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QST Issue: Feb 1982
Title: HW-101 Loading Capacitor Protection
Author: John Brush, WA3CAS

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with low-voltage, high-current dc supplies. The hash is transmitted into the ac mains.

The noise had been there all the time, but using a shielded feed line prevented me from hearing it. When the shield was lifted, the antenna lead was exposed to the radiation from the ac line. Simple problem, simple cure; but sometimes those "simple" problems can make you feel "simple minded"! — *James Beckett, WA2KTJ, Horseheads, New York*

MOBILE POWER SUPPLY FOR YOUR 2-METER HT

☐ Tired of recharging those NiCad batteries after using your HT for mobile operation? Try this circuit that I have used with my Yaesu FT-207R for about a year. Only a single coaxial cable is needed to supply dc power to the rig and carry the rf signal to my mobile amplifier. The modification cost about $5 for all new parts. See Fig. 4 for circuit details.

To modify an FT-207R, remove the rear cover and connect the battery pack. Be sure the radio is turned off. Connect voltmeter leads between the ground side of the BNC jack and the terminals on the back of the VOLUME/ON-OFF switch to determine which terminal receives the positive voltage from the battery. The cathode of D1 will connect to this terminal (remove the battery pack first).

Disconnect the wires that are soldered to the center feed of the BNC connector. Insert C1 between the BNC center terminal and the wires just removed. Connect choke L1, C2 and the anode of D1, as shown. The other end of C2 connects to ground at the BNC jack.

Follow the schematic diagram for modification of the amplifier. Capacitors C1 and C4 are used to couple the rf signals to and from the coaxial cable. If your amplifier has an ac coupling capacitor you may omit C4. The rf chokes L1 and L2 couple the dc power source to the rig, and at the same time offer almost no rf load to the coaxial line. Capacitors C2 and C3 provide additional rf filtering.

Diode D1 serves two purposes. It drops the line voltage approximately 0.6 V when the rig is powered externally. It also prevents current drain on the NiCad battery when a grounded external antenna is connected. Diodes D2, D3, D4 along with D1 drop the 13.8 V auto-battery voltage to be approximately 11.4 V at the transceiver ON/OFF switch. As with any rf circuit, all leads should be kept as short as possible. — *Glen Day, AB8W, Gambier, Ohio*

SPEAKER "THUMP" IN THE HW-101

☐ After constructing my HW-101 I noticed an intense "thump" in the speaker when going from receive to transmit. This was quite annoying, so I contacted the Heath Co. people for help. They suggested soldering a 0.1-μF capacitor from lug 2 of R12 to ground, but this didn't help.

I quieted my T-R problem by increasing the value of bypass capacitor C322 to 0.1 μF and changing R337 to 470 kΩ. This will give the same time constant as the original values. I also changed R338 to 680 kΩ to provide about the same blocking voltage to V14A so the audio amplifier will remain cut off during transmit (Fig. 5). If anyone has any "mods" to the HW-101 that they would like to share, please write to me. — *Jim Flanagan, WB5KYE, 1032 Southcliff, Portland, TX 78374*

FREQUENCY JUMPS IN THE TS-820S

☐ I was experiencing a frequency jump of up to 500 Hz with my TS-820S VFO. An on-the-air discussion with Al Fischer, W7OA, revealed that he had solved the same problem with his TS-820S. Kenwood had advised him to clean all of the pins on the plugs above and below the chassis with rubbing alcohol and a brush. This must be done gently, and the plugs must be reinserted carefully. The VOX relay must also be removed, the protective cover taken off and the contacts cleaned carefully with a brush and alcohol. This cleaning operation eliminated the frequency jump of the VFO, and my receiver is stable again. — *Jerry Dolezal, W9NSC, Franklin, Wisconsin*

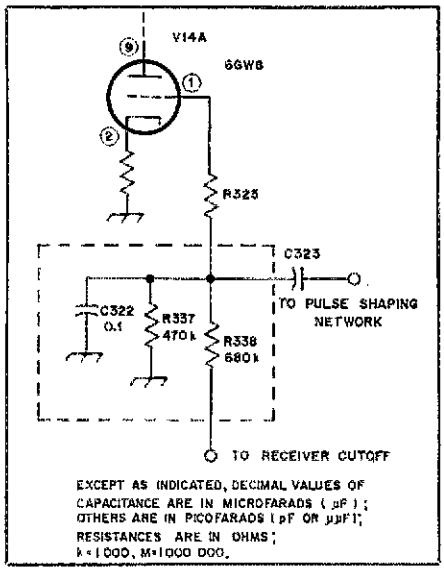

Fig. 5 — Components shown inside the dotted lines were changed to the values indicated to eliminate a loud thump in the HW-101 speaker when going from receive to transmit.

HW-101 LOADING CAPACITOR PROTECTION

☐ Recently the loading capacitor in my aging HW-101 failed. This failure was the result of constant upward pressure placed on the capacitor rotor shaft by the rubber belt-drive mechanism. Eventually this caused the bearings to wear down, allowing the rotor shaft to tilt and short the plates.

After replacing this capacitor at a cost of $12.15, plus the shipping and handling (the part used to cost $2.85), I decided to protect my investment by making a thrust bearing, which mounts on the front of the rf-cage assembly. This bearing will absorb the pressure placed on the rotor shaft, protecting the capacitor bearings. It is made from 3- × 3/4- × 1/16-inch aluminum bar and a nylon bushing (Heathkit part no. 455-44). Fig. 6 shows the mounting details. — *John E. Brush, WA3CAS, Coraopolis, Pennsylvania*

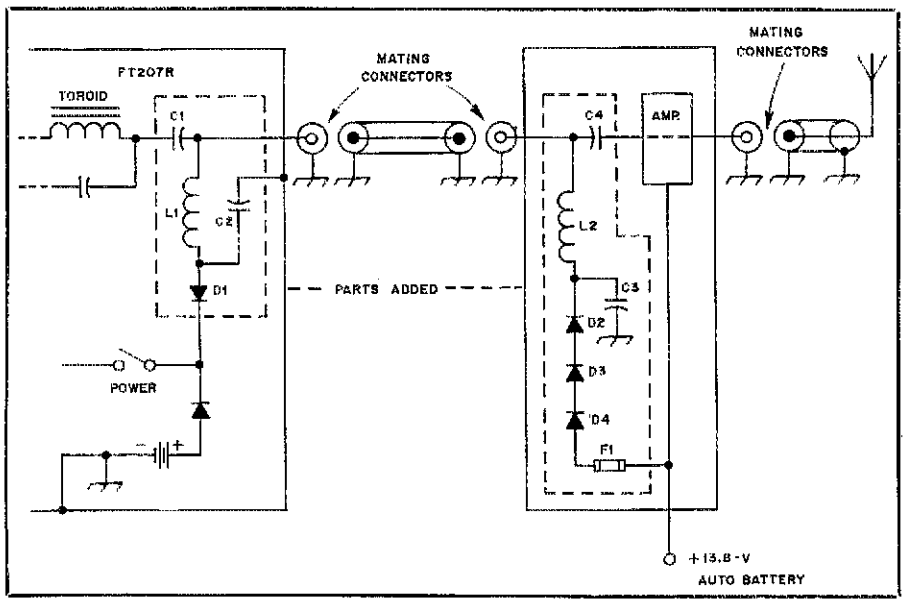

Fig. 4 — Supply the operating voltage to your HT through the coaxial cable from your mobile amplifier using this circuit. L1, L2 — a single-layer coil of no. 30 to 34 magnet wire covering the entire body length of a 5- to 20-megohm, 1/4-watt resistor.
C1, C4 — 0.01 μF, 50 V miniature disc.
C2, C3 — 0.1 μF, 50 V miniature disc.
D1 through D4 — 1N4001 or 1N4007 rectifier diode (any 1 A silicon diode).
F1 — 1/4 A fast-blow fuse.

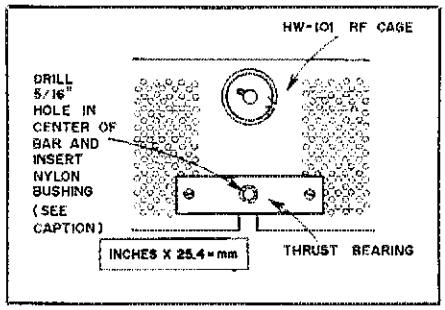

Fig. 6 — This thrust-bearing assembly reduces excessive wear on the loading-capacitor bearing in an HW-101. After placing the thrust-bearing assembly over the rotor shaft, mark mounting holes A and B to align with holes in the rear of the rf cage. Drill A and B with a 1/8-inch bit. Mount the assembly on the rf cage with no. 6 hardware.