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**QST Issue:** Dec 1966
**Title:** HW-12 Rattle
**Author:** Robert A. Sullivan, W0YVA/9

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## HW-12 RATTLE

THOSE whose cars have developed mysterious rattles after the installation of a Heath HW-12, HW-22 or HW-32 might try removing the unit and bending back slightly the bracket that supports the lamp illuminating the meter. It seems that road vibration will cause the lamp to bump against the rear of the plastic meter case in a most annoying manner if the lamp is allowed to rest near the case. — *Robert A. Sullivan, WØYVA/9*

## EQUALIZING THE LOW-VOLTAGE REQUIREMENTS OF THE HW-12 AND THE SB-100

AFTER reading W9LSZ's hint in *QST* for May 1966 on using the HP-23 a.c. power supply with both the HW-12 and the SB-100, I feel that it should be pointed out that there is an easier and safer way to accomplish the desired results. The HW-12 will operate from a low B-plus source as high as 325 volts (250 volts is normal) if the voltage supplied to the screens of

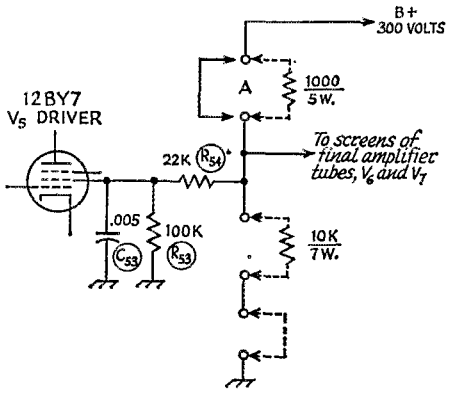



Fig. 4—To operate the Heath HW-12 from a low B-plus source of 300 volts, it is only necessary to remove the jumper from A and install the components shown in the dotted lines.

the driver and final-amplifier tubes is dropped to the proper value. As pointed out in the HW-12 instruction book and as shown in Fig. 4, it is only necessary to add two resistors and change a couple of jumpers to do this. The resistors required for the modification are a 1000-ohm, 5-watt unit and a 10,000-ohm, 7-watt unit.

The above modification has an added advantage over the previously described hint: if either transceiver is operated mobile, the low B-plus tap in the HP-12 d.c. supply may be set at 300 volts, and the rigs will be interchangeable without attention to the power supply. Also, there is no switch that could be inadvertently left in the wrong position, permitting too high a voltage to be applied to the HW-12 and possibly burning out three tubes.

— *Robert C. Clark, K9HVW/WA4VYL*

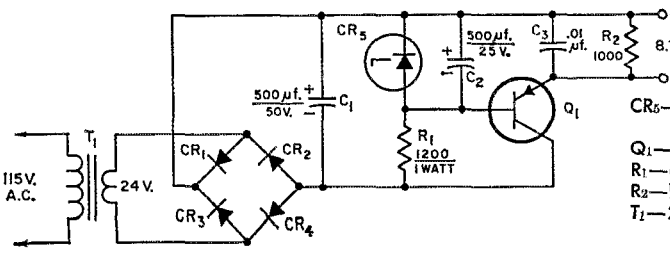
## TRANSISTOR POWER SUPPLY

THE circuit shown in Fig. 5 is an 8.7-volt 500-ma. electronically filtered transistor power supply based on a design submitted by Ralph W. Parlette, WB6JOY. Easily constructed, the supply is inexpensive, has good regulation and very low ripple. $CR_1$ through $CR_4$ form a bridge rectifier and $C_1$, a capacitor-input filter. Zener diode $CR_5$ provides the reference voltage for emitter-follower $Q_1$. $C_2$ smooths out the small amount of ripple that appears across $CR_5$. The effective capacitance across the load is equal to the current gain of $Q_1$ multiplied by the capacitance of $C_2$. $R_1$ limits the amount of current through $CR_5$; it is adjusted for a Zener current of approximately 15 ma. (no load). $C_3$ is an r.f. bypass capacitor and $R_2$ provides a small (10 ma.) bleeder load for the supply.

The output voltage of the unit is equal to the Zener voltage minus the emitter-to-base bias voltage of $Q_1$. Other voltages can be obtained by using different Zeners and changing $R_1$. $R_1$ should be chosen so that the Zener will operate as a more or less constant voltage reference for the transistor regulator at output loads of 0 to 500 ma. yet stay within its maximum current rating when no external load is attached. $Q_1$ is not special: any similar power transistor should work. Of course, the higher the current gain of the transistor, the better will be the electronic filtering. $Q_1$ should be mounted on a heat sink.

Power-supply ripple at full load was measured with an oscilloscope at 4 millivolts r.m.s. Increasing both $C_1$ and $C_2$ to 1000 μf. lowered the ripple to approximately 1 millivolt r.m.s. If less filtering can be tolerated, removing $C_2$ from across the Zener will raise the ripple to 15 millivolts r.m.s. The output changed only 0.1 volt as the line voltage was varied over a 30-volt range. Increasing the external load current from 0 to 500 ma. dropped the output voltage 0.2 volt. — *W1YDS*

Fig. 5—Circuit diagram of regulated 8.7-volt transistor power supply.




C1—electrolytic.
C2—electrolytic.
C3—disc ceramic.
CR1, CR2, CR3, CR4—50 p.i.v. 2-ampere silicon.
CR5—9.1-volt 1-watt Zener (General Electric 24XL9.1).
Q1—Delco or Motorola 2N1970.
R1—composition.
R2—½ watt composition.
T1—24- or 25.2-volt 1-ampere filament transformer.