



There is no difficulty in reading the meter of this compact instrument.

73 Tests the Alco GDM-1 Grid Dip Meter

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"Q" meter, L-C meter, crystal activity tester, HF-VHF signal generator, field strength meter, modulation quality checker and absorption wave meter. . . . If this sounds like a whole lab full of equipment, then wait one. This is only a partial listing of the functions that a good grid dip meter will perform and we haven't even touched on its primary area of usefulness, that of determining the resonant frequency of "cold" tuned circuits and antennas.

However, the ALCO Model GDM-1 grid dip meter is a cut above other equipment in its price range; that is if you can find one to compare it with. This is a completely wired, tested and calibrated instrument which sells for \$36.95, amateur net. Features not found in some other instruments include internal AM modulation, color coded dial and coils, adjustable index for precise calibration and a large, easy to read, plastic case meter. How come all of this for \$36.95? Well, it is an imported instrument, made in Japan, and is being sold as a direct mail item by ALCO Electronic Products, Inc. of Lawrence, Mass.

The GDM-1 covers the range of 1.5 to 300 mc using 6 sturdy, color coded coils which plug into a standard crystal socket mounted

on the front of the case. The coils are stored in a cushioned, heavy plastic box. The instrument is housed in an attractive, heavy gauge brushed aluminum case measuring $6\frac{1}{2}$ " x $3\frac{1}{4}$ " x $1\frac{1}{2}$ ". The case has a substantial heft and a nicely shaped for easy one hand operation. Control designations are neatly silk screened for ready identification. Hardware is nickel plated brass and machine screws are used instead of the sheet metal screws often encountered in lower priced equipment.

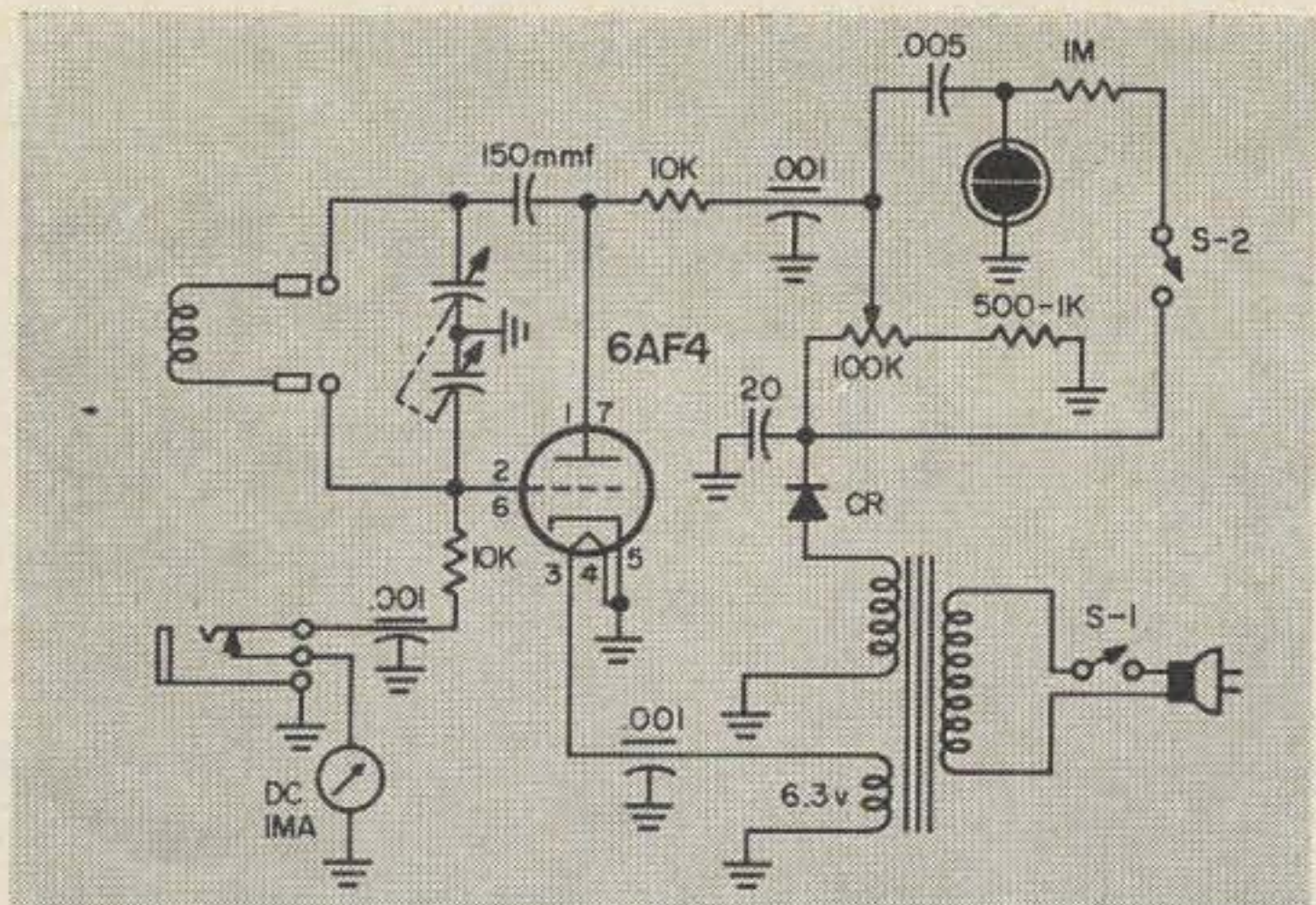
The six color coded scales are nicely laid out on a 3" diameter, serrated edge, plastic dial and an adjustable index scale is provided for precise calibration of any given range. The dial mechanism includes a friction device for smooth operation and the dial extends beyond the right side of the case for easy, vernier effect, tuning.

Internal AM modulation is provided and may be selected by a slide switch mounted on the back end of the case. This feature simplifies use of the instrument as a signal generator. The tone is rich in harmonics and enables identification of the grid dip meter signal in a welter of heterodynes. A phone jack is pro-

vided for monitoring purposes and good results are obtained with the instrument in either the oscillating or non-oscillating mode.

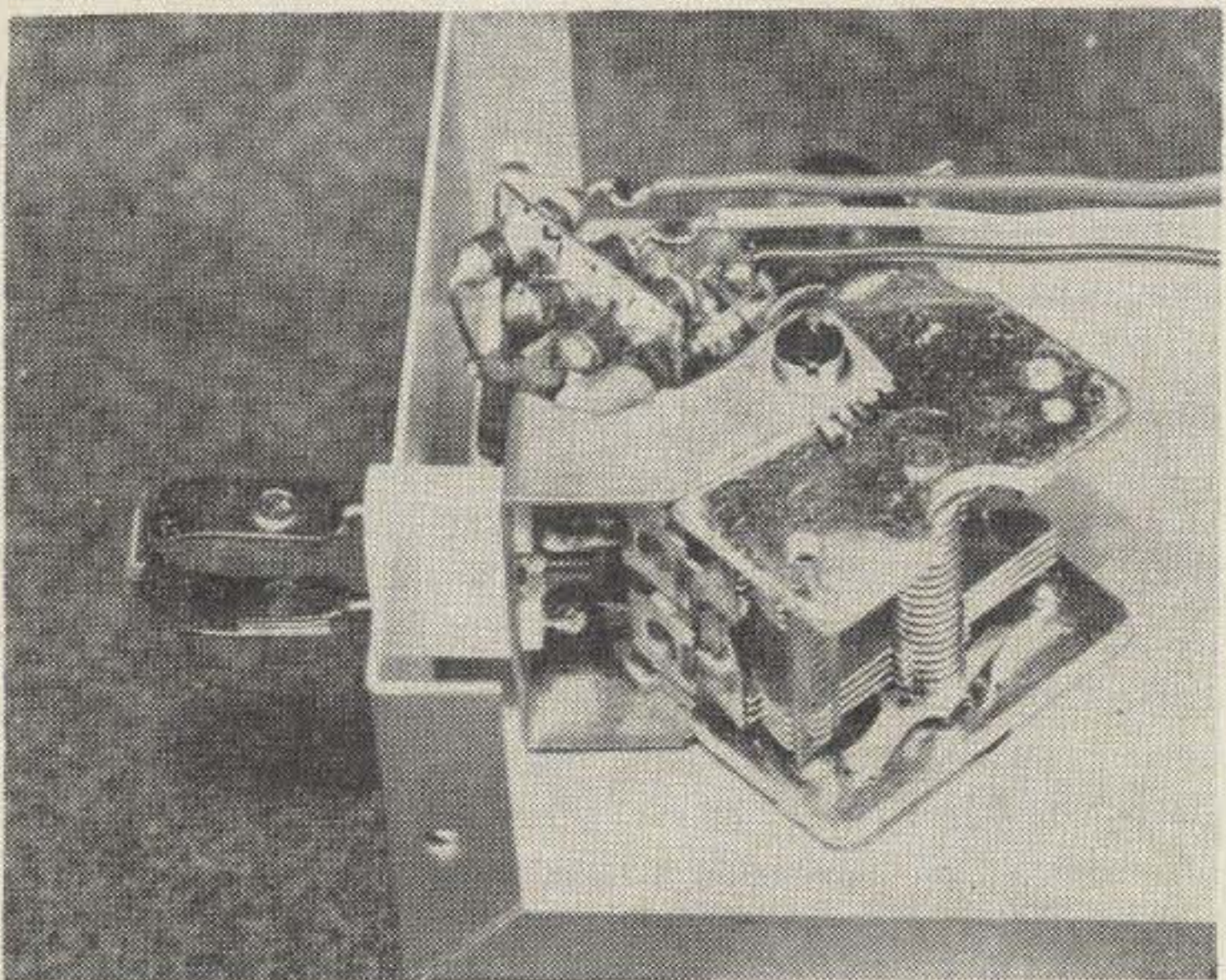
Study of the schematic diagram will disclose nothing really new in circuitry, although the AM modulation capability is an additional and very useful feature not found in many other instruments. The circuit is a conventional ultra-audion oscillator using a split stator tuning capacitor. A milliammeter is connected in the grid circuit and the plate voltage is made adjustable to control the magnitude of oscillation. This permits setting the grid current to the optimum point on the meter scale. When the grid dip meter coil is coupled to a circuit tuned to the oscillator frequency, it will absorb power. This loss of energy results in a decrease in the magnitude of oscillation and is indicated by a reduction in grid current. Therefore, by tuning the instrument for a dip on the meter and reading the frequency from the dial, the resonant frequency of the external circuit is quickly determined.

The modulator uses a neon lamp in a relaxation oscillator circuit and produces a pleasing tone. The power supply is conventional, using a selenium rectifier with a line isolation transformer and a 20 mfd filter ca-



pacitor. This simple circuit reduces hum to an acceptable level. The requirements placed on the meter used in a grid dip meter are quite demanding. The meter pointer should not shift with rapid changes in position or orientation but, at the same time, should respond quickly to small changes in current. In the GDM-1, the movement characteristics seem ideally matched to the requirements of the instrument and the large plastic case meter with its white on black scale is easy to read from all angles.

Performance of the GDM-1 leaves little to be desired. The thin profile of the instrument case, coupled with the "long reach" coils that are used on all except the highest frequency band, makes it easy to get into inaccessible areas. When the instrument is grasped in the hand, the serrated frequency dial falls under the thumb for easy adjustment and true "one hand" operation. The most outstanding feature



The secret of the outstanding performance of the instrument is in this well engineered oscillator assembly.

of the ALCO instrument is the absolute freedom from spurious responses. Also, with the exception of the lowest frequency range, grid current is uniform across the dial. On the lowest frequency coil, there is a gradual falling of grid current as the low end of the dial is approached.

The secret of this performance is shown in the close-up photo of the rf section. All circuit elements are constructed as a compact

sub-assembly which results in essentially zero length leads. RC filters using ceramic feed-through capacitors give extremely good circuit isolation of all external leads. The effectiveness of this decoupling is enhanced by the use of a copper plated sub-assembly chassis which gives low resistance grounding of the critical circuit elements.

The instrument gives good performance as a crystal activity checker and as a crystal controlled signal source. Crystal activity is indicated on the meter. Crystals from 200 kc to 20 mc were tested and all oscillated strongly. This and many other applications, including those listed in the lead paragraph, are covered in the instructions. The "Mimeographed in Japan" instructions will get plenty of use and really should be published in more permanent form. Those interested in pursuing the subject further are referred to the excellent book, "HOW TO USE GRID DIP OSCILLATORS," by Turner. This book is available from 73's own Radio Bookshop for a nominal \$2.50.

In the instrument tested, no deficiencies were noted which affected the performance. One point, however, deserves mention and possible correction in production. In all except the RF sub-assembly, which is excellent, the assembly and wiring techniques are slightly below commercial instrument standards. This is a minor point but a couple of terminal strips, a foot of lacing twine and ten minutes longer on the production line would turn the present aggregation of lead mounted components and point-to-point wiring into a "MIL Spec" creation.

Without a doubt, the ALCO GDM-1 grid dip meter is a bargain on today's instrument market. The GDM-1 should have considerable appeal to the amateur who likes his test equipment factory wired and calibrated. Even if you construct no equipment, the utility of a grid dip meter in antenna and trap adjustment more than justifies the purchase. In addition, you as the proud owner of a shiny new instrument will find you have friends you never knew you had.

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Photo: Morgan S. Gassman, Jr.

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