We are now preparing modification sheets...will be available by end of this month." About two weeks ago I received from Tokyo a 14-page brochure entitled "FT-101 Aux Band Installation for LHF Range". The modifications described enable operation in the 1.8 - 3 MHz. The instructions are very complete, easy to follow and feature very clear diagrams. Six parts, including a new final tank coil, are required for sets with serial numbers between 08001 and 24999. Those with serial numbers under 07991 require four additional parts (very small). It seemed to me that the parts should be available as a kit for a modest charge. Since the factory had stressed that kits generally are available from agents to save time and postage, I wrote Spectronics about possible kits. Also asked about possible operation in ship to shore frequencies (such as 2182 KHz) as several MM stations, especially in West Indies) had asked about this. Spectronics advised they too had received above brochure but have no further information about availability of modification kit for 160 m. They also pointed out that the FT-101 is not licensable as a marine transmitter, and its use would violate FCC rules and regulations. Quite true in US; foreign hams should check their own laws but regulations aside, from a technical point of view the 101 has the capability of operating, xtal controlled, on ship-to-shore frequencies. In the meantime, I had received a letter from Rai Perkins (G3NMH). His letter (which may produce some sparks), written on the letter head of Western Electronics (U.K.) Ltd follows: "...We are the main Yaesu distributors in the U.K. and have done many 160m.

conversions using Yaesu auxiliary band installation instructions available from Yaesu. In one of your Newsletters you mention an un-enthusiastic comment from other Yaesu distributor in England. This was because he was not bothering to do 160m conversion and everyone wanting it done came to us... R.S.G.B. (Radio Society of Great Britain) subsequently published a retraction saying that Lowe Electronics (the "other" distributor, Ed.) had not made available the latest information which we had (and Lowe did not have in spite of a visit to Japan!) Yaesu has several sets of information for doing 160m. (However, the best and newest is the one mentioned above, Ed.) The latest 101's from Yaesu are marked on the front panel ready for 160m. (The latest production series---serial 250v1 and up---appear to have 160m band factory installed according to latest instruction book. Ed.) To summarize, Conversion of FT-101's not now equipped for 160m can be effected readily (I would say) by any amateur who has built equipment from a kit provided he has the necessary parts and instructions. I will continue to strive to find out how these can be obtained generally.

From W4SZ (Ted Gormsen) "...I was bothered terribly with distortion in my audio, which I finally diagnosed as RF feedback being picked up by my phone leads, external speaker lead, and phone patch. I finally solved the problem by inserting a choke down by the plug in each lead; I guess one choke could be added between phone jack and terminal 22. Lacking chokes, I made mine by winding 16 turns over a lead pencil. The set now works perfectly and everyone raves about my audio..." (A real happy ending; Ted. Ralph (W6IL) see above--- had similar experiences---and solutions. Ed.)

From 4Z4JT (Gruelick Haramaty). Dust is an enemy which insiduously impairs the performance of the power amplifier and may lead to trouble. To be safe, put a square of air-conditioner filter material on the top cover of the PA cage (Provided you use a blower for cooling).

The "Cross-Modulation" Problem (Continued)

By all odds, the complaint most often expressed in correspondence I receive is the "cross-mod" problem. Chances are that the word is used in a generic sense; that is to describe a number of faults with a single term. It probably is used to describe such faults as image reception, front-end overload, IF break-through, etc. Perhaps "spurious signal reception" would be a better term but since everyone, including the factory and your editor has been using "cross-mod" to describe the problem, it will be continued but in quotes. There has been a great many letters about the problem but perhaps the most complete discussion has come from Don Millar (VK5PX). Accordingly, I will quote extensively from his letters, since he does offer a solution which I have tried personally and can recommend as being effective. However, let me start by quoting the end of one of his letters: "... Let me repeat that this problem ("cross-mod") does not manifest itself unless you have a really good antenna (beam, etc.) and even then only under good propagation conditions or in the presence of strong local signals. The portable or mobile rigs would probably never notice the effect..." So, on to the letter itself and Don's solution to the problem. Ed.

In its unmodified form, the FT-101 (apparently including the very latest models) when connected to a good antenna and under good propagation conditions produces three types of signals:

1. The legitimate (or desired) signals of Amateur transmissions which are tunable by the VFO.
2. Illegitimate signals, still tunable by the VFO, but which are not actually transmitting on the frequency to which the set is tuned. This is easily proven by the use of a separate high quality communications receiver. One way to recognize some of these signals is that they "tune in" backwards; that is, in the reverse direction compared with legitimate signals.
3. Signals which mask or cover the received frequency. Tuning the VFO has no effect on these interfering signals. This can be proven by switching the VFO switch to RX EXT with no remote VFO connected. Under extreme conditions, the interfering signal remains although the receiver should be silent. As a test, switch off the VFO, as described, turn up the audio gain and try peaking the preselector. Do this on all bands and see how many signals you can hear. If SSB, they sound like typical duck talk on a receiver with no BFO. CW similarly and AM signals are perfectly resolved: no beat note even though the Product detector is still working with carrier being injected.

The fault which causes the 2nd and 3rd type of signals is in the RX 2nd mixer stage. This can be demonstrated by the use of a separate high quality general coverage receiver coupled via a coax link to the FT-101 stages, before and after the mixer and after the filter. One then notes the presence or absence of signals between the two receivers.

In order to cure the 2nd mixer problem it is necessary to use a balanced mixer; however, most BM require abt 700mv to 1v rms of osc/injection. The FT-101 has some 80 mv of VFO injection available and while this could be increased in several ways, it becomes rather complicated when one considers TX/RX switching. Fortunately an answer lies in the use of an IC; the Motorola MC1596G fills the bill and is used as a DOUBLY BALANCED MIXER; that is, it cancels both signal and oscillator frequencies from appearing at its output and will only produce the sum and difference frequencies. If any input is removed the output is zero.

The MC1596 operates on a split rail and in order to use it on the 13.5v available, it is necessary to bias it with a voltage divider network. Also provision must be made to open circuit its input and turn it off when going from receive to transmit. All this adds even more external components; couple this with very limited space available and we have a king-size headache for the home do-it-yourselfer since good isolation of input and output leads must be maintained and the whole thing potted into a module to avoid any shorts to other circuitry. This mod could only be assembled by a very experienced ham who has modern facilities and access to hearing-aid micro-miniaturd type components. All this sounds very formidable but all is not lost: the complete modules are available from:

Graham E. Stallard, 27 White Ave., Lockleys, South Australia 5032. The cost: \$16~~95~~ covers packing and return airmail postage. These modules are professionally produced on photo-etched fiberglass P.C. boards which are potted and have color coded leads. Full, easy to follow instructions are included. *PRICE CHANGED TO \$16 AUSTRALIAN

I have had this Mod for the past 12 months and delight in demonstrating its effectiveness against that of an unmodified unit. Front-end overload is yet another problem (most owners are confused by type 3 signals and tend to call them front-end overload. Since the Mod, the only signal I could not handle was that of a mobile parked under my antenna, but even then the 20db pad cut him back to size. At 50 yards, no trouble could be detected.

(Signed) Don Millar.

Comment: What Don says about the instructions (and other matters) is quite true but unsoldering and removal of Q2 and a small capacitor is not easy for the uninitiated. If you are considering the mod, why not take out PR1082/84, remove the upper cap and the front cover, and evaluate the problem yourself. If you feel nervous about the job but want it done, get the unit from Stallard and get in touch with me. I will arrange to install the unit myself, or have another competent technician do so (for a fee, of course). Ed.

Wa2EVH (Rod Gould) in a recent QSO evaluated his very late model 101 in comparison with the one purchased about 15 months ago and which he had sold to another unwilling to wait three months for a shipment. The new model has many modifications and Rod says he is "delighted" with its performance regarding "cross-mod" in comparison with his earlier set. However, he judges the new Noise Blanker to be less effective. Also, the quality of workmanship of the PC boards is not up to the usual splendid Yaesu standards since he says it seems older type boards were hand-modified to effect circuit changes, as by soldering components on the foil side of the board. (I imagine this matter is the result of production changes and will be temporary until new boards are placed in production. In any event, what counts is how the board works---not what it looks like. Ed.)

K4ETW (Mel Brill) suggests changing the first RF transistor (3SK39Q) and the RX 2nd Mixer (3SK39Q) both with RCA 40673. Results of change: Gain in sensitivity of about 5db; RF Gain control much more linear in action; receiver noise diminished; "cross mod" considerably decreased but cannot give quantitative data. Changing RF unit is rather easy; 2nd RX mixer much more difficult; requiring patience and dexterity. Extra small hands would help too. Also changed my DTG 110B's with Motorola HEP 236's, recommended as direct replacement. When replacing 110B's note how heat transfer compound is applied and use silicone compound in same way. (Find RCA 40673's not readily available so have order a supply. As an accommodation, will sell at \$1.50 each plus \$1 service charge. Also will arrange installation, if desired,

on your boards. Write for details if interested. Ed.) (Get a spare for RF stagowhich is vulnerable. 40673's are diode protected-easily installed
OSL CARDS FOR CLUB MEMBERS. Order directly from Yaesu Musen Co., C.P.O. Box 1500, Tokyo, Japan. Minimum order is 500 cards. Cost \$7US plus \$4US for surface mail (or equal in other currency). Cards will be imprinted "member of FOX*TANGO CLUB" etc. plus your call, address, etc. Print desired imprint information clearly. Send with your remittance and address portion of Newsletter for ID. Consider the cards very attractive and "best buy" for the price. Ed.

Volume 1

OCTOBER

Number 9

Volume 1, Number 9 --- 'A lot of water has gone under the bridge since Number 1. Indeed, Number 10 marks the end of Volume 1 and the first year will be over. It has been an instructive, and I hope productive, year. I have, peforce, learned a lot about the difficulty of being a one man publishing business --- of trying to do everything from answering mail, typing stencils, addressing envelopes, licking stamps --- to say nothing of writing, drawing diagrams, and trying to keep records straight.

One thing I learned rather quickly: it is impossible (with my means) to do the job "for free" as I proposed in Jan. 1972 when I wrote in Vol.1, No.1 that: "there would be no dues, subscription fee, or obligation.... just a s.a.s.e. for each issue desired. I will volunteer my time and effort for what I believe is a good cause, as long as a need seems to exist and as long as the job doesn't get too big..." Well, it has gotten pretty big and I must seek ways to cut down the burden since I can't afford to hire any help; dues just about cover expenses and postage --- labor (time and effort) is still being donated. One way is to reduce the number of issues per year (to ten); and to make dues annual; that is, you pay your dues once per year and you get all the issues for that year whether you start in January or November, 1972 you get all the issues published in 1972. This is no great burden since most new members want the back issues anyway.

On this basis, the November issue will be the last one this year. As a retiree, I like to become a snow-bird when the weather grows cold. I plan to spend November and December in Miami Beach, and January and February in Mexico. My mail will follow me and I will take my typewriter so don't be surprised if some issues bear Mexican stamps. I'll take my FT-101 too --- what a pity I won't be able to use it in Mexico.

Correspondence

In the last issue considerable space was devoted to the modification proposed by Don Millar, VK5PX, to solve the "cross-mod" problem by substitution of an encapsulated IC (doubly balanced mixer) module for the existing 2nd RX Mixer. I had sent a copy of such information as I had to Tokyo (as had Don) in the hope of getting the factory's reaction. The factory writes: "...The information from Mr. Millar was passed to our engineering section for examination. However, we could not obtain the IC's he had used and in fact, we are very reluctant to use such components which are not always available in the domestic market here. (For example) we have had very unfavorable experience with RCA CA-311, CA-3035 and GE DTG110-B for they stopped selling RCA-CA-3000 series IC here quite suddenly and without any notice. This caused us a loss of several thousand dollars and made it necessary for us to redesign the circuit so as to use other available products of local manufacture. Recently we have made extensive modifications to improve receiver performance....as you can see from the schematic we have made the modification using our original semi-conductors with good results..."

Please note that Don's proposal has not been evaluated, and the need for the modification still exists in older sets where "cross-mod" is a problem. It may be needed in newer sets too to judge from a letter from Ansyl Eckols, YV5DLT (ex-W5DLT) in which he writes: "...My 101 is an early model, serial #511485, which was shipped from Japan in Nov. 1970 directly to Venezuela. It has given absolutely no difficulty except for receiver blocking, intermodulation, and IF feed-thru. A few days ago I tested the very latest FT-101 against mine and decided that Yaesu had not made much progress in cleaning up the front end. Any help you can give will be appreciated...." (On the other hand Rod Gould, WA2EVH thinks the newer models are better. Ed.)

To give a further international flavor to the discussion, Rolf Lernold, SM5BFG after writing about effects of changing the RX RF and 1st mixer to RCA40673 (see below for details) says "...As there are still the teletype signals (now reduced about 50%) present in the 20-meter band my next project will be to change the RX 2nd mixer to a balanced mixer using a Motorola 1496G...." Rolf enclosed a schematic which looked very

similar to that sent me by VK5PX although Don uses a 1596G. As Rolf is a new member, I asked if he had seen Don's suggestion. He said, in a more recent letter that he had not; but sent me page 10 from the sept '70 issue of Ham Radio Magazine which shows the circuit of the balanced mixer.

*Price changed: VK5ES says cost now \$16 Aust (not US) air-postpaid

Eric Roberts (K4RF) writes: "...My dial works very easily especially when thoroughly warmed up. Recently I noticed that the dial setting would "creep" about half a Khz or so but only when the crank arm on the main knob was in the 3 o'clock or 9 o'clock position. Removing the crank arm (spinner) cured the trouble which apparently was caused by the slight imbalance of weight. I then removed the main tuning knob and, upon turning it over, found some convenient cavities into which I ran some solder, equal in weight to the spinner, 180 degrees displaced. A drop of epoxy cement secured the solder. Since then no more creepy problems..." (Eric didn't say if the problem was worse when he operated mobile, but I should think it would be. It would seem that increasing dial drag would help but since the skirt is designed to slip, for calibration, it can be tricky. Ed.)

George Negus (K2DIU) writes: "...One sad experience I had with the 101 is worth repeating. I wanted two spare power cords to use at the island (one AC and one DC). The 12-pin plug on the back looked like the 12-pin Cinch-Jones plug; I got one and it was a perfect fit. I got the spare AC cord wired exactly according to the diagram in the very poor, very limited 26-page manual that came with the set. I checked, and double-checked and triple-checked and then plugged it in. ZAP!!! Blue smoke and an acrid smell! I had wiped out both power supplies. The trouble? The Yaesu pin-numbering system is a mirror-image of the Cinch-Jones numbers. I had fallen for a sucker trap; a direct comparison with the physical arrangement of the original plug would have saved me \$48 although I must say Spectronics East serviced the set promptly.

Ralph Cabanillas (W2BNJ/W6IL) described the same trap as K2DIU earlier but less dramatically. He urges those making up new line cords not to depend upon pin numbers when using an American-made 12-pin plug, but to physically compare it with the Yaesu plug (P9) to make sure to avoid error. Note the following:

OCTOBER

Pin Numbering in
Yaesu P9 Plug (Rear View)

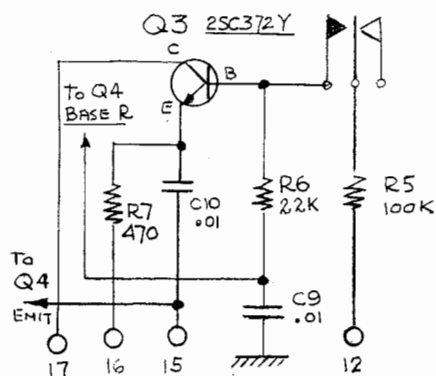
1	4	7	10
2	5	8	11
3	6	9	12

Pin numbering in Cinch-
Jones Connector (Rear View)

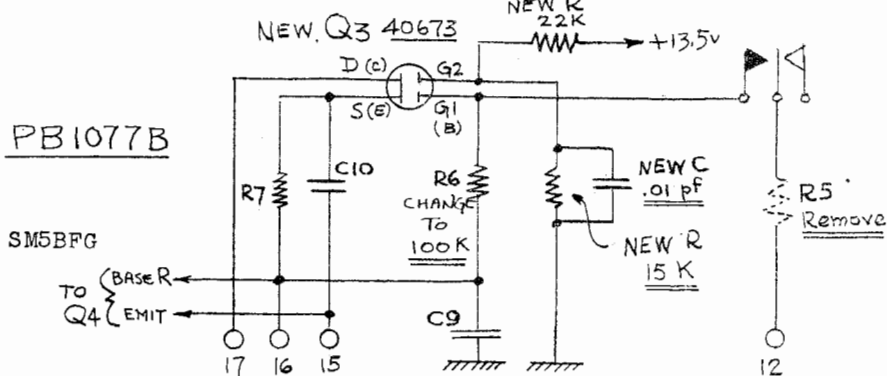
3	6	9	12
2	5	8	11
1	4	7	10

Reminder: Srulik Haramaty (4Z4JT) warned that it is possible to insert P9 upside-down, at least part way, but enough to make some contact and do serious damage. Mark your plugs by painting, with masking tape, or otherwise so you can tell which side is supposed to be UP.

Rolf Lernold (SM5BFG) writes: "... (Newsletter) issues 6 and 7 have already proven useful as I have made some mods suggested in them. I switched the RF transistor to a RCA 40673 which is a little safer to handle than the 3N140 and I also replaced the 1st RX mixer with a 40673. This mod proved very effective as all x-mods have totally vanished, the sensitivity has gone up a bit (which really was not necessary) and the RF GAIN control is much nicer to handle. Before it dropped at 8 but now it does not drop out before 3 to 4.



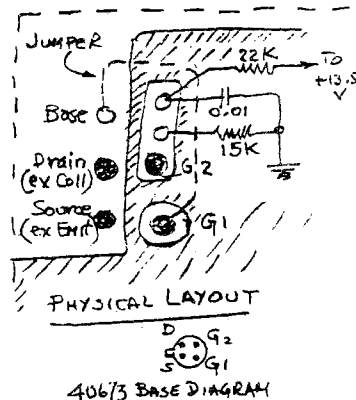
ORIGINAL Mixer Circuit



NEW Mixer Circuit

(Changing Q1 on PR1077B is quite simple; the lead layout of the 40673 is identical with the 3SK39Q it replaces. Changing the RX 1st Mixer is more involved; the effort seems worthwhile, however. Refer to the schematics and the physical layout when following the detailed instructions from SM5BFG. (Use correct unsoldering techniques, Ed.)

1. Remove original Q3.
2. Remove R6; put it in your junk box.
3. Remove R5; connect it where R6 was originally located. Leave the lead between contact finger #12 and the relay tongue open.
4. Drill two new holes for G1 and G2 of the 40673 to be installed. If possible cut out patches to which the new parts (15K and 0.01pf) are to be soldered. (This was difficult in my case so I just let G1 and G2 leads protrude through the two holes after cutting away enough of the laminate to avoid any short-circuiting. I then soldered the two components between G2 and ground and one Resistor (22K between the junction of the above three and some point at which there is 13.5v.



Note (see Physical Layout Diagram): the 40673 is installed as follows: The Drain lead goes into the old Collector hole; the Source lead into the old emitter hole; Gate 1 and Gate 2 through two new holes. Connect a jumper lead from the old Base hole to Gate 1 (Don't forget to Heat sink!) Replace the module in the FT-101 and Happy Days are Here Again! (As Don Millar, VK5PX, says: "What I like about the FT-101 is that it will never become outmoded to those with the capability of doing a bit of Research and Development..." And I might add, it won't become outmoded either to those who have the courage and ability to take advantage of the work of others and make changes within their level of technical skill. The advantage of both Don's mod of the RX 2nd Mixer (see Vol 1, No. 8), and that of Rolf (above) is they are neither risky nor irrevocable if you don't like the results. Restoring the PR's to their original condition is simple. And the experimentation is not costly, especially Rolf's. Two 40673's and a couple of small parts will cost less than \$5. And I can supply the 40673's if you have trouble finding a source. See last month's issues for details. Incidentally, it is interesting to note that in the latest production the factory has substituted a JFET for the bipolar transistor previously used as the RX 1st mixer. Several members had criticized the use of the latter as being contrary to good design practice. Perhaps the engineers acted on the criticism. I note that they have definitely acted on the suggestion of Gus Schnetzer (W2ICA) in that New models use a filament bulb accessible from the rear panel as a protective device in the RX Ant feedline instead of the vulnerable diode which it took me over an hour to replace when it failed. On this topic, those who still have the older sets (with the protective diode DL3) will be interested in Rolf Lernold's comment: "...I suggest that the diode DL3 just after the antenna changeover relay be closely examined. In my rig as well as in others I have seen here in Sweden, the circuit was completely wasted as the whole contraption was back-wards; thus instead of protecting the RF transistor, it served no purpose at all." Don Millar (VK5PX), who has been most generous with his correspondence and fine suggestions, has made an ingeniously simple one to solve the problem of automatically turning off the blower fan when the filaments are turned off to conserve power (as when operating maritime mobile with limited battery power available). Ralph Cabanillas (W2BNJ) had previously suggested the use of relays. Don's mod avoids this as follows:

1. The existing Heater Switch (S5) has two sections (i.e. DPST):
 - a. For Heaters; b. For Sidetone when on TX (CW).
2. Remove existing wires from b section; join together and insulate.
3. Connect new wires to b section of switch and connect in series with one power lead to blower.

Dividend: After mod, you can use the key in the Receive CW position to give sidetone for code practice. No cost, no new parts, added convenience. (Next month, Mod to achieve selectable sideband with no shift of frequency. Its great! Ed.)

Ken Voght (W9KM) writes: "...I have discovered a little flaw which all 101's made prior to a certain date seem to have. A QSL card from the FCC monitor station says I have a spurious output at 20.661 and will I please fix it. A check with a receiver confirms that it is there and calculations plus the enclosed block diagram show how it occurs when one operates 21MHz cw. Spectronics will exchange PB1084C for one which has better suppression of 3197.3 and 6358.6 KHz. However, they have not notified all owners to beware of

possible FCC QSL's if they operate 15CW. I'm sure I am not the first FT-101 owner to be caught and all the FCC needs to do is monitor 21.661 (Ken probably meant 20.661, Ed.) as the spur is there regardless of VFO frequency. It is a beautiful rig otherwise." (I'm sorry I did not have room for Ken's interesting Block Diagram. Also I felt I should check above with Spectronics and Tokyo. So far, one reply received, as follows. Ed.)

Spectronics answers: "...The spurious response is the result of the 2nd harmonic of the IF frequency beating with the 15 meter local oscillator xtal freq. A trap tuned to the IF 2nd harmonic (T-114) provides approximately 40 dB of attenuation, however because of the close proximity of the spurious frequency to the lower edge of the 15 meter band, mistuning of the preselect control can cause output at 20.661 instead of the intended signal frequency. To circumvent the possibility of this occurring an additional trap tuned to the 2nd harmonic of the IF freq. has been installed in the PR-1084 IF module. Customers desiring this additional trap should forward PB1064 module to Spectronics West for installation and include \$2.50 for return mail, etc." (Later models have a suck-out xtal at 6360 KHz installed on PB1084. If desired, check by removing module and look behind removable front shield. If xtal is seen, chances are that above mod has already been made. Ed.)

Bob Noren (SMØEWM) writes: "...Have changed the RX 1st mixer to double-gate MOS-FET to get rid of x-mod. Do not believe changing 3SK39's will cause much improvement. Also SMØDOJ has made a test of the FT-277 (101) for a big radio mag here in Sweden. I have asked him to translate it into English and send it to you as it is a real lab test, not like those in CQ and 73 'tests!'. (I sure look forward to getting above materials; Bob. In a way it reminds me of the protracted correspondence I had with QST trying to get them to run "new product" tests on the 101 long before I organized our Club. In his last letter dated 1/24/72 Doug DeMaw, WLCEB, Technical Editor of QST wrote: "...We have been attempting to get one of the transceivers from Spectronics for over a year. So far, our efforts have failed. Our Recent Equipment editor, Bob Myers, WLFBY, has again requested a review unit. Rest assured, when it arrives we will subject it to a complete shakedown, as is the case with all commercial equipment we review..." I guess it hasn't arrived yet. Perhaps this item will help speed matters. I hope so. Ed.)

George Rosenthal (WA2MPS) reports via QSO that his ALC was not functioning on 15 meters. Spectronics suggested return to West Coast for realignment. George checked output with wattmeter; found about 65 watts into dummy load (required) compared with 130 on 40. Checked alignment procedure in Manual---see pp 29-30. No sweat; adjusted two trimmers. Result: full power out, normal ALC action, and no costly round-trip to California for rig. The moral.....

Volume 1

NOVEMBER — DECEMBER

Number 10

A few days ago, in my usual pile of mail I found one particularly urgent appeal: PLEASE HELP ME, it said in caps and underlined. I'm really having trouble from strong nearby stations on 15. I'd like to fix the trouble by using one of the mods suggested in the Newsletter but which? I answered the letter, only to get a long-distance phone call a few days later from the same member. What I told him was that I really was not in a position to recommend one solution over another except in a subjective way. Even where I have actually made modifications in my own rig, as by installing the IC "blob" designed by VK5PX to replace the RX 2nd Mixer with one of the Doubly Balanced type, I can only say that I'm quite sure that it is effective. The only way to be certain is to make careful measurements with proper equipment; and this I cannot do, much as I would like to. Like you, I must depend upon and trust corroboration by others. In this case however, we have some pretty convincing evidence. In addition to "before and After" tapes sent me from Australia to demonstrate improved rejection of spurious signal reception, and indications that instrument tests do demonstrate improvement, I now have this communication from the factory in Tokyo: "We have tried VK5PX's modification and find that it is effective for the older set but less so for our more recent models which have been extensively improved. The actual data will be forwarded to you after it has been translated into English...." So congratulations to Don Millar who designed the Blob, to Graham Stallard who puts it together, and sincere thanks to Arn van der Harst VK5XV who called the development to my attention and went to the expense and trouble to send me the tapes. (New members should refer to back issues for details.)

But what about the many other promising modifications which have less impressive corroboration? Well, experimentation is the Heart and Soul of amateur radio---indeed many authorities feel that it is the principal reason why governments are willing to allocate precious room in the

electromagnetic spectrum for our hobby. One experiment stimulates another and thus progress is made. A good illustration of the point is Mel Brill's (K4ETW) improvement of Rolf Lernold's (SM5BGF) design for improving the RX first mixer, discussed below. Maybe next month will bring something even better. Quien sabe? But the average ham cannot wait forever. Somewhere along the line he must make the plunge....

From our Members.

(K6KCI)

Irma Weber wrote some time ago about a small matter that had been annoying her (and me, Ed.). The main dial was off about 10 kHz. She didn't know how to correct it. By chance, I found the solution a day before I received the following letter from Russ Mills, W1MIQ. AS he tells it: "... the rig never had good parallax on the main tuning dial---off 8kHz. I wrote to Spectronics when first I received the set; Answer: "no adjustment possible". Tried Spectronics East. Bob Schenk said we might just possibly be able to slip the dial on the shaft. We tried it and it works! Must be friction held." (I adjusted mine by removing top cover, find exposed edge of main dial in front and to right of VFO, put your thumb against edge and push gently. Ed.) Russ concludes by saying: The last paragraph in your last Newsletter (No. 9) was most helpful to me since I also had no ALC on 15. Eric Johnson W1RKA tickled the two trimmers. Now all is well.

Norm White WA6JDE writes from aboard the SS Seatrain Carolina in Rota, Spain, as follows: "I just learned from my buddy Max (WA7LZL) about your Newsletter; I enclose \$5 to get started. Presently I own two of the critters (FT-101's) and I have had no trouble with either of them, although I did get an earlier model: one of the very first to come off the production line, which had many bugs. About 8 months after purchase (in Yokahama) I returned to Yokahama on a weekend. Since Yaesu was unable to take it in for modification, they made an across-the-board swap. After about 18 months, I still have had no trouble with it, other than inherent things like some images and cross-mod. This one has had more than its share of bumps and bangs, as I carry it on and off ships all around the country (and the world) and still get excellent results and reports. My other 101 is at home in the shack, mostly used by my XYL/SWL while I'm away---also no problems there, although its only a year old. Sitting with it are the "Landliner" speaker/patch and the VFO, as far as I can judge, nearly an ideal station. I've seen the matching linear, but so far, Japanese linears (from the inside) do not seem to be as well constructed/engineered as many available stateside. (My choice is the 3011 which works beautifully with my rig--- both at sea and ashore.) The other ham on board here is George Rice/WB4QXL who is running the FT-101 with the SB-200 (Both our stations use 14AVQ's about 100 feet above the water). George's rig has had no problems either although a little over a year ago a steam line broke in his room so I guess the steam bath was good for it.

One good thing about these rice-a-roni rigs--- they say if anything goes wrong, just put in 2 tablespoons of Minute Rice and you're back in business! Seriously though, I did have trouble in the PR-1080 and, with only a short stay in port at Long Beach, I took it over to Spectronics. I've heard some bad mouthing about their operation but they were extremely fast and efficient, and did all but carry the rig in from the car. The bench time service rate is \$15 per hour (in half-hour segments) and the board replacement cost was \$30 (total bill \$37.50), completed in about 20 minutes, with a rapid check of the entire rig. The only question they asked was whether it was in or out of warranty---nothing about where purchased (as I'd heard they did). So as you can see, Milt, I'm a pretty satisfied customer....All I can add is that I very strongly recommend that the unit be used with a blower (either the accessory or a muffin fan). Those tubes will last far longer that way, and while the semi-conductors are rugged, heat is something they just do not like. (and on the subject of fans, Lawrence Henn ZELDP writes; "...I've done VK5PX's suggested fan mod and it works fine. Many thanks from the bush". Al Zetekoff W2AL (Field Engineer for FCC) recommends Rotron Sprint fan (about \$14); mounting holes on fan need to be drilled out only slightly to fit. Two speeds possible by use of 250-ohm 10 watt series R mounted behind fan socket; use pins (rather than plug) at ends of fan leads--to select desired voltage (high or low) for fan. Brian Hutchinson G3VGH secures his fan with small magnets cemented to its corners. Ed.)

An Easy Mod to Try. Ralph Cabanillas W6IL/W2BNJ/CT1?? writes: "...Since paralleling R16 (in RF ATT circuit) with 470 ohms my 20db attenuator (which is now about 12db) has been working beautifully as it knocks down spurious signals, yet doesn't wipe out true sigs that are at least S2 to S3.. Recommend that members try it. Ends of R16 are reachable by removing PR-1078A. The new 470-ohm R can be tacked on for testing on temporary basis to check operation. (Also, on the non-technical level potential tourists will be interested in the following from Ralph: Ed.)

"Dear Milt: I fell in love with Lisbon and go on the air 10/15 as Ctl/W6IL---am applying for Ctl call. Take exam in Portuguese tomorrow (it's hard enough in English, Ed). Am staying at Ritz Pensao; get all meals, have large room and bath, steam heat, phone, overlooking Av. da Liberdade. Also tomorrow get extra room in rear for my radio station. Prices are OK if you shop around. At Hotel Ritz rooms are \$22 to \$38US per day plus 10% tax. Here they're under \$10 including tax for two with full board---excellent meals: soup, fish, meat, vegs, dessert for lunch and dinner. Continental bkfst. Got FT-101 thru Customs, no duty. Plan to visit here, Milt. Everything well organized. You'll like it. 73." (sounds like the Chamber of Commerce but I'm hooked---I bet I'll be there in less than a year. Suggest you listen for Ralph on 21445 KHz. or drop him a line at: 240, 4^o Av. de Liberdade, Lisboa 2, Portugal.Ed)

Warning (from two members): if you get your rig from Japan, check before you plug it into power line. They seem to be wired for connection to 100vac (Not 117v) lines.

MEI Brill K4ETW writes: "The suggestion of Rolf Lernold, SM5RGF, concerning replacement of the RX 1st mixer with a 40673 gave me an idea leading to an even simpler replacement procedure (see pp 5-4 in Oct issue. Ed). The 40673 is a dual gate job, and usually in mixer applications one gate is fed with signal and the other with the heterodyne oscillator. If this were done for the FT-101 it would lead to a very difficult, if not impossible, replacement procedure. Rolf very wisely chose to feed the source of the 40673 with the heterodyne oscillator, a procedure analogous to the scheme used in the 101 where the emitter of the bipolar transistor is fed with the heterodyne oscillator. With Rolf's arrangement, gate#2 of the 40673 has neither signal nor heterodyne oscillator energy impressed on it, yet it must be biased and by-passed with three components. (In his original letter Rolf said: "This circuit is a little unusual but it is all right as the 40673 is functioning as a mixer and not an amplifier. Incidentally it is the same circuit as used in the RX 2nd mixer". Ed.) It seemed to me that a single gate FET would accomplish the same result as Rolf's use of the 40673, but would save these components. Accordingly, I chose the RCA 3N143 MOSFET and used the following procedure: (See diagram of original RX 1st Mixer circuit in Instruction Manual or P. 2 of last month's Newsletter. Ed.)

1. Remove original Q3(2SC372Y). 2. Remove R6. 3. Reconnect R5 so that instead of being connected between the Tongue of relay RL-1 and contact finger 12 together with one side of C8, it connects between the tongue of relay RL-1 and laminate ground on the component side of the board; solder to laminate at rivet located near R5. 4. Connect new 3N143 as follows: drain lead goes into old collector hole; source lead into old emitter hold; gate into old base hole. The fourth lead of the 3N143 is a case lead; solder this to the laminate ground on component side of board at rivet located near Q3.

Note that this procedure requires no drilling; 3 fewer components; no connection to 13.5v. My FT-101 now has a 40673 in the RF stage, a 3N143 in the RX 1st Mixer stage, and a 3N141 in the RX 2nd Mixer. With these replacements I feel that the intermodulation is now at least as low as any of the popular ham-band receivers. (Good show, Ed.) (Mel previously recommended use of the 40673 instead of the 3N141 as the former use built-in gate protection, practically eliminating the risk of "zapping" a gate due to static charge generated in handling the transistor. The 40673 is a very satisfactory mixer but if the 3N141 (or 140) is to be used, handle as little as possible and be careful to use a soldering pencil with a grounded tip. For those who want to experiment I can still provide 40673's at \$150 each plus \$1 service charge for postage and handling. Ed.)

Bob Patten, W4OZF writes to say that he has completed the factory-suggested 160-meter installation except for the required 28-turn tank coil which he has ordered from the factory (correspondence with factory and Spectronics has not yet disclosed how kit can be obtained but needed parts are common except tank coil, Ed.). He reports that the receiver works beautifully and all stages of the transmitter are working except for plate circuit of the finals. He very generously offers Club members his excellent 6-page condensation of the factory's 14 page manual free of charge except for a business-sized sase (suggest 16¢ stamps, Ed.). (I have Xeroxed a small quantity of the original 14-page manual for those who might want them at \$1 each postpaid. Ed). For those who lack confidence to make the modification, Bob offers to do job for \$25 including all parts but not shipping costs. Write first: QTH: 2311 Nassau Dr. Miramar, Fla. 33023. Bob also reports he tried SM5RFG's mod suggested last month. Replacing Q1 with 40673 did make

DECEMBER

NOVEMBER

2

3

RF Gain Control useful over more of its range and added 5 db gain to receiver, but changing Q3 did not improve the "cross mod" problem.

Phil Zaid, 9M2CP, writes that he has installed the VK5PX/VK5ES "Blob" (see page 1) and carried out some tests comparing it with the unmodified box. He says: "...it works and the improvement in almost all cases is most gratifying..."

Major Contribution: Have you noted that when you switch from Upper to Lower Side band that there is a frequency shift of about 3 kHz? This is often inconvenient and requires re-calibration if you have a sched on an opposite sideband, to avoid QRM, etc. The following modification by Don Millar, VK5PX is ingeniously simple, uses only a few parts, is not critical or difficult to align, does not affect the operation of the Clarifier or any other control. It has only one difficulty, according to Don. It is difficult to identify the spare contacts on S2-B and S-2D (note the diagram of the MODE switch in the upper left corner of the Main Chassis schematic). It would seem well worth the effort, even though they are quite inaccessible, unfortunately. Editor.

MODIFICATION TO AFFORD SELECTABLE SIDEBAND WITHOUT FREQUENCY SHIFT

By Don Millar, VK5PX

Parts.

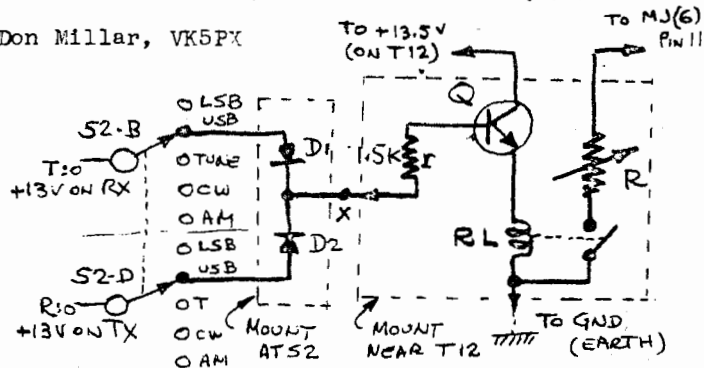
D1, D2: 1N914 (2)

Q: 2N3643

R: Miniature
Multi-turn
Potentiometer 5K
(Good Quality)

RL: Miniature
Reed Relay
2000 ohms
6 ma.

r: 1.5K, 1/2w.



Note: All components and leads are operating at DC so no particular layout is necessary. Theory is that when switched to USB:

(a) On Receive +13.5v via S2-B through diode D1 switches on RL Relay whose contact shunts 5K pot across VFO Reactance Diode supply line; thus changing frequency about 3kHz.

(b) On Transmit +13.5v via S2-D does likewise.

To Align: (1) Turn Clarifier switch OFF. (2) Turn Calibrator 100 kHz ON. (3) Turn MODE switch to LSB. (4) Tune in Cal signal to exact zero-beat. (5) Switch to USB and adjust New 5K pot for exact zero-beat. (6) Tune in an AM Broadcast station to zero-beat; voice should be same tone on USB as on LSB.

Comment: Was it not considerate and providential for Yaesu to leave two spare contacts exactly where needed so Don could use them for the above modification? Ed.

Looking Ahead. Future issues will include news of a major modification kit from Yaesu to bring Receiver performance up to that of latest models; a modification to eliminate need to manually change bias when changing from AC to mobile operation; modifying the RX input circuit by substituting lamp for DL3, etc. etc.

Season's Greetings. A little early perhaps but quite Sincere. Best Wishes to all my friends for a Healthy, Happy and Peaceful New Year. *Milt*

Note

This edition of Volume I of the FT Newsletter was reprinted in April 1974. As of that date no Index had been prepared; should one become available in the future it will be mailed to all members of the FOX-TANGO CLUB. Readers should also keep in mind that one suggestion usually triggers another so before undertaking a modification suggested in Volume I, later volumes should be studied to seek further improvements along the same lines....Those seeking information about the Club, will find it on the next page together with the address of the Editor; further details including dues and applications for membership should be addressed to him.

The INTERNATIONAL FOX-TANGO CLUB --- Information Sheet

OBJECTIVES: The Club is an international association made up mostly of owners of Yaesu transceivers who have banded together for their mutual benefit through the cooperative interchange of information intended to enhance the effectiveness of their equipment. Although originally organized in January 1972 for owners of the FT-101 only, the Newsletter now includes information about other models as well. An Enrollment Form and Dues Schedule will be found either on the back of this page or on an accompanying one.

BENEFITS: Members receive ten issues of the FT Newsletter per calendar year. Although most items are concerned with modifications and improvements; some dealing with new accessories, service and operating suggestions, and even social matters are included. Sources of information are, for the most part, owners of equipment; however, the manufacturer (Yaesu Musen Co., of Tokyo) has been most cooperative in answering questions of a general nature asked by members. Members who ask questions of an individual nature may receive suggestions from the Editor and possibly the calls of the nearest fellow-members. Such information can prove helpful in organizing on-the-air tests or even help in trouble-shooting, if required. Membership benefits prospective owners of FT equipment by enabling them to make objective evaluations based on a study of the unbiased comments of owners in current and back issues of the Newsletter. The Manufacturer benefits by receiving world-wide customer feed-back which has already resulted in suggestions for improvement in design, some of which have been adopted. However, the Club has no connection, direct or indirect, with the manufacturer. Hence it can and does speak frankly and act, on behalf of its members, as a liaison with the factory. Recently the Club has evolved a plan to protect its members against theft of equipment through serial number registration (see Supplement G, October 1973 Newsletter).

CONTRIBUTORS: Anyone who has a comment, question, criticism, or suggestion regarding his equipment or any Club activity should make it by addressing the Editor in writing. Every effort will be made to publish items of general interest as soon as possible. However, if a reply from the factory is required, publication may be delayed until both the question and the reply can be published together. Contributors need not be concerned with literary style as the Editor reserves the right to modify wording for clarity or to meet space availability, or to accept or reject part or all of a contribution. No payment is possible: It is expected that items will be offered in the same spirit that the Editor contributes his time and effort --- for the general welfare. As dues barely cover expenses, there is no profit (in financial terms) for anyone. However, all members whose articles are published in the Newsletter are now eligible for cash awards from a fund set up by the manufacturer to encourage suggestions which may lead to improvements in Yaesu equipment.

ORGANIZER: The Club was organized in January 1972 by Milt Lowens, WA2AOQ (ex-W2EZR), an advanced-class amateur who started his ham career in the early 30's shortly after getting his EE from Cornell U. Since then he has served as a licensed Professional Engineer, author, teacher, and most recently as Assistant Principal of a large technical high school specializing in Electronics. In his spare time he also operated his own TV Service organization for many years as well as a small mail-order business which peddled simple electronic gadgets he designed and manufactured, at home, with the help of his three (sometimes reluctant) adolescent daughters. Recently retired and now a grandfather of five, he has more time to devote to his three long-time loves: amateur radio, salt-water sailing, and his XYL (but not in that order, hi!). And he hopes to travel extensively too.

DISCLAIMER: The Editor cannot accept responsibility for results of suggestions published in the Newsletter. Should he be unable to continue publication, Club assets will be donated to a worthy international charity.

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