RADIO GUIDE

A Forum for Radio Engineers

Ray Topp Editor/Publisher (507) 280-9668

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Used Equipment For Sale

Over the past couple of months, there have been numerous requests for Radio Guide to include a used equipment classified ad section.

I'll be honest with you, I have never liked the way classified ads have been done in the past. There always seemed to be a jumble of tiny commercial ads mixed in with the "real stuff" and, though I see the reasons for that, it was always irritating to wade through all of it just to find what I wanted.

Also, the fact that the classified ads in most publications are free, works to everyone's disadvantage. A seller calls, places an ad and the equipment sells - - but that person never calls back to remove the ad. So, as many of us have found, when you call about a piece of gear, you find out it was sold four months ago! Yet the ad is still running. There's got to be a better way!

Here's what we're going to do: the classified ad section will be a separate canary-colored publication mailed along with, but separate from, the Radio Guide. It will be called the Broadcast Equipment Shopper. The ads will be laid out in a straight forward, easy to find, and informative manner - - you'll be able to find what you're looking for right away.

The ads you place in the Broadcast Equipment Shopper will cost $3.00 per insertion, for one month. This will help to support the cost of printing the Shopper and will entitle you to as many words as you need to describe your gear properly. I only ask that you describe your gear in as concise a manner as possible - - but I leave that up to you.

As was the case with the Radio Guide, the success of the Broadcast Equipment Shopper will be entirely up to you. The Broadcast Equipment Shopper is designed to meet your needs.

Broadcast Equipment Shopper

Here's what to do:

Write to Radio Guide and describe your equipment for sale

Use as many words as you feel you need, to describe your gear properly

Make sure you include your phone number, along with your name and address

The cost is $3.00 per ad, per month, and checks should be made out to Rochester Radio

Send to:

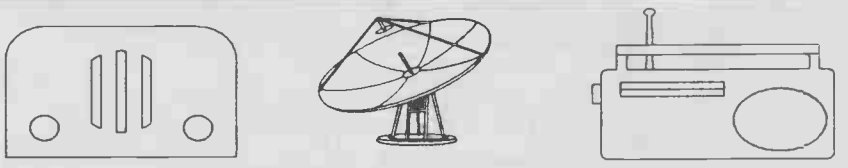
Rochester Radio
P.O. Box 7001
Rochester, MN 55904

Success and Reward

I started the Radio Guide because I felt there was a need for basic radio maintenance information in this industry. Too often we hear about the psychology of management and proper dress. It doesn't matter whether you wish to remain at your present job or aspire to management levels. A solid foundation in the basics of radio technology and maintenance will earn the respect of your peers and the admiration of your superiors. This is the purpose of the Radio Guide - - to help you to acquire and maintain that basic knowledge. You have helped to make that possible by contributing technical tips and articles.

I didn't want to hold cash payment as a carrot for articles. I wanted to see if there were enough people out there who would contribute information without reservation. This was the real test of the Radio Guide concept. Were there others who felt as I did about the lack of real-world information and were they willing to share their knowledge without compensation?

Many of you have told me that Radio Guide is doing the job it set out to do, and I now feel Radio Guide is on solid ground. With success comes rewards. Obviously, I do make a profit on the Radio Guide. Because of that, it's only proper that a portion of it should be returned to those who are the unquestionable source of Radio Guide's success. From now on, all articles and tips will be paid for. Here's how it will work: for an article of 2000 words, Radio Guide will pay $30.00; for an article of 1000 words, Radio Guide will pay $15.00; and for a tech tip, we will pay $5.00. This is a start. As the Radio Guide grows, so will these payments. This is not as much as some of the other trade publications pay - - but then the chances of your article being published in Radio Guide are virtually 100%. As I've said before, if it's technical nuts & bolts, and you send it in, it will get published - - and now, you will be paid for it.



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Do You Have the Answers?

Harris MW1A Power Change

Dave Downing, at (518) 585-2840, has a Harris MW1A he needs help with. He wants to tri-power the unit and needs a complete schematic and instructions for the change. Give Dave a call, if you have what he needs.

Wilkinson FME-10 Exciter Mods

Lloyd Spivey at WLLS, (502) 298-3268, would like to talk to anyone regarding modifications or improvements that can be made to the Wilkinson FME-10 exciter.

Dison Audio Console

Ray Bagby of KWEY, (405) 772-5939, needs assistance and information on an audio console manufactured by Dison Engineering Corp. of Nowatta Oklahoma. It seems to be late sixties vintage and in pretty good condition. Give Ray a call, if you can help him out.

Moseley MRC-1600

Ron Dick, of KMSU in Mankato Minnesota, would like some help with an MRC-1600. The channel-one lower function intermittently activates by itself at random times. He's replaced relay drivers and decoders, but no luck yet. Call him at (507) 389-5678.

Equipment Check List

A number of stations have called to ask for a generic check-list they can use to give them an idea of what should be looked at on a daily, weekly, monthly and yearly basis. Quite a few stations only see an engineer for emergencies. Even though there may be no qualified technicians at a radio station, it does not mean that a program of observation and inspection cannot be instituted. Send in your lists and ideas and we'll create a consolidated check-list for publication here.

Send to: Radio Guide
511 18th St. SE
Rochester, MN 55904

Mistakes and Corrections

Power Siftor (tm) Is OK

On page twelve of the December issue of Radio Guide, Mark Goff of KOOL-106 FM in Oklahoma, talked about a problems he had with Continental transmitter gating cards. He felt, at that time, that lightning surges had gotten through a Power Siftor (tm), a lightning surge protection device manufactured by Current Technology.

Radio guide has since been informed, that while it was indeed the lighting surges that caused the damage to the gating cards, it was not the fault of the Power Siftor (tm). It turns out that the device had been installed improperly, with a suspect grounding system. Barry Epstein and Sandy Dansburg, of Current Technology, provided Mark with insight into the design and operational theory of the their product and are still working with Mark to resolve the problems.

Thanks to Mark Goff for his honesty and apologies to Current Technology for any bad press.

FCC Rules & Regs Stock Numbers

After publication (of course) of the January issue of Radio guide, I found out that the stock numbers for the publications listed on the front page of the Guide were incorrect. All of the stock numbers should have been preceded by 004-000-. I should have realized that there's no such thing as a short federal stock number!

Sorry About That . . .

In the January issue of Radio Guide, on page 10, the by-line under the "No Audio" tip should have read: Earl W. Hocker - KTAN/KTAZ - Sierra Vista, Arizona. And, as if that's not enough, the city and state listed under "Modulation Peak Problem", should have been Valpariso, Indiana, instead of California. It's Winter here in Minnesota, and I've got California on the brain.

Harris FM-25K PA Overloads

By R. Lee Wheeler
Wheeler Broadcast Consulting
Shawnee Mission, Kansas

Morning Drive Over-Loads

Having installed and operated four Harris FM-25Ks and one FM 25K1 over the last four years, I have encountered a couple of problems which are typical of all of the units, at all of the power levels I run at the various installations. The problem manifests itself as a sudden and severe plate current over-load which, of course, generally seems to occur during the morning drive. The cause and cure of the problem is in the automatic power control in the transmitter. The Harris design of FM transmitters incorporates a power control scheme which varies the screen voltage to the PA tube, as a means of power adjustment. The automatic power control is quite simple. It senses the output power of the transmitter and compares it to a reference voltage generated by the auto power control front panel adjustment. If it senses a power above or below the 2% or 4% window selected, the transmitter automatically engages a motor-driven Variac in the screen circuit, which in turn lowers or raises the screen voltage until the output power returns to a value within the window.

The power control problem occurs when the line voltage to the transmitter falls, which in turn drops the "run what you brung" plate voltage as well as the output power. With all other things being held constant, if the plate voltage drops, the transmitter likes to see heavier plate loading. With all other things being held constant, if the screen voltage rises, the transmitter likes to see heavier plate loading.

Over a short period of time, the only reason for the automatic power control to operate is when the line voltage drops and the output power drops. The automatic corrective action of the automatic power control makes this already bad situation worse by raising the screen voltage. The net result is that the screen voltage increases, which leads to an increase in plate current - - but an actual reduction in output power due to the de-tuning of the final caused by the combination of these actions. The real kicker is that the automatic power control on most of the older versions (pre mid-86 vintage) can only be adjusted during a "plate on" condition. If you have overloaded, the only way to turn the box back on is to go to the transmitter site and back the IPA drive level off to a point where the transmitter will no longer over-load, back the screen voltage off of the right-hand peg, and then adjust your drive back up and re-tune the final.

Switching to Manual

I have spoken to Harris about the problem and their suggested remedy is to tune the transmitter and set the power controls during a worst case line voltage sag. I personally have a real problem with this remedy as it results in operation which is 2-5% inefficient most of the time. It is also an inconvenience since most transmitter work occurs between midnight and 4 a.m., when line voltages tend to be higher than average.

The easiest solution to this problem is to simply switch to manual power control. At all of my installations this has cured all problems with the transmitter and resulted in very stable operation. At all of the sites combined, I have totaled less than 2 minutes of down time and no instances of less than 90% or greater than 105% output power. The down side to this solution is that on transmitters which were built before the VSWR foldback modification was added, there is no remote power control at all.

If you have a site which is subjected to really wild voltage swings, the solution to the overload problem is the screen transformer itself. If you are lucky enough to be running 208V primaries, tap the screen transformer up to a point where the maximum screen voltage is around 1kV. On some installations I have used the 240V taps and on others I have used the 250V. In most cases this will prevent the box from automatically de-tuning itself off the air.

MCI Flutter Dancer Boogie

By Gary Minker - WPBG/WIRK
West Palm Beach, Florida

Along the same lines of the recent articles in the December 1988 issue of Radio Guide entitled MCI TAPE TIPS, there may be some additional problems lurking in a JH-110 A/B/C. The tape handling problems associated with the play/record mode are usually very different from those of the wind modes. Some problems of the play/record mode that resemble phase-lock problems, really are not; they are compensations for other problems. The can of worms can look like this:

1. The capstan motor exhibits a once per revolution quiver which can be seen while monitoring the DC drive voltage to the motor from the phase-lock board. This problem is usually called to your attention by the audible wah-wah-wah sound that emanates from the capstan motor. This noise usually is accentuated when operating the motor at low fixed or variable speed.

2. The flutter dancer arm jitters or wows while running tape at any speed but is accentuated at low speed.

3. The machine operates at maximum tension when running.

4. The machine will not hold a stopped position and winds at an un-controlled speed over 5,000 FPM.

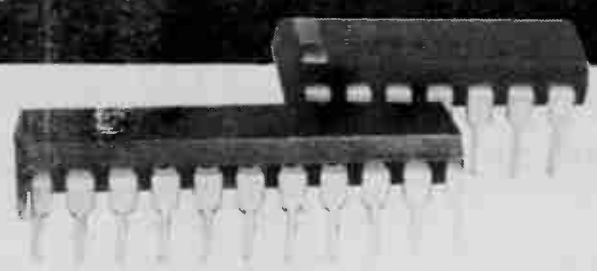
The jitter of once per revolution that is visible on the scope trace while monitoring the DC drive voltage to the capstan and/or the output of the servo tach on the capstan will more than likely not be the lack of concentricity of the tach mylar or the correct phase alignment of the opto-eyes in the tach assembly. The problem is related to the extremely low horsepower of the capstan motor. A bad bearing in the capstan motor which would place micro-inch-ounces of strain at the same position in the rotation will give the motor this jitter, one time per revolution. Removal of the motor and driving it with a variable power supply will show analog variations of the drive current. A stroboscopic study of the capstan will show this change also. The jitter and/or flutter of the capstan is also audible as sort of a wah-wah-wah as it rotates. If re-building the tach and capstan is not in the game plan (provided the bearing wear is not severe), an updated phase-lock board is available which exhibits resistance to the anomalies of this problem (#PC 2500-1033-XX).

True, the flutter dancer arm is a problem as outlined in the previous article, and the positioning of the magnet is critical to smooth operation, but glitches that appear in the output of the take-up and supply servo tachs can cause the arm to dance its own tune. A non-polarized 25V 'lytic or tantalum across the output of the two tach motors will help to slow down the tendency to correct non-existent torque problems which also force the dancer arm to aggravate the analog torque board. Odd combinations of reel size and unusually low reel tensions will also aggravate this dancing.

Full or erratic reel tension is often related to dirty molex connectors which connect the reel servos to the mother board. Cleaning and periodic movement of these connectors will clear up this problem which also causes the flutter dancer arm to boogie.

The uncontrolled wind from a standing stop or panel command is for the adventurous. When rebuilding the reel servo motors, notice the wind polarity of the DC output. After rebuilding the motors (generators), loosen the rear brush cap and adjust the cap for best output wave form and polarity. Yes, it's true these servos can put out the opposite polarity in a wind situation and cause the machine to run at over 5 times normal wind speed with no stopping ability except for power-down brake clamping.

These 2 new ICs and RAMKO RESEARCH have just changed the whole concept of Broadcast Audio!!



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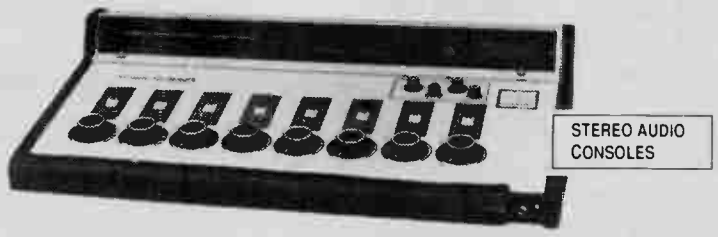


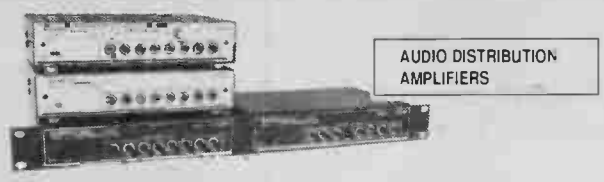
STEREO AUDIO CONSOLES

4, 6 & 8 MIXER, SINGLE CHANNEL STEREO-$1295 to $2850!

The new xL series of broadcast consoles redefine the term "solid state" From the beautiful exterior finish of Carbide Black, muted grey's and special xL white polyurethanes and the exceptionally long life (5 million operations), silent illuminated push button switches, thru the rock solid 1/10" thick aluminum control surface to the individually housed (double RF shielde) plug-in modules and bussing system, it will be immediately evident that nothing has been skimped on to bring you both the finest scund possible and construction that far exceeds anything else available. In short, a console that will stand up to years of use (and/or abuse), deliver performance that can only be found in the highest caliber production consoles, is a snap to install and program, and a dream to operate.

HIGHLIGHTS: Each mixer is programmable for mic thru line level on input A and high level on input B. Indentical PROG1 and PROG2 output channels each individually or simultaneously selectable at each mixer. Huge 4" multi-color, expanded scale solid state "VU" meters. Long life faders driving special lutra low distortion VCAs for precision tracking and noise free operation. Overhead protected audio switching ICs that cannot be driven into clipping. Internally located barrier strips for ease of installation and future changes. Double module shielding, extensive bypassing, intsrumentation "STAR" ground system, and RF beads for high level RF immunity.*Four, six & eight mixers *Single & dual output versions *Mono mix outputs *15 inputs(4 mixer), 19 inputs(6 mixer), 23 inputs (8 mixer) *programmable mic/line inputs each mixer *mic inputs programmable for stereo or mono feed *programmable muting *External 20 watt stereo monitor amp *On air light's relays *Plug-in modules *Optional start/stop controls *

❑ **xL41S** (4 mixer, single channel) $1295. **xL42S** (4 mixer dual channel) $1450. **xL61S** (6 mixer, single channel) $1795. **xL62S** (6 mixer, dual channel) $1950. xL81S (8 mixer, single channel) $2595. **xL82S** (8 mixer, dual channel) $2850.



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❑ **xL4S/8M**-$195. **xL8S/16M**-$360. Call for option prices.

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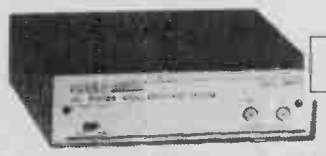

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DUAL CHANNEL WITH SWITCHABLE MIC/LINE INPUTS & 21V PHANTOM POWER. Balanced XLR inputs and balanced phone jack outputs. +25dBm max out into 600 ohms; resp., 10Hz to 20kHz, -1dB; 0.008% dist.; 72dB gain mic & 22 dB gain line; -71 dB s/nmic & -84dB s/n line. Front panel level controls. . Table top or one thru four 1 3/4" rack mount. ❑ **xLM2L2** - $129. **PS-20** (UL listed power source powers 1 to 10 units) - $25

✳ **THIS IS ONLY A PARTIAL LIST OF OVER 80 DIFFERENT PRODUCTS MANUFACTURED FOR THE BROADCAST INDUSTRY.**
❑ AUDIO ROUTERS SWITCHERS starting at $1273 ❑ STUDIO POWER AMPLIFIERS from $99 ❑ MODULAR AUDIO DA'S from $900 ❑ SOLID STATE METERS ❑ AUDIO MATCHING AMPLIFIERS $115 TO $174 ❑ MIXERS (studio & portable); COMPRESSOR/LIMITERS; and the list goes on. **Call for our new catalog or specific specifications sheets.**

RCA BTF-20 Filament Leads

By James A. Eberhart - WQHK/WMEE
Fort Wayne, Indiana

You have PA plate voltage, but no plate current or power output. The driver(s) are operating normally, although there is no (or well below normal) grid current in the PA tube. All line and filament voltages are normal. I have seen this happen to two different people at two different stations, both operating the 20 kW version of this transmitter, and I might add that they were stumped for a long time.

The problem is that the filament leads from the feed-through capacitors to the tube socket will age over a period of years and the lugs on the ends of the wires will eventually develop a high enough resistance that the tube filament will not light up. This same problem can develop from the filament transformer to the feed-throughs in back of the PA cabinet, but this is usually caught because these are easy to inspect. Check the insulation on the leads in the PA cabinet and if the insulation has become hard and brittle, that is the sign that overheating has occurred.

A good source for replacement leads is your local welding supply shop. They can supply a very flexible cable of the same size as the original and they have the tools to install the large lugs for you.

I strongly suggest that these leads be thoroughly inspected every six months for heating, either by removing them or with a good light and a small mirror.

One last hint, ceramic tetrodes DO light up. With only the filaments on, crack the front door and take a look under the blocking condenser shelf. If you don't see a nice warm orange glow coming out of the ceramic, you know what the problem is.

Broken Fingers & Blowers

By James A. Eberhart - WQHK/WMEE
Fort Wayne, Indiana

A couple of tips for the newcomers - - us old folks learned this a long time ago, the hard way.

1. Check those blower impellers every six months. The curvature of the blades will load up with dirt and the volume of air delivered by the blower will drop off to the point where the air-flow switch will shut the filaments down. I found one transmitter so dirty, that the air-flow switch had been jumpered across. I was told by the engineer at the station that the switch had gone bad a long time ago and was never replaced. We removed the short after cleaning the blower and the switch worked just fine.

2. Before you change the final, look around the anode finger stock and count the number of fingers that are missing. After you replace the final, count the finger stock again to see if any additional are missing. Many years ago, I had one break off and fall down into the socket without my knowledge, shorting out the bias. The result of that was a ruined brand new tube, when I applied plate voltage.

RCA BTF-5/10/20E TRANSMITTERS

We're still looking for articles, tips and information regarding this series of transmitters. There are still quite a few of these transmitters out there, providing reasonable service. In many cases it's taken a lot of work and ingenuity to keep them running, and to find parts (if any). Send those articles and tips to:

Radio Guide
511 18th St. SE
Rochester, MN 55904

RCA BTF-5D Rectifier Stack

By Steve Minshall - KTRB
Modesto, California

Several years ago I had a serious problem with the rectifier stacks of an RCA BTF-5D. The rectifier stacks would fail several times a year until I did some modifications. The first problem I found was that the voltage dividing resistors were of a value of 22K or 27K at 2 watts. Considering the voltage across them during the none-conducting time of the rectifier stack, they were running in excess of their dissipation rating. The cure for this problem was to replace all the resistors with a 220K 2 Watt value.

The second problem with the rectifier stacks is that they are located in the bottom of the cabinet, tucked in a corner, (the cabinet having only a ventilation screen at the top). The whole cabinet runs very hot due to poor ventilation. RCA recognized this as a problem after some of the transmitters were in the field and they sent out a notice to drill three ¼-inch holes in the grid compartment so that the pressurized air from the grid compartment would provide some cooling to the rectifiers. The small holes are just not enough - - but the solution is not to enlarge the holes as this would reduce the air-flow through the tube.

My solution to the ventilation problem was to install a 230-Volt muffin fan at the bottom of the cabinet hooked up to the primary of one of the transformers. The fan was bolted vertically onto the floor of the cabinet (using a piece of aluminum angle) and the air-flow was directed at the rectifiers. The fan was placed as close as possible to the removable back panel of the transmitter. The last step was to cut a 6-inch by 6-inch hole in the back panel adjacent to the fan and a piece of perforated metal was bolted over the hole. After the fan was installed, the cabinet ran just warm instead of hot.

My wife and I spent most of the night doing the rectifier stack modification and installing the fan. After these two modifications, there has never been a failure of the rectifiers.

Another problem, I had, was a screen overload condition. The transmitter would run, as long as the screen voltage was kept below a certain level. This level kept getting lower over the course of a few hours until the transmitter would not put out any appreciable power at all. All my troubleshooting led to the screen bypass capacitor (on the final) and an ohmmeter check showed it to be just fine. But I tested it with an old Heath bench power supply and when the voltage was increased to about 100 Volts, it would suddenly short.

The screen bypass capacitor is built into the bottom of the cavity around the tube socket and is made by sandwiching four silver-plated pieces of mica between aluminum plates. I made a temporary repair by erasing a circle of silver plating around the pin-hole in the mica.

In the six years I took care of this transmitter, the only other failure was the blower motor which was replaced by a motor purchased in town. Overall,the BTF-5D was a very reliable and stable transmitter.

For Your Information . . .

A new and continuing feature of the Radio Guide, is the reader-service "coupon" located on page 12. Fill in all the information asked for, and circle any advertiser's number from which you wish to obtain more information. Along with the "coupon", feel free to send a couple of technical tips you may have lying around. We can use them!

RCA BTF-5/10/20E Transmitter Tips & Hints

By Steve Brown - WLTE
Minneapolis, Minnesota

This is a compilation of tips from Mike Hendrickson and I. Mike is Director of Engineering of Hedberg Broadcasting Group of Spirit Lake Iowa. Please understand that these tips are our opinions only, and we'd welcome rebuttals!

First, believe it or not, some good things to say about the BTF-5/10/20E series transmitters. Despite some faults, they're built like Sherman tanks, and unless you abuse them for an extended period of time, they forgive mistakes. The now-antiquated 120 VAC control ladder even has its benefits. First, it's isolated from ground with a good transformer (unlike other models of the same vintage), and it appears to have been designed during a time when cutting corners on component ratings wasn't so important. My first encounter with a BTF-10E in 1974 worried me - - all the relays in the control ladder were soldered in! Since then, I haven't seen or heard of anyone who's had a relay failure that necessitates replacement. Is it the 120 volts or the AC that keeps the contacts clean?

The factory VSWR protection is a waste of time. The combination of the mechanical meter and short lifetime lamps, plus the technical bulletin on how to "fix" the problems by disassembling the unit every few months, warrants a look at alternative protection by an external unit such as a Bird Wattcher. The ironic thing is that our system, a BTF-40E, uses the identical unit in the combiner unit, and with no maintenance, it has never burped.

Efficiency and Stability Improvements

The efficiency curves in the manual tend to be rather pessimistic, at least for the BTF-20E. There are some things to improve PA efficiency and stability, however. A glance at the transmitter schematic for the BTF-5E, shows a series LC circuit across the filament leads (although not included in the 10 or 20 kW models). Mike reasoned that, since the tube in the 10 kW box is the same as a 5 kW model (except for anode size), it wouldn't hurt to add the circuit to his BTF-10E. The metal plates that bolt to the filament connections at the tube socket are not available from GE, but they did supply him with shop drawings and a doorknob capacitor value; and a local machine shop supplied the metal and labor. The efforts yielded a 5% increase in efficiency. The circuit is hard to adjust, because if it's mis-tuned, you won't see changes in plate current. Moving the capacitor up and down the slots in the two conductor plates in 1/8" increments, will produce the changes in current that tell you you're getting close.

Check to see if your BTF-5/10/20E has a hose-clamp installed on top of the PA cavity, where the transmission line exits. Mike's BTF-10E didn't, and a call to RCA a few years ago produced the comment that it didn't matter at that power level (although my BTF-20Es had them). He had always experienced instability in tuning, that acted like poor neutralization, but re-adjusting the neutralizing sliders didn't change anything - - they were always set correctly. Also, there had always been an inordinate amount of RF in the transmitter building, that careful grounding hadn't changed. He decided to apply a sleeve on the top side (outside) of the cavity, notched so it could be compressed by a hose-clamp to the 3 1/8" line, where it passes through. After installation of the clamp, RF leakage in the area of the transmitter went down considerably. His remote control behaved itself, as well as the rack mounted STL receiver, and he gained another 1% to 2% improvement in efficiency.

Simple Things to Improve Reliability or Decrease Parts Costs

Keep tuning and loading plates in the PA cavity parallel and spaced equally from side to side, through their entire length. Sliding finger-stock is not the way to tune a transmitter, but keeping constant tension on the fingers, through proper alignment, will greatly expend the life of the contacts. If you're tuning a BTF-20E at full power or less, with clean intact sliding finer-stock, and you still draw arcs, check the alignment of the movable outer plates on tuning and loading assemblies.

The cesium contaminated vacuum arc gap on the rear of the PA cavity is there for a reason, but they do fail. Rather than spending money for a replacement or leaving the protection out, we used a spark-plug. Machine copper or brass stock to the same outside diameter as the end of the old vacuum gap and tap it to fit on the small threaded end (top) of the spark-plug. Machine a second piece of stock to be larger than the threaded end of the spark-plug that goes into the engine, and tap it to screw the spark-plug into. Machine the remaining end of this stock down to the outside diameter of the old vacuum gap. Set the plug gap at 1.2 to 1.5 kV with a "hi-potter"; plug the new device in where the vacuum gap went, and you're in business.

Here's a final idea that applies to all transmitters. Mike used this one on his BTF-10E when he moved it from one site to another.

The transmitter had been operated for years in the upper level of a portland cement plant, and looked just a bit dusty! When the transmitter was moved to a better location, no attempt was made to clean it up. When Mike moved it to it's final resting place in Mankato Minnesota, as his back-up rig, he removed blower, tubes, PA cavity and anything else easily removable, and sprayed down the whole box, inside and out, with a weed sprayer containing a detergent/water solution. This isn't so crazy - - Tektronix uses a machine that operates like a big commercial dishwasher to do the same thing with their gear. He then thoroughly rinsed the box with a garden hose, let it dry outside on a sunny spring day for several hours and then moved it inside to dry out for a week or so. No transformers were removed for this operation - - the blower and motor seemed to be the only rust-prone items. In the meantime, he completely disassembled the PA cavity and tube socket parts, and replaced old parts with new as necessary, then re-assembled the cavity and the rest of the transmitter. The only major problem since then, was the apparent "drift" of tuning. This turned out not to be the transmitter, but a frequency drifting Harris TE-3 exciter that drives it. When the exciter drifted to a new "home", the maintenance engineer would notice power output drop off and attempt to re-tune the transmitter to correct it! A check with a frequency counter located the culprit.

Your Help is Needed ...

If we're doing alright, let us know. If we're not serving your needs, let us know that too - - and at the same time be sure and tell us what you think needs correction, modification or expansion.

Remember, Radio Guide depends upon your suggestions for its content, direction and its very existence. You've said you've wanted it, so here it is. Please, help to create a useful technical publication.

Give me a call me at (507) 280-9668 - - Ray Topp, editor.

Tips From The Field

Technical Tips From Around the Country

AEL Interlock Tip

By Bob Ladd - WNRR
Bellevue, Ohio

I had an experience this past summer working with an AEL transmitter that may be of interest to anyone pulling maintenance on these units.

I had run into an open filament transformer on an AEL FM 2.5 KD. After making the repairs, I wanted to view the final cavity while the high voltage was applied to see if any arcing would occur. The AEL has an interlock defeat mechanism built into each interlock switch, which when pulled out and turned, bypasses that switch from shutting down the high voltage if a door is opened.

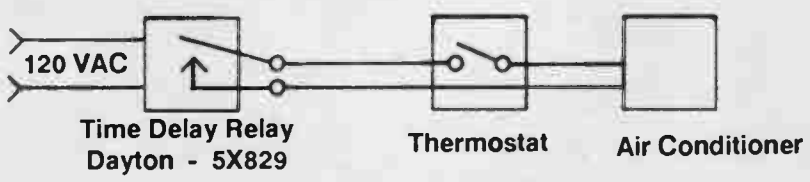
I had neglected to pull out the interlock to bypass the switch at the open door. Naturally, when I hit the high voltage, nothing happened. In every transmitter I have worked on, the normal procedure at this point would be to bypass the interlock then hit the high voltage button again. Not so in the AEL! As soon as the interlock is bypassed, the transmitter does what ever it was commanded to do just prior to the bypass. In this case, the high voltage came to life. Since interlock switches are often located near high voltage potentials, the chance for high voltage shock is good. Watch for this with AEL transmitters. It could save your life.

Air Conditioner Tip

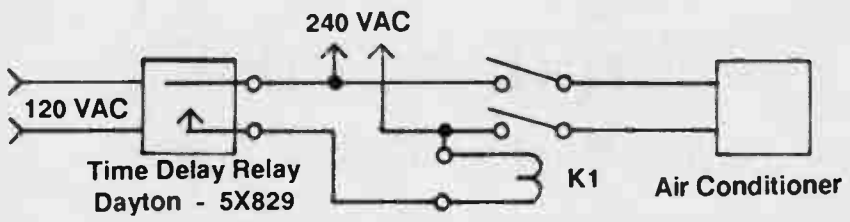
By Bill Rett - KWTR
Lakeport, California

If your transmitter building air conditioner compressor is running and the power fails for a couple of minutes or less, the compressor will draw excessive current trying to re-start against the high head pressure, and will likely trip its circuit breaker.

The addition of a time-delay relay keeps the compressor from running for the period of the delay, after power returns. The adjustable time-delay relay is available from Graingers.



If the thermostat is not accessible, here is an alternative:



K1, is a plate contactor out of an old RCA BTF-10B transmitter

Please-We Need Your Help!

If you have any short tech-tips, send them in or better still, call me at (507) 280-9668 and we'll talk about them. Remember, it doesn't do anyone any good if you keep that information to yourself. Don't assume that everyone knows about your special technical tip. Send them in - - they'll be printed in the next issue.

. . . editor

Contract Engineers

Radio Guide will provide space here for contract engineers wishing to expand their business. To be listed here, just give me a call at (507) 280-9668. This list is not a recommendation of any particular engineer. You will have to determine for yourself the qualifications of a particular person for the job.

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