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QST Issue: Mar 1988
Title: Eliminating Dial-Drive Clutch Slippage in the HW-101
Author: Vernon Range, Jr, KA9NBH

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circuitry do not encourage positive feedback. I was reminded of this when I built a grounded-grid amplifier using parts I already had on hand. The tubes I used—805s—work well as class-B audio amplifiers but were not designed for grounded-grid RF service. *This* grounded-grid amplifier required neutralization! My neutralizing technique requires only a receiver (or transceiver in receive mode) and an antenna.

First, remove all power from the amplifier and be sure its high-voltage filter capacitors are safely discharged. Next, hardwire the RF contacts of the amplifier TR relay into the transmit mode. Connect the receiver to the amplifier input and the antenna to the amplifier output. Tune in a steady signal and peak the amplifier tank circuit for a maximum S-meter reading. Adjust the amplifier neutralizing capacitor for a signal null. Finally, return the TR relay wiring to normal. The amplifier is neutralized.

I like this technique because it can be done when nothing in the amplifier is hot, thermally *and* electrically.—*Scott Reaser, K6TAR, Pacific Palisades, California*

Editor's Note: Although neutralization of the amplifier went well, K6TAR later reported that the rig didn't pan out. Showing true ham spirit, Scott penned this note on the back of his publication release form: "Please note that although I think the idea I submitted has merit, that particular application was a disaster. Case in point: 805 triodes made a lousy linear, even if the tubes were free! Subsequent to my original communication, I started over with the amplifier. Rebuilt with a single 3-500Z and a Hypersil® transformer supply, the amplifier works nicely. The lesson is to use parts designed for the application."

SHIELD CHOKES FOR COAXIAL CABLE

☐ When a coaxial (unbalanced) transmission line is used to feed a balanced antenna directly, RF current can flow on the *outside* of the cable shield. Even when a balun transformer is used to correct the imbalance, near-field antenna radiation can induce current flow on the outside of the cable shield if the coax does not leave the antenna perpendicularly. RF current flow on the outside of the shield is undesirable because it can distort the radiation pattern of the antenna, and may lead to inaccurate SWR measurements and stray RF in the shack.

You can use two *shield chokes* to reduce the effects of external shield current at the ends of a feed line. Form each choke by winding ten turns of feed line at the minimum bending radius (usually ten times the line diameter) recommended for the line. Use electrician's tape to hold the turns in place after you wind each coil. Place one choke within ¼ wavelength (at the highest operating frequency) of the antenna; place the other at the same distance from the transmitter. Caution: Don't form shield chokes in foam-dielectric transmission line. Tightly coiling such cable can cause the center conductor to move out of concentricity because of foam "cold flow." This changes the line impedance at affected points and reduces the power-handling capability of the cable.

If you're thinking of using a 1:1 balun transformer with your coax-fed dipole or at the driven element of a beam antenna, consider using a shield choke instead. Shield chokes are easy to construct using readily available materials. Properly built, they can handle as much power as the coax that composes them. In balun applications where impedance transformation is not required, a shield choke may be the better alternative.—*Bob Schetgen, KU7G, ARRL HQ Staff*

ELIMINATING DIAL-DRIVE CLUTCH SLIPPAGE IN THE HW-101

☐ After I became the third owner of a Heathkit HW-101 transceiver, I noticed that its VFO occasionally slipped out of calibration at the ends of its range. I discovered the cause after removing the VFO assembly from the rig to inspect the dial-drive clutch: After years of pressure, the plastic clutch (Heath part no. 266-200) had warped. I reversed the clutch disk so that the inside surface of the disk faces outward, making the warpage work in my favor, Now, the dial drive works well. The clutch allows just enough slippage for manual calibration of the VFO dial scale—*Vernon D. Range, Jr, KA9NBH, Rochelle, Illinois*

A DEEP-CYCLE BATTERY AS AN EMERGENCY POWER SOURCE

☐ After I acquired a size 27, deep-cycle lead-acid battery as an emergency power source for my 2-meter transceiver, hams on the local repeater advised me on how to keep the battery charged. "Connect a variable dc supply in parallel with the battery and set its output voltage to 13.6," they said.

The current capability of my power supply is insufficient for such service. The supply can source the 4.8 A required by the rig during high-power transmit, but is rated at only 3 A for continuous duty. Connecting the supply directly in parallel with the battery *and* the transceiver would, at times, result in current drain exceeding the supply's continuous-duty rating.

Fig 2 shows my solution to this problem. Charging current with this circuit is 1 A or less, and the supply can still power the transceiver. Installation of a jumper across points A and B applies the full battery voltage to the transceiver if this is needed during an extended power failure. —*George Hopkins, KF6GL, Sunnyvale, California*

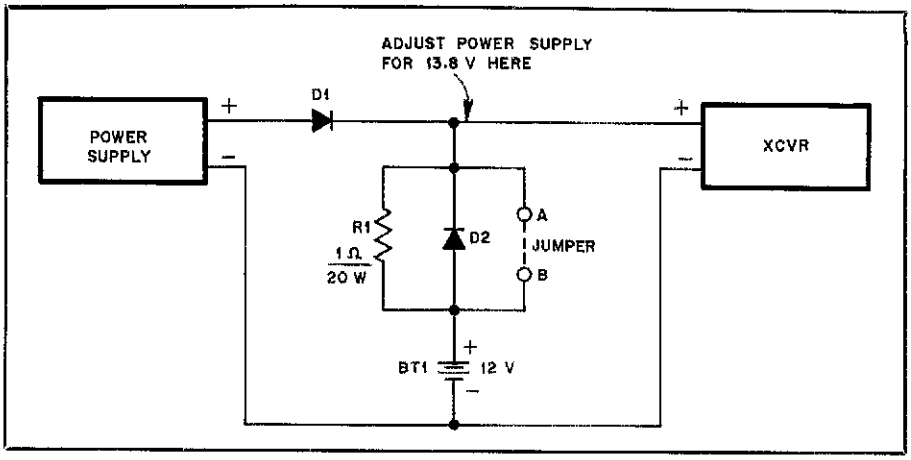

Fig 2—KF6GL's power supply/charging circuit. In this application, D1 and D2 are 6-A, 600 PIV diodes (Motorola MR756, ECG5815 or equivalent), R1 is a wirewound unit and BT1 is a size 27, deep-cycle, lead-acid storage battery. The jumper is used only during power failures (see text). The power supply is normally turned on only while the station is attended. In tailoring this circuit to your application, use conservatively rated components.

BETTER AUDIO QUALITY FROM AN OUTBOARD SPEAKER

☐ I have a hearing disability that requires bassier response and more audio output than my stock Kenwood SP-930 speaker could provide without objectionable distortion. I improved the power-handling capability and frequency response of the '930 by replacing its speaker with a 4-inch Radio Shack® automobile speaker (RS 40-1197). This replacement speaker exactly fits the mounting holes in the SP-930! Next, I lined the speaker cabinet with fiberglass insulation (RS 42-1082 or equivalent) to damp acoustic resonances.

Modified in this way, the SP-930 handles the full audio output from my TS-930 transceiver without noticeable distortion, and its frequency response is substantially improved. The outboard speakers used by many hams can probably be improved by similar modifications.—*Maurice Sasson, MD, W2JAJ, New Rochelle, New York*